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Commission



TOOLS AND METHODOLOGIES TO ASSESS THE EFFICIENCY OF HEALTH CARE SERVICES IN EUROPE

**An overview of current
approaches and opportunities
for improvement**

Report by the Expert Group on Health System Performance Assessment

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The full lists of Members of the Expert Group on HSPA, the efficiency sub-group and participants to the Policy Focus Group are presented in Annex A.

Comments on the publication are welcome and should be sent to the following email address: SANTE-HSPA@ec.europa.eu.

Foreword

In the face of rising cost pressures and increasing demand for care services, national health systems across Europe are striving to supply universal access to essential, high-quality care while safeguarding their long-term sustainability. In this context, European governments are ever more focused on finding ways to improve the efficiency of their health care systems to tackle this dual challenge. While a growing body of evidence suggests that considerable room exists for optimising health care spending without impairing access and quality of care, developing appropriate methods to measure and assess health care efficiency is crucial to correctly identify wasteful practice and design policy interventions that effectively improve efficiency. In this regard, the Expert Group on Health Systems Performance Assessment (HSPA) noted that, despite considerable progress in the last decade, the development of tools and methodologies to assess health care efficiency is still in its early stage, and that an array of technical and informational limitations render developing more advanced efficiency assessment tools an arduous task.

This new report by the Expert Group on HSPA aims at supporting national policy-makers in their efforts achieve this objective. To this end, we present an overview of the key theoretical concepts related to health care efficiency, analyse country experiences assessing efficiency of care in Europe, and propose a few ways their assessment methodologies can be incrementally advanced to better support health policy-makers and managers in their quest to deliver better-value care.

The findings of this report present an undeniably challenging and complex agenda for policy-makers and researchers. While the report documents several conceptual and methodological difficulties that countries encounter as they seek to develop better tools to assess efficiency of care, acknowledging these limitations is an indispensable part of a process predicated on a strong evidence-based approach to health policy-making. The investment required for improving current efficiency assessment tools and methods is justified by the magnitude of the risks that stem from failing to provide more targeted guidance to policy-makers. In the absence of analytical tools that can accurately detect health system inefficiencies, decision-makers may conclude that these cannot be singularly addressed, and be required to implement untargeted measures that can negatively affect the efficiency of other care processes. Moreover, failing to fully acknowledge the limitations of efficiency assessment tools used in the analysis may lead decision-makers to misinterpret their results, and devise policy interventions that target only apparently inefficient practice, or that have potentially unintended consequences on other aspects of health service delivery.

By means of the work illustrated in this report, we hope to set a useful starting point for European health policy-makers and health managers who are reflecting on how to develop more sophisticated tools and methods to assess the efficiency of their health care systems, as a means to minimise these risks and design more effective efficiency-enhancing policy interventions.



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Executive summary

In a context of rising health care costs driven principally by the increasing prevalence of chronic conditions, ageing populations and the high costs associated with technological advances in medicine, health care systems in Europe are nowadays facing the intricate challenge of delivering accessible, equitable and high-quality care while ensuring the sustainability of public finances.

At the same time, there is emerging consensus among policymakers and researchers that a significant share of current health care spending in modern health systems could be reallocated to better use without undermining access and quality of care. As a result, European governments are increasingly interested in capturing opportunities to extract additional value from available resources, and increase the efficiency of their health care systems to tackle this twofold challenge.

Yet while the idea of efficiency in this context – that is, how well a health care system uses its resources (input) to improve population health (outcome) – is simple to understand, several methodological questions remain on how to correctly identify inefficiencies within health care systems and devise corrective interventions without unintended consequences on access or quality of care. The relationship between health system inputs and health outcomes is complex and influenced by several factors that are typically outside of the control of the health system, which makes it difficult to measure the effect of specific care interventions on health outcomes and perform fair comparative assessments across entities. Together with considerable data limitations affecting analysts' capacity to capture the performance of different segments of the 'health production process', assessing health care efficiency becomes a very complex endeavour in practice.

In light of these difficulties, specifying a set of appropriate instruments to analyse, measure and assess efficiency of care (as well as

spelling out their limitations) is a precondition for policymakers to design and implement interventions that can effectively make use of the ample potential to increase efficiency mentioned above.

In support of this undertaking, among its activities over the course of 2018 the Expert Group on Health Systems Performance Assessment (HSPA) produced this report on tools and methodologies to assess efficiency of care. The report sets out to explore the most recent theory and observed practice of health care efficiency measurement and assessment across European countries, in view of discovering what opportunities exist for European countries to improve their tools and methods to measure and assess efficiency of care, and to make better use of efficiency information for policy formation.

The findings of the report are based on input and discussion provided by members of the Expert Group on HSPA, which were gathered through the following activities:

- A discussion of how countries envisage efficiency of care and how it can be conceptualised for the purpose of measuring and assessing it, which has been condensed in Chapter 1 into a summary of key concepts, definitions and analytical frameworks related to efficiency of care according to the latest research on health system efficiency measurement;
- An internal survey on national experiences in assessing efficiency of care in Europe, carried out by the HSPA sub-group over the course of summer 2018, which results have been presented and analysed in Chapter 2;
- A policy focus group steered by the European Observatory on Health Systems and Policies, which took place in September 2018. The policy focus group saw 17 national HSPA experts gather to discuss strategies to moderate demand for acute care using an

analytical perspective encompassing the entire care pathway, analyse the policy risk associated with relying on a restricted set of (often partial) efficiency indicators to devise efficiency-enhancing interventions and possible ways to tackle this risk. The conclusions of this semi-structured discussion have been summarised in Chapter 3.

The report's findings have shown that no single efficiency metric at any level of analysis can generally give, on its own, a sufficient indication of whether an entity is efficient or not. The fact that indicators provide only partial information about discrete segments of the 'health production process' should be explicitly acknowledged, and metrics should instead be read in conjunction with others to extrapolate relevant information about where inefficiency may be located. While admittedly difficult to systematise, this approach is the only one that, at present, allows carrying out an exhaustive and sufficiently sophisticated analysis that takes into account the contingent strengths and weaknesses of each efficiency indicator used.

Countries' experiences collected through the internal survey have revealed that considerable variation exists in how countries define and conceptualise health care efficiency. Efficiency measurement methodologies are still at a developmental stage in many countries, with data constraints often limiting their scope for analysis to hospital care. The good news is that a significant share of European countries is starting to broaden the scope of their efficiency analysis to other care settings – most notably, primary care and long-term care, which would allow them to assess the impact of non-hospital factors that often determine the overuse of hospital services.

As per the use of benchmarking, while countries generally acknowledged its potential to foster efficiency improvements, several recognised that increased standardisation of data collection, reporting methods and better risk-adjustment are indispensable preconditions to make full use of this powerful tool.

Concerning the formulation of indicators to measure efficiency of care, great variation exists in how countries have designed their set of indicators, with only few that are measured in a standardised way across countries. The lack of a shared understanding of how efficiency of care studies should be conducted constitutes an obstacle to achieving greater standardisation of efficiency indicator sets across countries. While designing a 'one-size-fits-all' suite of metrics may be difficult and even counterproductive, considering the risks associated with the possibility of coming up with a misleading interpretation of indicators, laying out an 'investigative schematic for efficiency measurement and assessment' may significantly increase the analytical rigour of efficiency analyses and foster the development of more robust, homogeneous methods to assess efficiency of care across countries.

Results of efficiency of care assessments are a pivotal resource for policy formation, managerial decision-making, guaranteeing financial sustainability and improving accountability of public service in most European countries. In this context, countries recognise that the existence of a solid governance structure ensuring accountability is a necessary condition for the successful implementation of most efficiency-enhancing interventions. In a positive commitment to improving accountability mechanisms and overcoming stakeholder resistance to change, the vast majority of policymakers across Europe are currently working to make efficiency information about health care systems performance more accessible to the public and make citizens more perceptive to the importance of minimising health care inefficiency.

The information collected throughout this report indicates that there are several promising opportunities for European countries to improve their tools and methodologies to measure and assess efficiency of care, as well as for efficiency information to play a stronger role in decision-making – the most prominent examples are:

- **Increasing the quality and granularity of cost data**

Cost data are a fundamental piece of information that underpin decisions on resource allocation across the health care system. While acknowledging the peculiarities of costing practices specific to the health care sector, country experiences revealed that cost structures behind specific procedures or treatments often vary significantly from one country to another and even between providers within the same countries due to differences in costing methods and classification rules. In this context, obtaining more consistent and detailed costing of the care provided up to the level of individual patients would enable analysts to use more reliable data to support efforts to measure (and improve) efficiency of care. The ongoing rapid development of e-health and information systems may offer opportunities to generate patient-level cost data from other care sectors in the near future.

- **Improving measurement of health outcomes**

This report has analysed the several methodological challenges associated with developing comparable outcome-based measures for the purpose of comparative efficiency assessment. Research initiatives such as EuroHOPE (Box 2) showed that using a disease-based approach to benchmark efficiency of care provided in the whole care cycle using register data is feasible also in the international context.

Several countries have also recently intensified their efforts to develop patient-reported outcome measures (Box 1), which offer a promising opportunity to improve outcome measurement for a series of treatments. In the long term, achieving an international agreement recommending the use of standardised and validated outcome measures would permit greater advances in this area.

- **Expanding the scope for efficiency measurement beyond hospital care**

The discussion on strategies to moderate demand for acute care as a prime area for efficiency gains has shown that a significant share of efficiency-enhancing interventions requires a broader perspective that looks beyond measuring efficiency of hospitals. However, countries' efficiency assessment frameworks often disproportionately concentrate on measuring efficiency of hospital care relative to other sectors, not because of strategic decisions in their assessment approach, but mainly due to the lack of data from other care settings. Expanding efficiency measurement to other care sectors – especially primary, mental and long-term care – would allow health care managers to retain greater control of the 'non-hospital' factors that cause unnecessary use of hospitals, which would also offer some insight of allocative efficiency at the system level. Broadening the scope for efficiency measurement, as well as making full use of available hospital efficiency metrics that can serve as a proxy for other care settings is thus indispensable for efficiency of care assessments to become more usable for policy-makers.

- **Designing communication of results with stakeholders in mind**

The report has found how the target audience of efficiency assessment reports consists of a broad range of stakeholders, which ranges from health managers to policymakers, citizens and clinicians. Customising communication about efficiency of health care based on the 'capacity to react' of different audiences can increase stakeholder engagement and the effective translation of analytical insights into action for efficiency improvement. An area that offers interesting prospects for further development is the way findings are presented: data visualisation tools can act as a powerful device to 'bridge the communication gap' between health care analysts/researchers and policy-makers, helping translate technical analysis into more evidence-based policy options.

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Introduction

Following the adoption of conclusions “Towards modern, responsive and sustainable health systems” by the Council of the European Union [1], the Council Working Party on Public Health at Senior Level (WPPHSL) invited Member States and the Commission to set up an Expert Group on Health Systems Performance Assessment (HSPA) to:

- provide participating Member States with a forum for exchange of experiences on the use of HSPA at national level;
- support national policy-makers by identifying tools and methodologies for developing HSPA;
- define criteria and procedures for selecting priority areas for HSPA at national level, as well as for selecting priority areas that could be assessed EU-wide in order to illustrate and better understand variations in the performance of national health systems; and
- intensify EU cooperation with international organisations, in particular the Organisation for Economic Co-operation and Development (OECD) and the World Health Organisation (WHO).

In autumn 2014, the Expert Group on HSPA was established. Its membership is comprised of representatives from EU Member States plus Norway, the European Commission, the OECD, the WHO Regional Office for Europe and the European Observatory on Health Systems and Policies. The Expert Group is co-chaired by a Member State periodically elected by other Member States’ representatives, and the European Commission’s Directorate General for Health and Food Safety (DG SANTE).

The Expert Group on HSPA organises its work around a set of priority topics endorsed by the EU Member States, which provide a mandate to the Expert Group to proceed with

its analysis work. The activity of the Expert Group on HSPA culminates in the production of a yearly thematic report that identifies and examines tools and methodologies to support policy-makers in their task of assessing the performance of national health care systems in Europe.

After having examined the array of tools and methodologies to assess quality of care [2], the performance of integrated care [3] and of primary care [4], in 2018 the Expert Group on HSPA focused on identifying tools and methodologies to assess efficiency of health care.

This study of methods to assess efficiency of care by the Expert Group on HSPA comes at a time when total health care spending in the EU represents about 9.6% of GDP [5], with further growth expected in the future as a result of demographic transitions and innovation in medical technology. The decision to dedicate a sizeable and growing share of GDP to health care is not troublesome per se, assuming that the desire for better health care reflects societal preferences in high-income, developed countries and that, as some studies suggest, improvements in health outcomes driven by health expenditure generally exceed the costs of care [6]. However, there are two main reasons why rising health care expenditure is a prominent preoccupation of European policymakers nowadays.

The first reason is that public spending on health in the EU accounts for more than three quarters of total health expenditure: according to recent projections [7], the public share of health care spending is anticipated to grow from 6.8% of GDP up to 8.4% (+24%) or more in 2070. This increase would necessarily require countries to find ways to generate additional revenue through some combination of further tax increases, diversion of public spending from other productive areas, and increased recourse to regressive financing mechanisms such out-of-pocket payments, all measures that would

impose a substantial macroeconomic and societal cost.

The second reason – of particular interest for this report – is that there is growing evidence that a substantial share of current health care spending in European health care systems can be deemed as wasteful. The OECD recently estimated that up to 20% of health spending in Europe is wasted on services that either do not deliver benefits or are even harmful, and on costs that could be avoided by substituting cheaper alternatives with identical or better benefits [5]. In a context where health care spending constitutes an ever-increasing share of total resources, with already strained public budgets paying most of it, tackling these inefficiencies is an ethical and financial imperative of first-order importance to ensure fiscally sustainable universal access to good quality health care in the future.

Identifying the appropriate instruments that can enable the implementation of efficiency-enhancing measures without undermining access or quality of care is a corollary to this objective. Failing to define a set of appropriate tools for measuring and assessing efficiency that can guide policymakers in their decision-making process gives rise to two types of risks [8]:

- The first type of risk arises when, in the absence of analytical instruments that manage to detect inefficiencies in specific areas of care, decision-makers may conclude that identifying and addressing inefficiencies is impossible, and therefore allow poor performance to persist, with the negative consequences described above. Even worse, if expenditure reductions are required, decision-makers may be forced to implement untargeted horizontal budget cuts, almost certainly harming patient health in the process;
- The second type of risk arises when, in the presence of an erroneous interpretation of efficiency indicators which limitations had not been sufficiently acknowledged, decision-makers end up implementing policy

changes that either “hit the target, but miss the point”, or that target only apparently inefficient practice in one care area, without considering the unintentional (negative) spillovers to other areas of care stemming from their decision.

The objective of this report by the Expert Group on HSPA is to identify the tools and methodologies to assess efficiency of health care that can help European health care policymakers avoid these risks as much as possible, as they pursue the (many) opportunities to release resources within their health systems to deliver better-value care.

To do so, the report first presents an overview of the key concepts, definitions and an analytical framework relating efficiency in health care, to help readers understand the nature of different types of efficiency as well as the array of technical difficulties encountered by analysts who try measuring and assessing it (Chapter 1).

The report then presents a summary of the key findings of an internal survey on national experiences in assessing efficiency of care. The aim of the survey was to collect information about how countries across Europe are currently measuring and assessing efficiency of their health care systems, in view of helping policymakers identify common trends, challenges and best practices, as well as unexploited areas and opportunities to improve their efficiency measurement and assessment methods in their respective countries (Chapter 2).

Chapter 3 presents an account of a policy dialogue held during a ‘policy focus group’ (PFG) attended by national HSPA experts in Brussels in September 2018, which was steered by experts from the European Observatory on Health Systems and Policies. The PFG explored opportunities for managing acute care demand across the entire care pathway in the context of improving health system efficiency and sustainability, and scrutinised possible interpretations of selected hospital efficiency indicators used across Europe in view of

developing a better informed, comprehensive framework to measure efficiency of acute care.

The last part of the report (Chapter 4) summarises the key messages from each chapter and discusses the main options that European countries have at their disposal to improve the measurement and assessment of efficiency of care in their systems. Some policy considerations highlighting the opportunities that health policymakers in Europe can exploit to improve efficiency of care through the development of more sophisticated monitoring and assessment tools are presented.

Chapter 1

Efficiency in healthcare: key concepts

In the context of rising health care costs driven in part by demographic transitions and advances in medical technology, policy-makers in Europe are increasingly faced with the challenge of reconciling increasing demand for health care services with available resources while ensuring long-term sustainability of public finances. Based on the premise that wasteful spending in health is still widely prevalent in many forms, experts argue that achieving greater efficiency – generally speaking, how well a health care system uses the resources at its disposal to improve population health and attain related goals – should be the major criterion for priority setting among European health care policymakers.

As mentioned in the introduction to this report, evidence from recent research carried out on this topic confirms that ample margin exists to increase health systems' efficiency in Europe. For instance, findings from the latest publication '*Health at a Glance: Europe 2018*' from the Organisation for Economic Co-operation and Development (OECD) and the European Commission estimate that up to 20% of total health care spending in Europe could be reallocated to better use¹ without undermining access or quality of care [5]. Within health care systems, hospital services stand out as a prominent area that offers substantial scope for efficiency gains. For instance, OECD data shows three to five-fold variations among European countries in rates of cardiac procedures and knee replacements performed, which cannot be explained solely by differences in clinical burden. Another area where ample margin to increase efficiency exists is pharmaceutical care, with data showing high variance in uptake of generics and biosimilars across EU

countries², suggesting the existence of unexploited potential to streamline consumption of medicinal products (both in terms of overuse / overprescribing as well as limited patient compliance) both in hospitals and outpatient settings.

As the provision of health care services cannot be governed directly by market mechanisms given the well-known information asymmetries and instances of market failure that characterise this sector, it is imperative for health policymakers to act upon these opportunities to increase efficiency of care and improve sustainability, as well as quality and access to needed care (as an inefficient use of finite healthcare resources creates a risk that some individuals may receive care of comparatively lower quality, or even be effectively denied access to care).

This first chapter presents an introductory account of the key concepts, definitions and an analytical framework relating efficiency in health care. These elements will help readers of this report understand the nature of different types of efficiency, as well as the technical difficulties encountered by those who try measuring and assessing it. In turn, readers will appreciate how these complications may lead to the development of defective models of efficiency and/or misleading interpretations of efficiency indicators, which risk steering the health policy-making process in potentially unintended directions. To minimise this risk, analysts should make use of conceptual frameworks that clarify the scope and correct interpretation of efficiency metrics, each seeking to capture how proficiently some discrete segment of the 'health production

resources could be used to produce more health services.

² To an extent that cannot be reasonably attributed to a country's market size and/or to the timing of patent expires.

¹ i.e. the same health system goals could be attained using fewer resources (which could be re-allocated elsewhere where their marginal contribution to improving health outcomes would be relatively higher) or, alternatively, the same amount of

process' is performed. The definitions and analytical framework presented below thus aim at helping analysts:

- define the boundaries of the entity (e.g. a hospital, or a whole health system) under scrutiny,
- acknowledge the assumptions and limitations of efficiency metrics used in the analysis; and
- understand how this information can be interpreted jointly to extrapolate significant information about where inefficiencies are and what may be causing them.

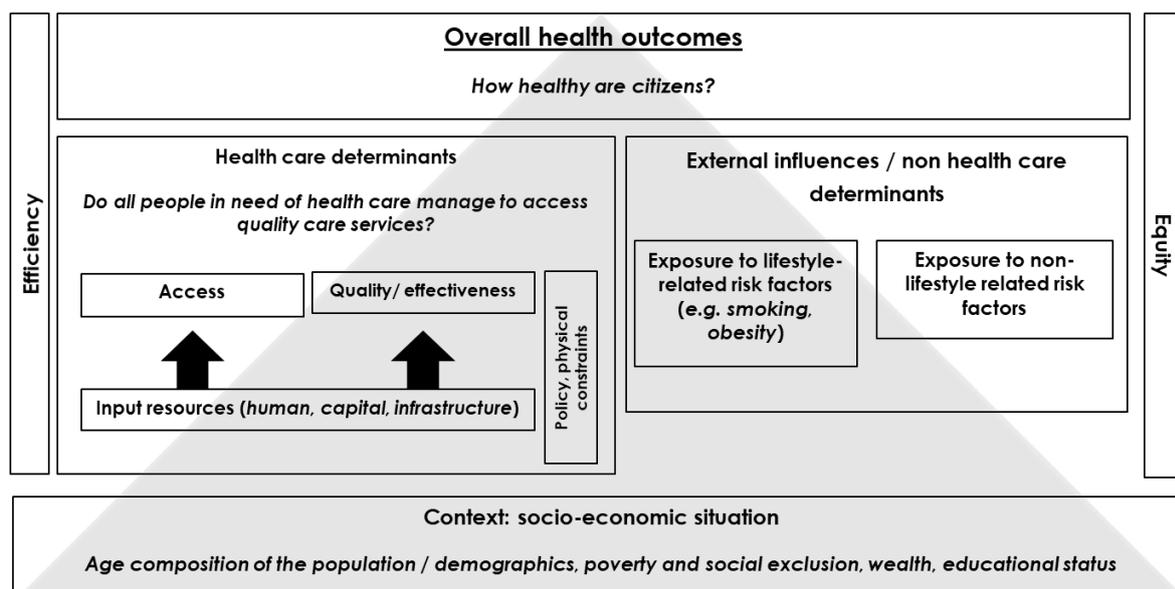
Definitions of efficiency

As mentioned above, the concept of efficiency relates to how well a health care system uses the resources at its disposal to improve population health and attain related goals. Care services supplied by the health system

can be considered as an 'intermediate product' instrumental to achieving these outcomes. We can thus describe efficiency as the ratio between health system inputs (costs, in the form of labour, capital, or equipment) and either outputs (e.g. number of patients treated) or health outcomes (e.g. life years gained) [9].

While data availability and consistency are important constraints for the development of operational efficiency indicators, it is nevertheless important to highlight that using health system outputs as a proxy can lead to the development of indicators that may be prone to faulty interpretation. As set out in the conceptual framework presented in Figure 1, a large number of non-health care determinants (for which efficiency models should ideally try to adjust) beyond health system outputs contribute to the definition of health. Devising efficiency indicators that capture the full 'production process' from inputs to health outcomes [10] is therefore preferable as a general rule.

Figure 1 – A conceptual framework in the area of health



Source: Adapted from Social Protection Committee [11]

Another implication stemming from this definition of efficiency is that a clear conceptual difference exists between the pursuit of greater efficiency and that of cost containment. While the former seeks to increase the ratio between valued outputs and inputs up to an optimum, the latter indicates a preoccupation limited to inputs, with no reference to output/outcome changes associated with a reduction of inputs. While it is fair to assume that the necessity to contain costs reinforces the urgency of increasing efficiency in certain areas of care, it is however important to consider that decisions on *where* to cut expenditure (or other inputs) without full knowledge of the benefits those distinct resources are securing for the health system may be detrimental to health system efficiency, producing health losses that are more than commensurate with the decrease in spending.

Inefficiency in a health care system can arise for two distinct, yet related reasons. Inefficiency materialises 1) when the maximum possible improvement in outcome is not obtained from a fixed set of inputs (or, in other words, when the same – or even greater – outcome could be produced consuming less resources), and 2) when health resources are spent on a mix of services that fails to maximise societal health gains in aggregate. As explained in more detail below, these two types are conventionally referred to in the health economics literature as, respectively, *technical* and *allocative* efficiency.

Technical efficiency

The definition of technical efficiency in the health care context is analogous to the one used in the field of engineering, where the efficiency of a device is defined as the ratio between the useful work performed by it and the total energy consumed as input. Similarly, technical efficiency in health care indicates the capacity of an entity within the health care system to produce its chosen outputs given its

resources. In both cases, measured levels of efficiency are compared to the highest level of performance attainable (i.e. an ‘ideal machine’) to evaluate how efficiently, respectively, a device and an entity within the health system operate.

Contrarily to allocative efficiency, measuring an entity’s technical efficiency does not presuppose assessing the *value* of the outputs produced; to the extent that no additional unit of output can be extracted from the ‘production process’ holding all inputs constant, an entity is technically efficient. It is therefore possible to find a highly technically efficient entity (e.g. an emergency ward) operating within an ‘allocatively inefficient’ system that, for instance, does not allocate enough resources to primary care and fails to prevent potentially avoidable admissions.

As it is possible to create “cost-per-unit of output” metrics (e.g. *cost to treat a specific disease per patient*), most technical efficiency analyses are based on comparative performance studies. In hospitals, diagnosis-related groups (DRGs) are a classification system that allows to set up this type of efficiency comparisons: cost-per-patient data within a DRG for a specific care provider can be compared with the mean cost-per-patient of all other (similar) providers. This provides some insight on the performance of an entity (typically, a hospital) relative to others in its same category.

However, the complexity of hospital cost structures and subsequent variation in management accounting practises used across different entities poses limits to the reliability and use of these metrics for decision-making. The difficulty of allocating specific costs to patients in a standardised way across all units means that DRG-based “cost-per-unit” type of indicators offer limited insight into *what* causes allegedly identified technical inefficiencies. Specific indicators of *operational waste*³ – measuring, for instance, the share of high-cost medication utilised when cheaper, therapeutically equivalent products are

³ As presented later on in the chapter, operational waste covers instances when the care patients receive

is what they need, but the same (or superior) benefit could be achieved using fewer resources.

available – should complement efficiency analyses that use this type of metrics.

Allocative efficiency

While technical efficiency considers the extent to which an entity is capable of maximising its output using a fixed amount of input resources, allocative efficiency addresses the issue of deploying the right mix of outputs (or inputs) that maximises welfare according to societal preferences. A decision on what this ‘right’ mix of outputs should be presupposes, in principle, the existence of information on the relative value of different health system outputs attributed by citizens. In the absence of a market generating prices for most health system outputs (which would allegedly reflect societal preferences), it is however extremely difficult to aggregate individuals’ preferences and specify what the optimal mix of outputs produced (or of inputs used) would objectively be according to this criterion.

Besides inescapable judgements stemming from considerations of political nature, policy makers have to therefore orientate their resource allocation decisions based on the assumption that the mix of outputs that maximises health gain (in aggregate) produced by the health system is the ‘right’ one.

Allocative efficiency in health care can be considered both at the ‘micro’ and ‘macro’ level. At the provider level – considering a patient’s experience where the inputs are the resources spent for his treatment, and the output is the resulting health gain – the allocatively efficient decision is to treat the patient with the most cost-effective treatment available. This ‘value for money’ assessment is usually performed by health technology assessment (HTA) agencies, which use quality-adjusted life years (QALYs) to measure health gain across potential treatments that a patient could receive, and compile a cost-per-QALY metric to determine which specific treatment is the most cost-effective, eventually determining what bundle of health services to provide. In this context, the promulgation of standard clinical

guidelines can play an important role in ensuring that providers use resources in an efficient way. A provider would thus be ‘allocatively efficient’ if its treatment recommendations comply with clinical guidelines, assuming those had been developed to reflect cost-effectiveness.

At the system level, allocative efficiency is reached when resources are distributed across different care sectors (e.g. primary care, hospital care, long-term care) in a way that the mixture of care services provided maximises the aggregate health gain ‘produced’ by the health care system as a whole. Allocative efficiency metrics at this level should indicate whether a health system is producing health gains ‘below the production possibility frontier’ because of a misallocation of resources (or lack of integration) across the components of the health care system. For instance, *rates of avoidable hospital admissions* may be considered an indicator of imbalances in resource allocation, in the sense that a greater concentration of resources on primary care may generate allocative efficiency improvements to the whole health system.

Based on the observation that health outcomes are influenced by several non-health care determinants outside of health policy makers’ influence, one may also conceptualise allocative efficiency at the ‘societal’ level – that is, whether the ‘right’ amount of resources are devoted to the production of health care relative to other areas of ‘health-producing welfare’ (e.g. social protection, education). In an efficient system of this kind, the marginal utility of the last input unit devoted to health care would be equal to the marginal utility of devoting another input unit to some other area of welfare. It thus follows once again that addressing this question of resource allocation between different sectors presupposes the existence of information about the ‘societal value’ of health care spending relative to non-health care welfare spending.

In this context, it is perhaps worth noticing that differential levels of efficiency of entities within a health system (e.g. hospitals) would

make it very difficult to assess the allocative efficiency of health spending at the 'societal' level. In other words, indications that additional spending should be shifted to health care from other welfare sectors may as well be evidence that either technical or allocative inefficiencies exist within the health care system at current levels of spending. Even from an international comparative perspective, observing two countries that have comparable health outcomes at different levels of health expenditure (e.g. as a share of GDP) is not per se a sufficient indication that curbing health spending in the 'less efficient' country to the level of the 'more efficient' one will allow it to retain the same outcomes using less resources. Achieving technical and allocative efficiency at the lower levels of analysis is therefore a pre-requisite to carry out a 'non-spurious' assessment of allocative efficiency at the 'societal' level.

Wasteful spending on health

Another useful, complementary way to conceptualise efficiency of care consists in using the notion of "waste" as defined by the Organisation for Economic Cooperation and Development (OECD) [12]. The idea of waste is similar to the one of technical inefficiency explained above. Waste occurs when 1) health care resources are allocated to services and processes that are either harmful or do not deliver benefits, and when 2) costs that could be avoided by substituting cheaper alternatives with identical or better benefits are incurred.

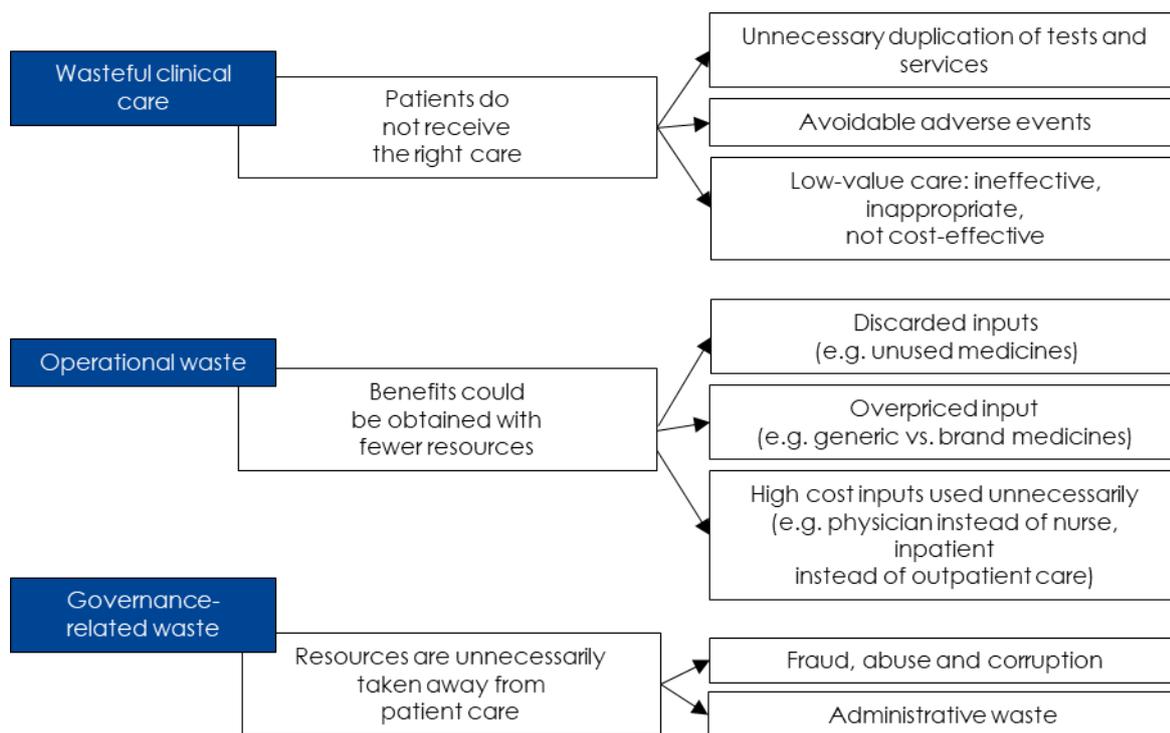
Based on this definition, the framework proposed by the OECD [12] distinguishes three categories of waste (Figure 2) – wasteful clinical care, operational waste and governance-related waste.

- *Wasteful clinical care* covers instances when patients do not receive the right care. This includes preventable clinical adverse events, driven by errors,

suboptimal decisions and organisational factors, notably poor co-ordination across providers. In addition, wasteful clinical care includes *ineffective* and *inappropriate care* – sometimes known as low-value care, mostly driven by suboptimal decisions and poor incentives. Last, wasteful clinical care includes the unnecessary duplication of services.

- *Operational waste* occurs when care could be produced using fewer resources within the system while maintaining the benefits. Examples include situations where lower prices could be obtained for the inputs purchased, where costly inputs are used instead of less expensive ones with no benefit to the patient, or where inputs are discarded without being used. This type of waste mostly involves managers and reflects poor organisation and co-ordination.
- *Governance-related waste* pertains to use of resources that do not directly contribute to patient care, either because they are meant to support the administration and management of the health care system and its various components, or because they are diverted from their intended purpose through fraud, abuse and corruption. It thus comprises two distinct types of waste. The first is administrative waste, which can take place from the micro (manager) to the macro (regulator) level. Again, poor organisation and co-ordination are the main drivers. Second, fraud, abuse and corruption, which divert resources from the pursuit of health care systems' goals, are also wasteful. Any of the actors can be involved, and in fact, a comprehensive analysis of the topic requires the inclusion of businesses/industries operating in the health sector. In any case, the intention to deceive is what primarily distinguishes this last type of waste.

Figure 2 – Categories and examples of wasteful spending on health



Source: Adapted from OECD/EU (2018) [5]

A conceptual framework for efficiency of care

To guide a study of efficiency of the ‘health production process’, it is necessary to set out a conceptual framework that maps the relevant actors, activities and other factors to be considered when assessing efficiency of care. Efficiency indicators covering different segments of the production process can then be organised within the framework to scrutinise their significance and capture interactions between different metrics to interpret their meaning correctly.

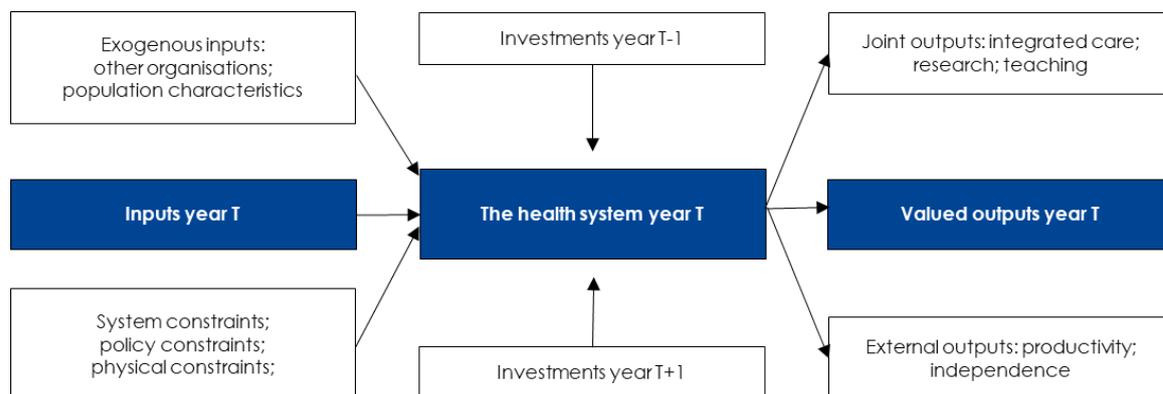
Based on the extensive work carried out recently on this topic by the European Observatory on Health Systems and Policies [13], an exhaustive framework for analysing health system efficiency should explicitly consider the following five aspects, which will be described in more detail in Chapter 3 of this report:

- 1) *The (boundaries of the) entity to be assessed*
- 2) *The outputs (or outcomes) under consideration*

- 3) *The inputs under consideration (labour, capital)*
- 4) *The external influences on attainment*
- 5) *The links with the rest of the health system*

A consideration of these five aspects leads to the conclusion that the straightforward conceptualisation of efficiency as the ratio of inputs to valued outputs masks a series of methodological problems that make exhaustive and precise efficiency measurement a complex endeavour in practice. In light of these complexities, the European Observatory on Health Systems and Policies devised a conceptual framework for efficiency that seeks to render explicit the array of relevant inputs that should be considered (e.g. population characteristics, contingent constraints), outputs (e.g. organisational know-how, enhanced workforce productivity) as well as to capture the intertemporal, dynamic nature of processes and actors that make up the health care system (Figure 3).

Figure 3 – A more complete model of efficiency



Source: Cylus J, Papanicolas I, Smith PC (2016) [13]

The objective of this framework is to deconstruct efficiency indicators into a reasonable number of issues to enable analytical scrutiny. It is mainly relevant for technical efficiency analysis, yet its discussion of external circumstances and broader impact on the health system raises issues linked to allocative efficiency too.

While the numerous efficiency indicators that can populate this framework all have their specific limitations, it is certainly preferable to steer the health system with imperfect measures – provided they are well understood and correctly interpreted – rather than with none at all. It is thus vital that policymakers acknowledge the weaknesses of indicators used, and that the search for opportunities to develop and implement more sophisticated efficiency metrics does not stagnate.

After having presented a typology of efficiency and having provided an overview of the main methodological challenges in measuring and assessing it, the next chapter of this report presents the results of a survey conducted by the Expert Group on HSPA that explores how European countries are currently dealing with the complex task of measuring and assessing efficiency of their health care systems.

Chapter 2

Survey on national experiences in assessing efficiency of care: summary of findings

This chapter summarises key findings from an internal survey conducted by the Expert Group on health systems performance assessment (HSPA) on national experiences in assessing efficiency of care. The objective of the survey was to collect and communicate information about how countries across Europe are currently measuring and assessing efficiency in their health care systems. The analysis of survey results provides readers with cross-country information about different measurement systems' strengths and weaknesses, which can facilitate the dissemination of best practices and help readers identify unexploited areas and methods for efficiency measurement in their respective care systems. The objective of the survey is therefore to provide national health policy-makers in Europe with useful insights that can ultimately help them make better-informed decisions about the way they measure and assess efficiency of care in their respective health systems.

The first part of this chapter presents an account of the process followed to design the survey and collect data from members of the Expert Group. The second part and main body of this chapter presents details of the survey results, summarises key findings and formulates some reflections on policy implications for each section. The third and last section summarises horizontal key findings from the analysis of replies that are of practical significance for the objective of the survey.

Survey design and method

In January 2018, the Secretariat of the Expert Group on HSPA set up a sub-group of nine members⁴ from the Expert Group to work on the development of the survey questionnaire. Between February and March, two teleconferences were held with sub-group members to discuss the survey's scope and structure based on a first draft produced by the Group's Secretariat. After reaching an agreement within the sub-group, a draft version of the questionnaire was submitted to all members of the Expert Group. Comments received by members of the Expert Group were taken into account by the Secretariat, and a final version of the survey questionnaire⁵ was produced and administered to all members in April.

For the purpose of this survey, the Expert Group decided to define efficiency of care as the extent to which the inputs to the health system, in the form of expenditure and other resources, are used to best effect to secure their outputs and/or outcomes. Such definition limits the scope of the survey to the notion of *technical efficiency* presented in Chapter 1 – that is, the extent to which the health care system is minimising the use of inputs in producing its chosen outputs, regardless of the *value* placed on those same outputs. The scope of this survey did not therefore focus on *allocative efficiency*. As presented in Chapter 1, assessing this type of efficiency requires having some information on the relative value attributed to different health system outputs. Differences in how different respondents attribute this value would have been, in practice, difficult to capture in the context of this survey and in the cross-country analysis of replies. While acknowledging its limitations, the Expert

⁴ The sub-group was joined by members of the Expert Group from Austria, Belgium, Estonia, Finland, Lithuania, Poland, Sweden, Slovenia and Slovakia.

⁵ The questionnaire is presented in Annex B of this report.

Group decided to opt for a more pragmatic approach and narrow the scope of the survey to the concept of technical efficiency.

The survey questionnaire was composed of two parts – A and B.

Part A constituted the core part of the survey, presenting a set of 24 questions divided across five main sections as per below:

- 1) *Introduction*
- 2) *Scope for measurement*
- 3) *Data quality and availability*
- 4) *Policy and managerial uses of the assessment*
- 5) *Governance*

Part B consisted of an elective part that asked members to present an example of an efficiency of care assessment exercise recently conducted in their country. Examples would ideally present the objectives of the efficiency assessment, their context, methodology, tools/techniques, data and indicators used as well as how results were utilised, including a description of challenges encountered in the process and of possible solutions devised to overcome them.

Survey results

All 29 country members of the Expert Group⁶ received the survey via email. 22 country members⁷ (76%) responded to the main part of the survey (Part A); seven of them⁸ responded to the elective part (Part B) as well.

⁶ The Expert Group on HSPA is composed of the EU Member States plus Norway.

⁷ Austria, Belgium, Czechia, Germany, Denmark, Estonia, Greece, Finland, Croatia, Hungary, Ireland, Italy, Lithuania, Luxembourg, Latvia, Norway, Poland, Portugal, Romania, Sweden, Slovenia and Slovakia.

⁸ Belgium, Estonia, Ireland, Italy, Lithuania, Norway and Sweden.

⁹ See for instance the cases of Italy, where efficiency is framed under the broader objective of

Survey results are presented below, following the structure of the survey questionnaire.

1. Introduction

Of the 22 countries that participated to the survey, half reported that no formal definition of efficiency of care exists at the national level. In several countries, working definitions of efficiency tend to embed efficiency as an implicit goal under other performance dimensions, such as quality⁹ and accessibility¹⁰. Moreover, some countries reported that health authorities at different levels (regional, local, provider) conceptualise the idea of efficiency in different ways, using a series of definitions that span from ‘value-for-money’ (based on management accounting) to ‘broader’ ones, such as productivity.

Among the other half of respondents that reported the existence of some formal baseline definition of efficiency in their country,

- Five reported defining efficiency as the relationship between *inputs* (e.g. time, labour, capital) and *intermediate outputs* (e.g. number of doctor visits),
- Five reported defining efficiency as the relationship between *inputs* and *outcomes* (e.g. life years gained), and
- Three reported using both definitions for two distinct levels of analysis – typically, with efficiency defined as the ‘input-to-health output ratio’ being used for analysis at the provider (e.g. hospital) level, while the input-to-health outcome ratio being the preferred definition for

“*appropriateness of care*”, Austria, where health services are deemed efficient when they are “*of the best quality, [delivered] at the right time, at the right place and at the lowest cost from a societal perspective*”, and Luxembourg.

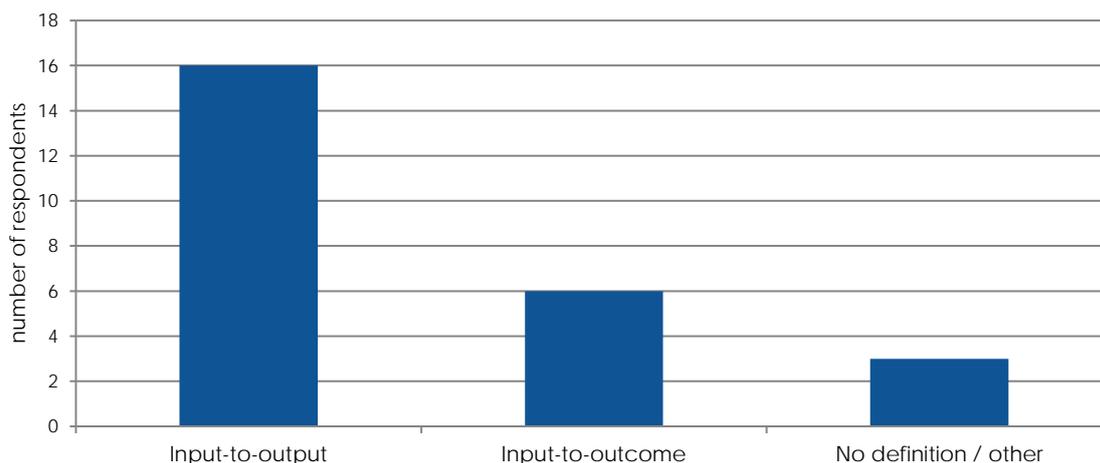
¹⁰ See for instance the case of Estonia, where “*ensuring equal access to health care services in a context of limited resources*” is part of the National Health Insurance Fund’s working definition of efficiency.

analysis at the more macro level (e.g. national and international).

Looking beyond the existence of formal definitions, definitions of efficiency reported by survey respondents can be clustered in two

basic definitions as shown in Figure 4 below. In practice, 16 countries conceptualise efficiency of care as the relationship between inputs and intermediate outputs, while only six of them define it as the relationship between inputs and health system outcomes.

Figure 4 – Working definitions of efficiency of care reported by survey respondents



Some countries using the former definition of efficiency acknowledged that their decision is partially the result of a heuristic¹¹. Ideally, they would consider outcomes (e.g. health gains) instead of service outputs (e.g. volume of activities) in their analysis. However, lack of conceptual clarity on how to attribute health gains to specific interventions, as well as data availability constraints significantly hinder the practical operationalisation of this definition by analysts. Moreover, these respondents acknowledge that the relationship between health system inputs and health outcomes is complex and driven by several factors that escape the control of health service providers.

In light of the frequent absence of suitable mechanisms to adjust for the impact of these external factors on health outcomes, choosing to consider health service outputs instead of health outcomes may offer a suboptimal yet potentially more serviceable definition of efficiency for the purposes of supporting

decision-making. To study the efficiency of providers providing a series of specific treatments, the development of instruments such as patient-reported outcome measures (Box 1) may offset some of these methodological concerns in the future.

Half of respondents to the survey reported that their governments carry out comprehensive health system efficiency assessments at regular intervals, with reports being published with a frequency that varies from every quarter¹² to once every three years¹³. Among those countries who do not regularly assess health system efficiency, the vast majority (nine) reported that at least one occasional study on efficiency of care had been carried out at the national level in the past five years.

More than three quarters of all respondents reported that occasional studies on efficiency of care have been made in their country over the last five years. The majority of these

¹¹ See for instance the cases of Belgium and Sweden.

¹² See for instance the case of Ireland's Health Service Executive (HSE) Performance Profiles.

¹³ See for instance the case of Belgium's Federal Healthcare Knowledge Center (KCE) Performance Report.

sporadic studies were produced by academia and/or other research institutions, and predominantly focused on assessing the efficiency of acute care hospitals and, to a lesser degree, long-term care institutions.

Considering the type of efficiency analysis tools and methods that had been used, several of these studies applied frontier-based methods such as data envelopment analysis (DEA), which allow for the combination of multiple inputs and outputs into a single efficiency measure. In this context, it is worth noticing that none of the countries that reported having set up a system of periodical assessments of efficiency reported using non-parametric efficiency analysis techniques as part of their analysis.

Box 1. Standardising and developing patient-reported outcome measures (PROMs): the PaRIS initiative

The quality of health care should ultimately be assessed in terms of its impact on peoples' lives. This requires outcome measures that not only measure the duration of life but also the quality of life. Measurements such as case fatality, survival and life expectancy, are now widespread in national health systems. However, systematic use of measures that capture other outcomes of importance to patients (e.g. pain, functional capacity, quality of life) is currently less evident. *Patient reported outcome measures* (PROMs) are instruments especially devised to capture this information. While collecting 'traditional' data on clinical outcomes (e.g. survival rates) remains essential, complementing it with data about outcomes 'observed from a patient's point of view' offers a more comprehensive understanding of the effectiveness of care services.

While health care providers use PROMs in the consultation room, aggregated PROMs are also used to drive performance improvement and to identify which quality aspects remain insufficiently addressed in current practice. The value of PROMs for healthcare performance measurement will increase when they are linked to other surveillance data, such as clinical registries and hospital discharge data and when providers and policy makers can compare their results nationally and internationally. While an increasing number of PROMs initiatives are evident in Europe, these initiatives are often small scale, only cover narrow ranges of conditions, and are often less well coordinated nationally. This fragmentation hampers comparative analysis of outcomes and so, national and international learning.

The Patient-Reported Indicators Survey¹⁴ (PaRIS) initiative led by the OECD aims at addressing critical information gaps in PROMs, with a view to developing international measures and data collection standards that promote benchmarking of health system performance. The initiative has two main goals:

- To accelerate and standardise international monitoring, in population groups where patient-reported indicators are already used, starting with breast cancer, hip and knee surgery and mental health. Panels of experts will agree on which existing measures and methods are most appropriate for use in this context.
- To develop new patient-reported measures and international data collections for the most rapidly growing group of patients in Europe: people with one or more chronic conditions who are living in the community. This multi-year activity of the PaRIS-initiative is still in its early stages, involving ongoing active collaboration with participating countries and other international partners, such as the European Commission, the World Health Organization, the Commonwealth Fund and the International Consortium for Health Outcomes Measurement (ICHOM).

Coupling harmonised patient-reported measures with existing statistics on expenditure, clinical quality and safety and access to care will offer a powerful set of benchmarks that will provide more evidence-based policy advice to European governments seeking to improve the quality, equity and efficiency of their health systems.

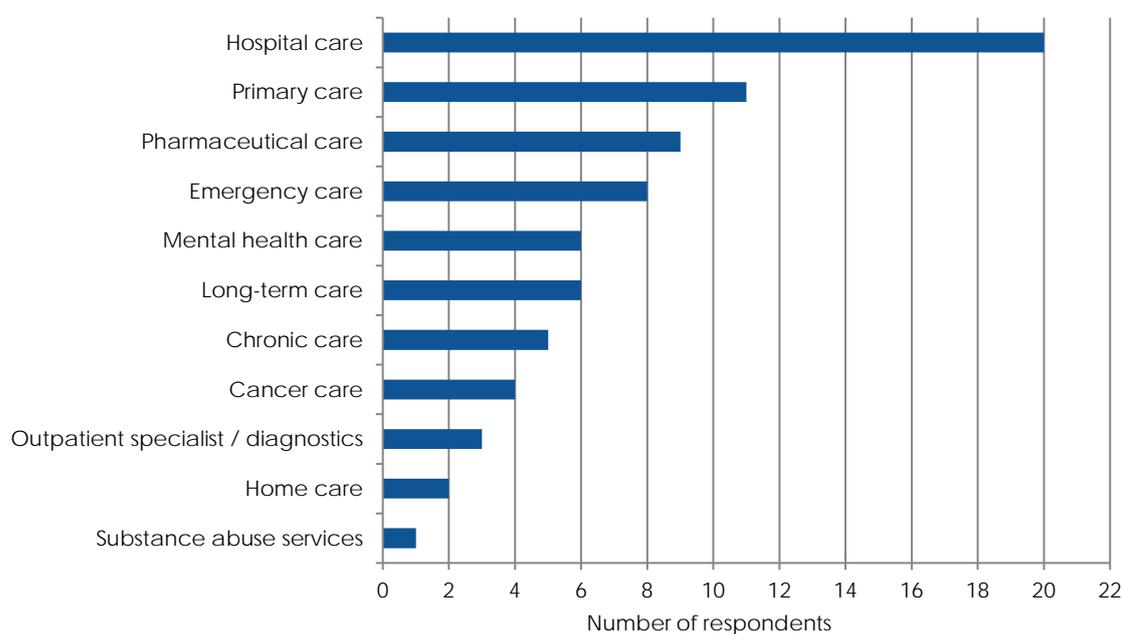
¹⁴ "Patient-Reported Indicators Survey (PaRIS)" www.oecd.org/health/paris.htm.

2. Scope for measurement

Almost all respondents (20 out of 22) reported hospital care as the area where regular efficiency measurement and evaluation activities are most consolidated in their country. Half of respondents reported encompassing primary care in their scrutiny of efficiency, and slightly less than half reported assessing the efficiency of

emergency and pharmaceutical care. As shown in Figure 5 below, about a quarter of respondents reported including mental health care, chronic and long-term care as part of their efficiency monitoring activity, while less than 20% reported focusing specifically on measuring efficiency of cancer care, outpatient specialist care and diagnostics, home care and substance abuse care services.

Figure 5 – Care settings reported by countries as part of their efficiency of care assessment



Countries' reported high concentration on measuring efficiency of hospital care relative to other areas can be partially explained by the fact that hospital care alone accounts for a large share of total health spending in all countries surveyed¹⁵. As a result, it may be fair to assume that from a managerial standpoint, focusing efforts on a scrutiny of efficiency of hospital care over other areas would present the greatest marginal benefit to its health care system's efficiency overall. However, while it is a fact that hospitals constitute a core part of any functioning

health system, this hypothesis relies on an overly simplified model of efficiency, which overlooks potential interactions and performance spillovers between different care settings (for example, an under-performing primary care that fails to reduce avoidable deterioration¹⁶ of patients' conditions can lead to higher avoidable hospital admission rates).

Several respondents acknowledged that the scope for measurement of efficiency of care in their country is limited primarily to hospital

¹⁵ Data from the Joint OECD-Eurostat-WHO Health Accounts (SHA) show that on average, hospital expenditure in the EU plus Norway accounted for 38.4% of total health expenditure in 2016, ranging from 29.1% (Germany) to 46.7% (Estonia).

¹⁶ For the management of chronic conditions such as asthma, chronic obstructive pulmonary disease (COPD) and congestive heart failure, it is widely accepted that effective treatment can be generally delivered at the primary care level.

care, not as a result of 'strategic' decisions in their approach to assessing efficiency in their system, but mainly due to the low availability of data necessary to assess efficiency in other care settings besides hospitals.

For example, Sweden's National Board of Health and Welfare, which routinely produces in-depth efficiency analyses of specific parts of (mainly hospital) care, reported that primary care has been hardly ever covered at all in their work because of difficulties in gathering enough data of sufficient quality for the purpose of the efficiency assessment. Italy's National Agency for Regional Health Services reported analogous limitations as per their efficiency assessment activities in the areas of primary care, as well as in long-term and mental health care, where the subpar quality of current data flows and great heterogeneity of organizational models across regions has hindered the development of a fully-fledged efficiency assessment at a systemic level. Because of these limitations in data availability, several countries reported that their monitoring activities aimed at scrutinizing the performance of non-hospital care settings are often limited to a simple measurement of volumes of care delivered¹⁷.

In an effort to render efficiency of care assessments more exhaustive, nine countries reported the existence of plans to expand the scope of their more detailed analysis of efficiency of care to other areas.

An overview of the main care areas that countries plan to include in their more thorough assessment of efficiency of care in

the future (Table 1) shows that among all care areas, primary care and cross-sectoral care (i.e. long-term and social care) were the most frequently reported.

Countries' focus on these two specific areas of care may be explained by the fact that, as primary care and long-term care are the two main "entry and exit points" to the health care system, a tighter scrutiny of their efficiency would allow health care managers to retain greater control of the 'non-hospital' factors – still within the health care system – that cause unnecessary use of hospitals, which often end up acting as a "provider of last resort" due to shortcomings in these two care sectors.

Nine countries¹⁸ also reported on their plans to implement e-health records and invest in the development of more advanced information systems as a means to improve quality and availability of data at their disposal to assess efficiency of care, both within hospitals as well as in other care areas.

When inquired about at what levels (national, regional, local health authority, provider) data is generally reported in their country for the purpose of measuring and assessing efficiency of care, more than three quarters of respondents reported that most of the data is reported both at the national and individual provider (e.g. hospital) level; slightly more than half of the countries report data at the regional level, and less than 40% report at the local health authority level. A similar pattern of responses is observable for reported levels up to which data is pooled for analysis (Figure 6) as well.

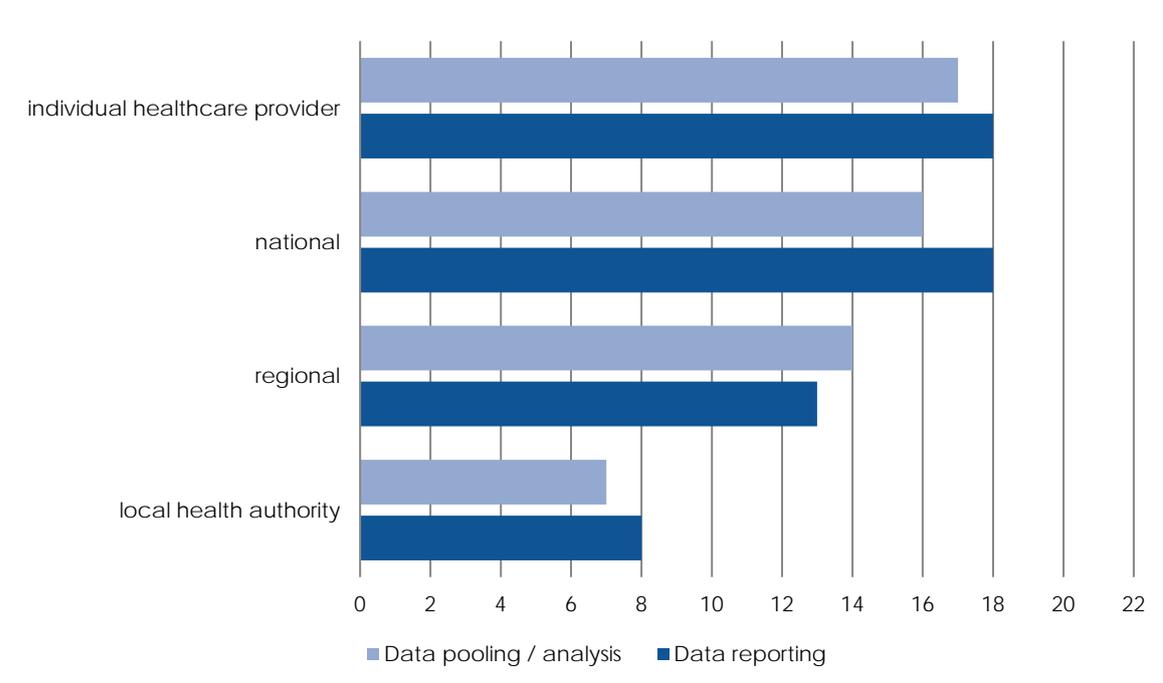
¹⁷ These cases were included in the count presented in Figure 5 above.

¹⁸ Examples were reported by Germany, Hungary, Ireland, Latvia, Lithuania, Luxembourg, Portugal, Slovakia, and Slovenia.

Table 1 – Reported care areas planned for inclusion into next healthcare efficiency analysis, by country

Country	Area of care to be included in efficiency assessment
Austria	Cross-sectoral (e.g. health and social care)
Czech Republic	Mental health services
Germany	Ambulatory specialist care, pharmaceutical care ¹⁹
Denmark	Mental health services
Finland	Primary care, cross-sectoral (e.g. health and social care)
Luxembourg	Primary care, pharmaceutical care
Norway	Primary care
Portugal	Ambulatory specialist care and diagnostics
Sweden	Cross-sectoral (e.g. institutional long-term care and social care)

Figure 6 – Levels of data reporting and pooling / analysis reported by respondents, by level

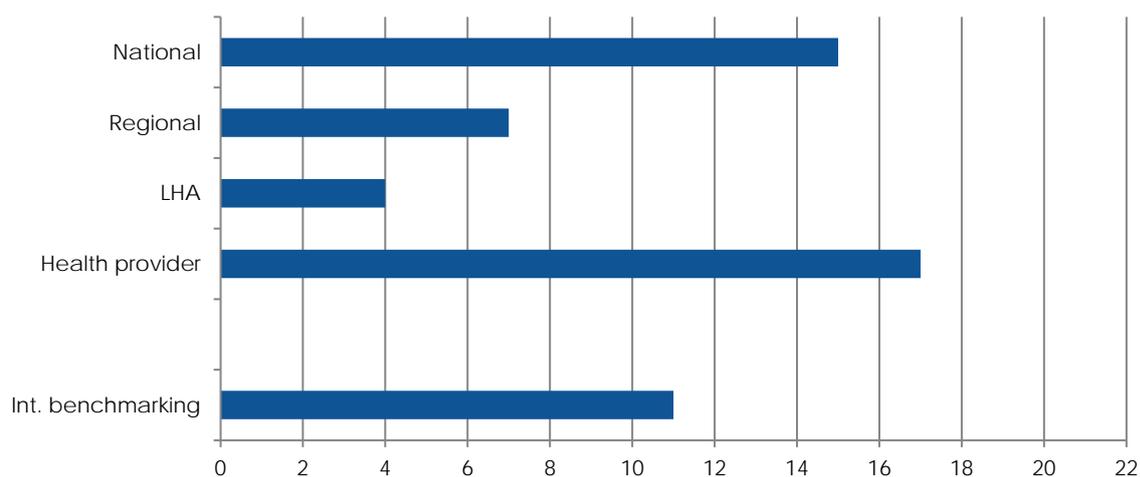


¹⁹As part of a plan for the rollout of an HSPA system which is currently under study.

As illustrated in Figure 7 below, the number of countries that reported benchmarking efficiency of care at each of these levels is (predictably) consistent with the results reported in Figure 6 above. While more than two thirds of respondents reported

benchmarking efficiency of care at the national and provider level, only seven and four countries reported doing so, respectively, at the regional and local health authority (LHA) level.

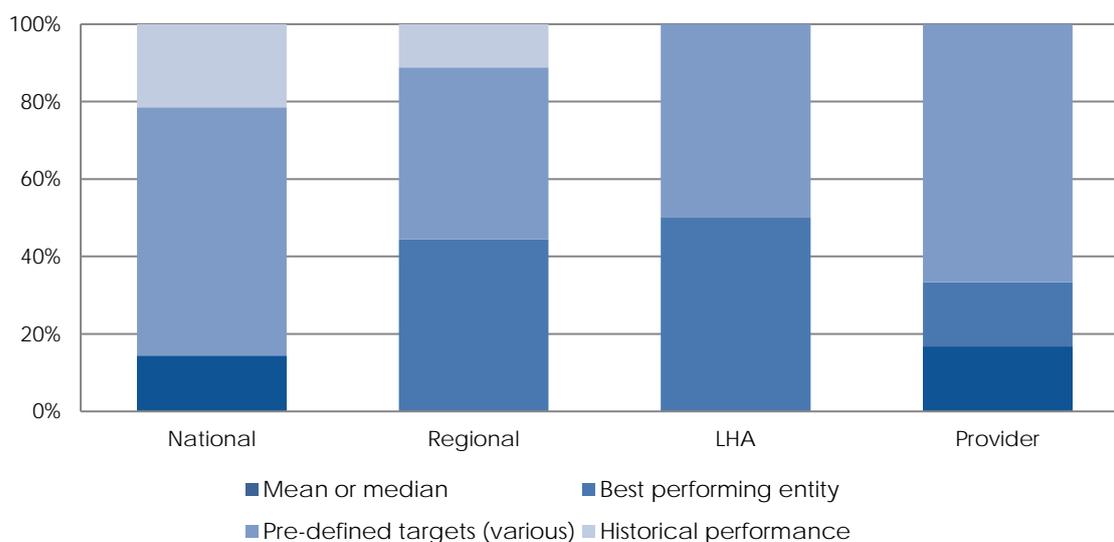
Figure 7 – Number of countries that reported benchmarking efficiency of care, by level.



An analysis of the most frequently reported benchmarks per each level of analysis reported by countries (Figure 8) shows that:

- At the national level, most countries reported benchmarking efficiency of care against a set of indicator-specific targets based on various factors, ranging from policy objectives, standards of care (for indicators derived from clinical guidelines), expert consensus and results observed in neighbouring countries. About 20% of these reported using historical performance of efficiency indicators to define future targets, and slightly less than 20% reported using the national average or median as a benchmark;
- At the regional level, less than half of countries reported benchmarking efficiency of regional entities against a set of pre-defined targets; the same number of countries reported using the results of the best performing entity as a benchmark, and about 10% reported using the 'historical performance' criterion;
- Among the (four) countries that reported assessing efficiency at the LHA level, half reported benchmarking entities based on the results of the best performing unit under scrutiny, with the other half using a range of pre-defined targets;
- At the provider level, two thirds of countries reported benchmarking units against indicator-specific targets defined in a variety of ways (see first point above). The other third of countries were equally split between those that reported benchmarking based on either the mean or the median within the provider's specific category, and those that reported using the results of the best performing provider within its specific category.

Figure 8 – Benchmarks (categories) reported by level of analysis.



Lastly, as shown in Figure 7, half of countries reported using international benchmarking for a limited, unspecified number of efficiency indicators. As per benchmarks reported by countries in this context,

- six reported using the EU average;
- four reported comparing their results to those of neighbouring countries;
- four reported using the average value of some smaller selection of EU countries²⁰;
- three reported using the OECD average.

A general limitation reported by survey respondents as one of the reasons for the limited uptake of efficiency benchmarking activities, especially at the international level, was the difficulty to adjust relevant data to account for differences in current reporting practices. For instance, several survey respondents cited the existence of systemic differences in the interpretation of reporting rules for cost data in hospitals – even between regions within the same country – as one of the primary obstacles to the operationalisation of a system to measure

and benchmark efficiency of care in their country.

Opting for a ‘pragmatic’ approach – that is, deciding to implement benchmarking despite these limitations, and consider its results as a merely approximate indication while working towards the progressive standardisation of reporting practices across entities – may not be advantageous either, as policy choices based on the results of these hypothetical benchmarking activities would risk supporting potentially harmful decisions, should policymakers fail to sufficiently recognise the limited validity of these analyses for any reason.

Overall, while survey respondents acknowledged the potential that benchmarking activities offer to create opportunities for efficiency improvements, increased harmonization of data collection and reporting methodologies, as well as better understanding of existing data are indispensable steps for the execution of more meaningful benchmarking activities in the future. An example of a recent research initiative that aimed at tackling these limitations is the EuroHOPE project, which is presented in Box 2 below.

²⁰ For example, Slovakia considers the average of Visegrád-4 countries; Belgium uses the EU-15 (EU before 2004 enlargement) on top of the EU average.

Box 2. **International health care performance comparison using a disease-based approach: The EuroHOPE project**

By making use of available databases through a microeconomic disease-based approach, the EuroHOPE²¹ (*European Health Care Outcomes, Performance and Efficiency*) project evaluated the performance of European health care systems in terms of outcomes, quality, use of resources and cost. The project used patient-level data available from linkable national registers and other data sources that allow for measuring outcomes and the use of resources (such as cost, number of hospital days, treatment with specific procedures and drugs) in selected, well-defined and risk-adjusted patient groups. The main task of the project was thus to contemplate and compare national as well as international differences in five economically important patient groups (acute myocardial infarction, ischemic stroke, hip fracture, breast cancer and very low birth weight and preterm infants) with respect to effectiveness and efficiency of the whole clinical pathway.

Activities

- Development of protocols to be used to construct internationally comparative individual level databases from participating countries that can be used in performance analysis, research and calculation of performance indicators for specific disease and whole somatic hospital care;
- Calculation of internationally comparative performance indicators at national, regional and hospital level;
- Exploring the reasons behind performance differences between countries, regions, and providers to evaluate the link between costs and outcomes;
- Development of methods for international performance comparison using register data

Outputs

- National and regional level performance indicators for ACS/AMI, ischemic stroke and hip fracture from Finland, Italy, Sweden, Norway, Hungary and Denmark and hospital level productivity measures from Nordic countries
- Several studies explaining international differences in health care performance²².
- Extending the disease-based performance analysis to include services given in primary and social care²³

²¹ <http://www.eurohope.info/>; <https://thl.fi/en/web/thlfi-en/-/persistent-differences-in-health-outcomes-for-major-medical-conditions-across-europe>

²² Special issue of EuroHOPE in *Health Economics*, 2015, volume 25 (S2); Special issue in *Nordic Journal of Health Economics*, 2018 (in press)

²³ Häkkinen, U., Engel-Andreasen, C., Goude, F., Hagen, T. P., Kruse, M., Moger, T., Rehnberg, C. and Peltola, M. (2018). Performance comparison of patient pathways in Nordic capital areas - A pilot study. THL — Discussion paper 22/2018. (Available <http://urn:fi/URN:ISBN:978-952-343-134-8>)

Box 3. The hospital benchmarking system in Finland

In Finland, hospital benchmarking has been based on a data warehouse containing all patient contacts in hospital and inpatient primary care since 1998. Output data is grouped using NordDRG, to cover the whole episode of care. Cost data is combined with output data to create indicators for hospital performance, allowing for productivity comparisons. The databases give a process view both from a regional as well as from a producer's perspective. Since 2010, it is included as a part of the official statistical reporting system. The approach has been extended to compare hospital performance with other Nordic countries.

Data:

- Annual individual level discharge data from all somatic inpatient and outpatient admissions;
- Annual aggregate cost collection at medical specialty level from hospitals checked with financial account of hospitals;
- Annual micro (discharge level) cost data (from hospitals with advanced cost accounting system) for calculating cost weights for DRGs.

Productivity (Cost /output):

- Cost: total expenditure at producer (hospital and medical specialty) or regional (hospital district and municipality) level;
- Two output measures: cost weighted number of DRGs and episodes. Episodes include all individual patients' admissions of the same DRG during the year (e.g. readmission, specialty and hospital transfers for the same DRG are not treated as new output).

Level of measurement (productivity and other activity measures):

Producer level:

- Hospital, medical specialty and output (episode and DRG) level

Regional (hospital district, municipality) based on patients' place of residence

- Total hospital care and disaggregated by medical specialties, episodes and DRGs
- Dividing regions risk adjusted cost per capita between risk-adjusted use of somatic care and productivity.

Reporting

- Annual report as a part of official national statistical publication
- Annual 15 separate databases (excel sheets) available (in web) on productivity and other activity measures by provider and regions, type of output and time (cross-section and time series).

3. Data quality and availability

This section of the survey asked respondents to present the key set of indicators used to assess the efficiency of the 'production process' underlying their country's health system. The survey questionnaire asked respondents to report a minimum core set of data for each indicator listed: a brief description of the measure, its measurement level, the data sources used, whether the indicator is linked to a goal contained in a national strategy for efficiency improvement, and any other indicator-specific information of relevance.

Survey respondents were then asked to describe the process that led them to design and operationalise their set of efficiency indicators – how metrics were selected, to what extent their selection was influenced by their strategic objectives (as opposed to mere data availability), what risk adjustment methods (if possible) are used, et cetera.

Lastly, respondents were asked to report whether a standard data collection methodology is used across all reporting units under scrutiny for the purpose of the efficiency assessment, and whether any quality assurance / audit procedures are put in place to ensure that the data feeding the assessment are reliable.

All respondents with the exception of two managed to indicate a selection of indicators used at least as a starting point to capture information related to efficiency in their country's health system. Of all 20 countries, 12 reported having defined a specific sub-set of indicators explicitly devised to measure efficiency, while the other eight reported using an indicator set designed to assess a set of broader dimensions related to efficiency (e.g. waste, appropriateness) as well as other domains (e.g. quality of care).

Among those twelve countries that reported having defined a specific subset of indicators to measure efficiency of care, the sheer majority nevertheless acknowledged that this list was not sufficient by itself to provide an exhaustive description of the efficiency of the 'care production process' of their healthcare

system. To present a more wide-ranging picture of efficiency of care, eight of these countries reported using a second sub-set of 'context' indicators analogous to the *waste* and *appropriateness* indicators reported by the other countries in combination with their first set of efficiency metrics.

A total of 72 distinct indicators were extracted from responses to the survey. The variance in the number of distinct indicators reported by each country was large, with a range of two to 19. With regard to measurement levels, the absolute majority (56) of indicators pertain to the *meso* level (sub-sector), 12 to the *micro* level (disease or patient-based) and only two to the *macro* (health system) level.

As expected from the findings highlighted above in Figure 5, the majority (45) of metrics reported by countries aims at measuring the efficiency of hospital care. Twelve of the indicators reported refer to primary care, ten to mental health care, and three to emergency care. The next part of the chapter presents an overview of the main indicators reported by survey respondents for each of these care settings.

Indicators for hospital care

Figure 9 below presents an overview of the indicators reported by countries to assess efficiency of hospital care. As illustrated in Scope for measurement of this chapter, almost all survey respondents reported hospitals as the setting where their country's efficiency of care measurement and assessment activity are most consolidated, also partially thanks to the relatively greater availability of data about activities and processes taking place in the hospital setting compared to other health care system areas.

The most frequently reported efficiency metric was *average length of inpatient stay* (ALOS), both in its 'general' form, covering all inpatients (reported by 77% of respondents), as well as in its condition/procedure-specific variants – for instance, *ALOS for normal vaginal delivery* (reported by Belgium), *ALOS excluding LOS higher than 30 days*

(reported by Ireland), and “*delayed discharges*”, i.e. ALOS for a selection of surgery procedures for patients who are ready to be discharged (reported by Denmark, Norway and Estonia).

The second most frequently reported efficiency metric was the *share of day case surgery*, which was also reported in a series of different formulations: for example, Belgium reported using the *share of day case surgery as a share of all surgical admissions*, while Luxembourg and Hungary reported using the *share of total procedures deemed eligible* as a denominator. In another example, Austria and Norway reported using variants of this indicator for particular conditions or procedures as well, together with Sweden (*uterine prolapse*), Ireland (*elective laparoscopic cholecystectomy*) and Lithuania (*cataract, laparoscopic cholecystectomy, phlebectomy, and hernioplasty*).

The third most frequently reported category of efficiency indicators consisted of *costs per patient* metrics developed by disease category following diagnosis-related group (DRG) classifications, which allow to compare the performance of specific hospital specialties against a benchmark (for instance, a national average of costs per patient for a certain DRG). Based on this “unit cost” category of indicators, several countries have also reported using a “*hospital productivity index*”, which is usually obtained by comparing the costs of hospitals against an estimated hypothetical cost optimum. This estimate is calculated by multiplying the unit cost benchmark for each DRG by the number of cases in each hospital. While versatile, this class of DRG-based efficiency indicators is inextricably dependent on the availability of reliable, comparable cost data, as well as the quality of the DRG system itself: for example, the Czech Republic reported that their use of this type of efficiency indicators is limited to the detection of outliers only, as their DRG system is currently in need of being redesigned.

Given that indicators reported by survey respondents are often not exclusive to the efficiency domain and that categorising indicators per se is not an exact science, it is fair to observe that several of the most frequently reported indicators in Figure 9 may be more precisely categorised as ‘*appropriateness*’ or ‘*waste*’ indicators. As presented in Chapter 1, these concepts are broader than the concept of efficiency, which was defined more narrowly for the purpose of this survey²⁴.

The most frequently reported indicator that may be categorised as such is the *share of hospital admissions for ambulatory care-sensitive conditions*, an indicator of wasteful spending in hospitals that can signal inadequacies in the supply of primary and community care. All (seven) survey respondents who reported using this indicator use the same set of five chronic conditions for its definition – diabetes, hypertension, chronic heart failure, asthma and chronic obstructive pulmonary disease (COPD).

The second most frequently reported metric in this category is the *rate of hospital discharges* (i.e. the release of a patient who has spent at least one night in hospital). While the influence of the number of hospital beds on admission rates has been widely documented in the literature [14], wide geographic variations in hospital discharge rates within the same national health system may be associated with the presence of performance issues at the primary care level in those areas with particularly high rates. In this sense, this metric can be interpreted as an indicator for appropriateness of care.

The third most frequently reported indicator by survey respondents – *hospital readmission rates within an established period* (usually 30 days) – could also be considered an indicator of appropriateness of care. While it is important to bear in mind that that hospital readmission rates are influenced by a series of factors that lay outside of the control of hospitals (e.g. the severity of

²⁴ See beginning of this chapter – ‘Survey design and method’.

disease of patients, but also the quality and accessibility of outpatient and follow-up care), a consistently high readmission rate may indicate that patients are being discharged prematurely, or that care provided during the first hospital stay (as well as post-discharge) may be inadvertently inadequate. To the extent that readmissions can be attributed to these factors, high readmission rates are indicative of an inappropriate use of resources. Several countries using this metric reported reading its results in combination with the efficiency indicator *average length of stay* (ALOS).

As the polarity of the latter indicator is difficult to define a priori²⁵, data on readmission rates are used as a tool to assess whether the observed ALOS may be too short, or whether there may be room to decrease ALOS without causing inefficiencies later on or in other parts of the health system (e.g. ambulatory emergency care).

Lastly, countries reported a wide range of indicators with different formulations that may be categorised under the label “wasteful clinical care” following the classification proposed by the OECD (Figure 2).

For example, to measure overconsumption of imaging, Belgium uses an indicator that measures the level of medical radiation exposure of the Belgian population (measured in mSv per capita / year), and Luxembourg considers the share of prescription for CT-scans and MRIs performed in compliance with national current clinical guidelines.

Another example is the share of hospitalised patients with a nosocomial / hospital-acquired infection (HAI), which was reported by Norway, Romania and Sweden.

²⁵ While it is fair to assume that a shorter length of stay is technically indicative of lower use of resources, discharging patients too early can result in an

increased probability of complications and (costlier) readmissions in the future.

Box 4. Estimating potential efficiency gains through greater use of day surgery in Sweden

The Swedish National Board of Health and Welfare (*Socialstyrelsen*) carried out a series of studies to estimate the potential efficiency gains stemming from an increased use of day case surgery in selected procedures. The aim of Swedish day case surgery is to optimise the amount of selected surgical operations, treatments and examinations, which can potentially be carried out in such a short care time that the hospital discharges the patient on the same calendar day of admission. In Sweden, a total of 2.7 million surgical interventions were carried out in 2013 including planned and urgent interventions, an increase of over 1 million interventions compared to 2005. Of these, 70% were performed as day cases in 2013, compared to 42% in 2005. The total cost of the surgical interventions amounted to SEK 82.6 billion (EUR 9.22 billion) in 2013 and to SEK 62.4 billion (EUR 6.96 billion) in 2005, a 24% increase.

Methods

The examples below regarding surgical interventions are register studies where data was collected from the National Patient Registry (PAR) held by The National Board of Health and Welfare. The studies considered all interventions defined as day case surgery as well as all inpatient surgery events, including the length of hospitalisations. The Cost Per Patient Registry (CPPR), which is provided by the Swedish Association of Local Authorities and Regions (SALAR), was used for cost calculations. Since costs vary between different interventions and county councils/regions, the average cost per patient for day surgery and inpatient surgery for 2013 was used to reduce the risk of over/underestimation of costs.

Example 1. Eleven surgical interventions

The study considered 11 interventions (*arthroscopy, cholecystectomy, uterine prolapse, inguinal hernia, pacemaker, planned PCI, prostate enlargement, septoplasty, curettage, tonsillectomy and urinary incontinence*) between 2005 and 2013, which are performed both in day case and inpatient surgery. The average cost of day case surgery was SEK 8,139 (EUR 789) per care contact and 80,851 SEK (EUR 7,842) for inpatient care. Within these 11 interventions, day cases increased by approximately 19 000, while inpatient surgery decreased by approximately 15 000. At the same time, hospitals reduced their capacity by approximately 80 beds due to the transition from inpatient to day case surgery, which represented 11% of the total number of released beds (738 beds) during this period. Since the proportion of day case interventions increased during the study period, the estimated efficiency gain was approximately SEK 440 million (EUR 49.1 million) – 14% of total costs – between 2005 and 2013.

The increased number of day case surgeries implies an increased efficiency of healthcare in terms of lower costs and released beds for alternative use. The result of the study shows that the healthcare system can now perform more than 4000 additional interventions at a lower cost than before, with a reduction of approximately 80 beds. Since day case surgery rates vary between 64-73% of all surgical interventions in Sweden, it is likely that scope for further efficiency gains remains unexploited.

Example 2: Uterine prolapse

Uterine prolapse is one of the interventions where the share of day case surgery varies

substantially between county councils/regions in Sweden, ranging from 0% to 82% in 2013. The average for all the county councils/regions was 52 per cent. An operation in day case surgery costs in average about SEK 14 000 (€ 1 562) whereas an inpatient surgery costs about SEK 39 000 (€ 4 352).

The aim of this study was to quantify margins for savings if the share of day case surgery increased in each county council/region, to estimate the amount of resources which could be used for other purposes within the health sector or elsewhere. That was assuming that county council/region performed as the best regions and could carry out 82 per cent uterine prolapse in day case surgery while maintaining patient quality and safety. Researchers also assessed what it would entail for every single council/region if they carried out 82 per cent of the operations in day case surgery. If further efficiency improvement seemed possible, researchers wanted to measure to what extent, expressed in SEK, and to present a discussion about efficiency/effectiveness.

The results showed that SEK 26 million (€ 2.9) could be saved if every county council/region performed as the best region (82 % day case surgery). In this study, researchers analysed efficiency in terms of ineffective use of resources. We compared the results concerning output (total quantity of operations) and costs for two alternative situations, still with the assumption that patient safety and quality was maintained. One situation was the actual use of resources in 2013. The other was a fictive situation where all the county councils/regions carried out 82 per cent of the operations in day case surgery. The difference in cost was referred to as inefficient use of resources, which stood at nearly € 2.9 million for all county councils/regions.

Box 5. Norway's cost-per-patient system

Norway implemented cost-per-patient calculations for all somatic (inpatient) care services in all hospitals in 2017. This change in data reporting practices enabled hospitals to calculate production costs for treatment and monitor efficiency of hospitals in a more precise manner. In this system, each patient stay is considered as a 'production process' composed of several sub-parts, each encompassing a specific medical service; each sub-part can be attributed unequivocally to the patient. For instance, a procedure's duration and number of medical personnel involved may be linked to the diagnostic code to estimate the cost of a surgery procedure. Patient-level cost data reported by hospitals is thus used for cost weight calculations for the DRG-system and for determining the financing of the four health regions. This cost-per-patient system is not yet implemented as part of a fully-fledged HSPA monitoring system.

The Norwegian Directorate of Health²⁶ is now in the process of establishing a national cost-per-patient database as part of the national patient register. Once operational, the database will make it easier to analyze differences in hospital efficiency, and hence develop more precise and granular assessments of hospital performance.

All hospitals in Norway are also in the process of developing cost-per-patient calculations covering mental health care and treatment services for drug addiction. The plan is to complete this work in 2020, and use the data in cost weight calculations and financing of specialist care for these patient groups as well.

²⁶ <https://helsedirektoratet.no>

Figure 9 – Key efficiency / appropriateness indicators reported by survey respondents (1/2).

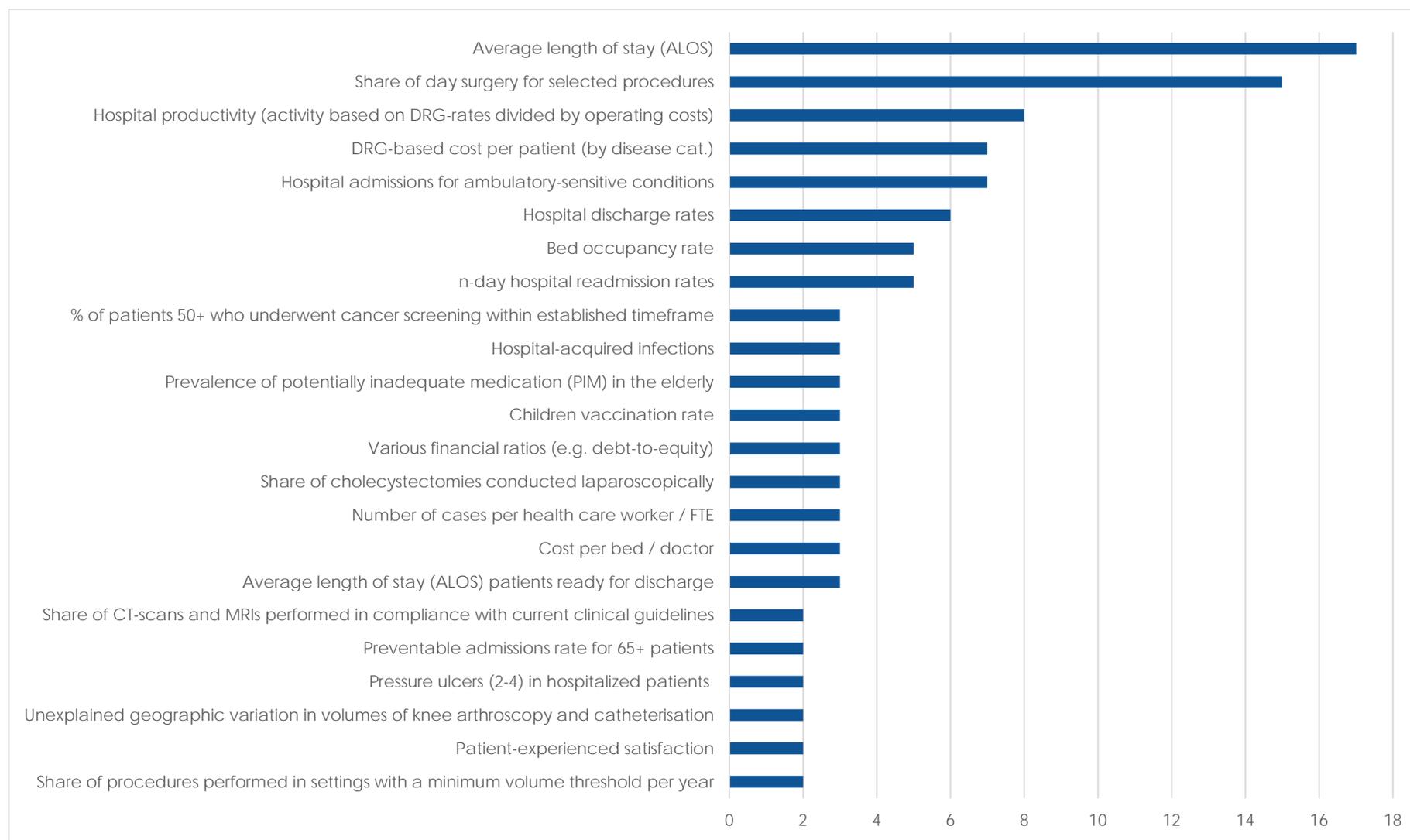
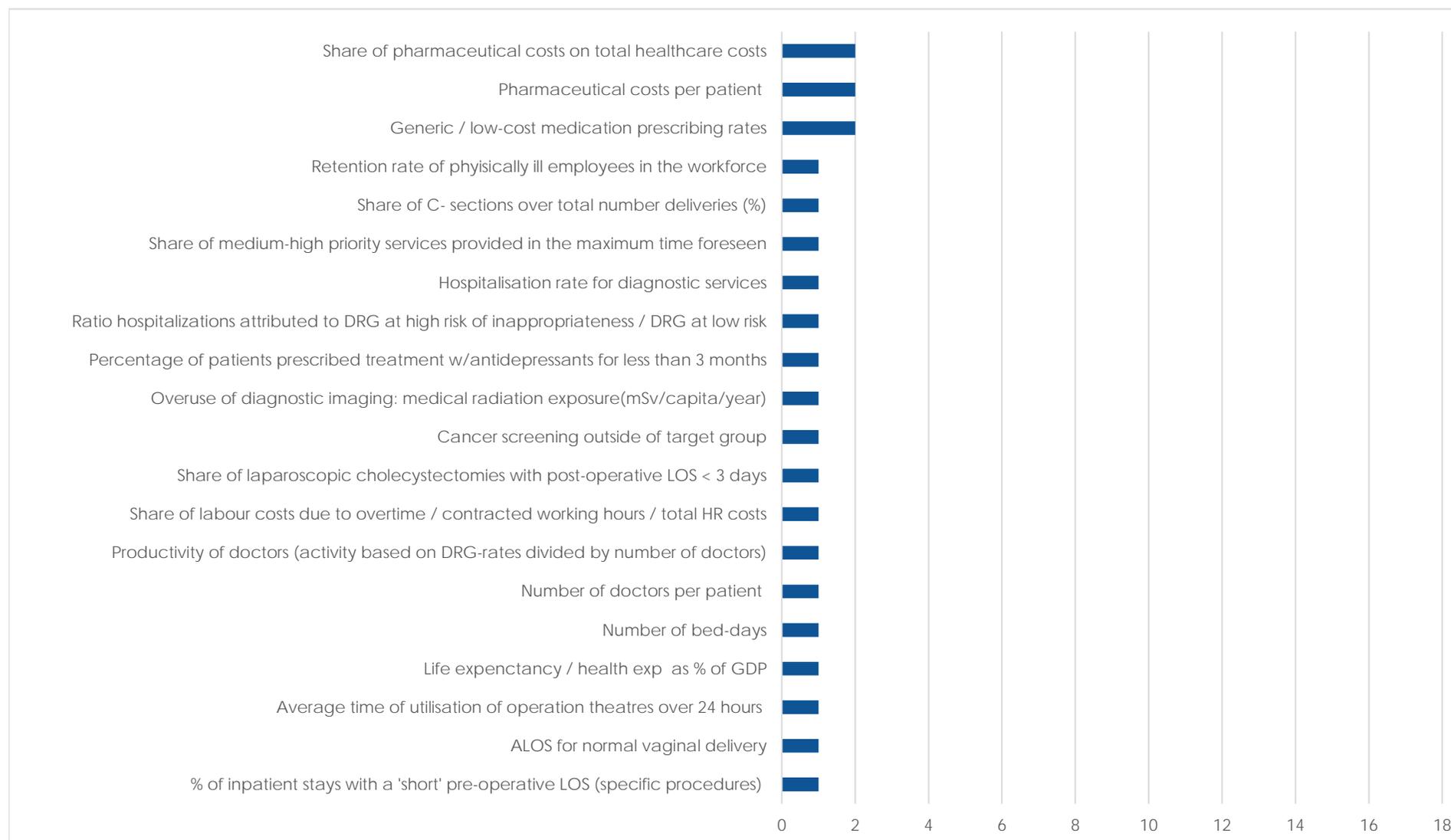


Figure 9 (contd.) – Key efficiency / appropriateness indicators reported by survey respondents (2/2).



Box 6. Belgium's 'Appropriate Care Policy Unit'

A health systems performance analysis conducted by the Belgian government in 2015²⁷ concluded that, while health system efficiency was improving, performance bottlenecks still persisted in several areas, as indicated by significant unexplained geographic variation in volumes of some interventions, over-use of investigations/equipment and inappropriate treatment in many care domains. To tackle inefficiencies and reduce wasteful spending on health, the Belgian National Institute for Health and Disability Insurance (NIHDI) proposed to the Public Health and Social Affairs Ministry to create an 'Appropriate Care' (AC) Policy Unit.

The AC Unit was set up within the NIHDI's Directorate for Research, Development and Quality under NIHDI's Administration Contract for 2016-2018²⁸ with a mandate to '*promote an integrated approach to the rational use of healthcare resources*'. The AC Unit has been running since the second quarter of 2017; its team consists of 8 FTE (3 MD, 3 analysts, two administratives). The tasks of the Unit were set out formally in the '2016-2017 Healthcare monitoring Action plan', published by NIHDI on 18 July 2016²⁹. The action plan listed around 30 measures designed to make healthcare provision more efficient, encourage appropriate practice and tackle unnecessary / inappropriate care.

The 2018-2020 Work Plan³⁰ describes the current working methods of the AC Unit. The plan states that one of the tasks of the AC Unit is to analyse '*appropriateness of care*' by identifying unexplained (after standardisation) variations in consumption patterns. Such variations can potentially point to a non-optimal use of resources (*under-, mis-, or overuse*). Variations are examined according to the following breakdowns: international, by gender, by age group, geographical, by type of social insurees, by care setting (inpatient vs. day hospital), by trend in rate of use, and by technique used. The AC Unit has deliberately chosen not to attempt interpreting the figures, preferring to present the results to experts closer to the field. The output of these analyses will be made public from 2019 to provide open input to discussions.

The next step of the AC Unit's work programme is to establish, in collaboration with healthcare professionals, a list of actions with a roadmap to solve unexplained variations detected. Remedial actions can be developed on several domains: (1) regulation (rule of reimbursement, investments, new technology) (2) continuous professional development (update of clinical guidelines, peer review, incentives), (3) individual level (feedback and follow up).

In conclusion, the appropriate care policy unit is operational since 2018. This unit aims to systematically screen all possible practice variations within the system, publish reports addressed to professionals to understand causes of those variations and look together with them for solutions to tackle unexplained variations related to under-, mis- or overuse.

More information is available on: <https://www.healthybelgium.be/>.

Analyses of medical practice variations will become available on April 25th, 2019 on: <https://www.healthybelgium.be/en/medical-practice-variations>

²⁷ https://kce.fgov.be/sites/default/files/atoms/files/KCE_259C_performancereport2015_0.pdf

²⁸ <https://www.inami.fgov.be/fr/inami/Pages/contrat-administration-2016-2018.aspx>

²⁹ <https://www.inami.fgov.be/fr/publications/Pages/plan-action-controle-sds.aspx>

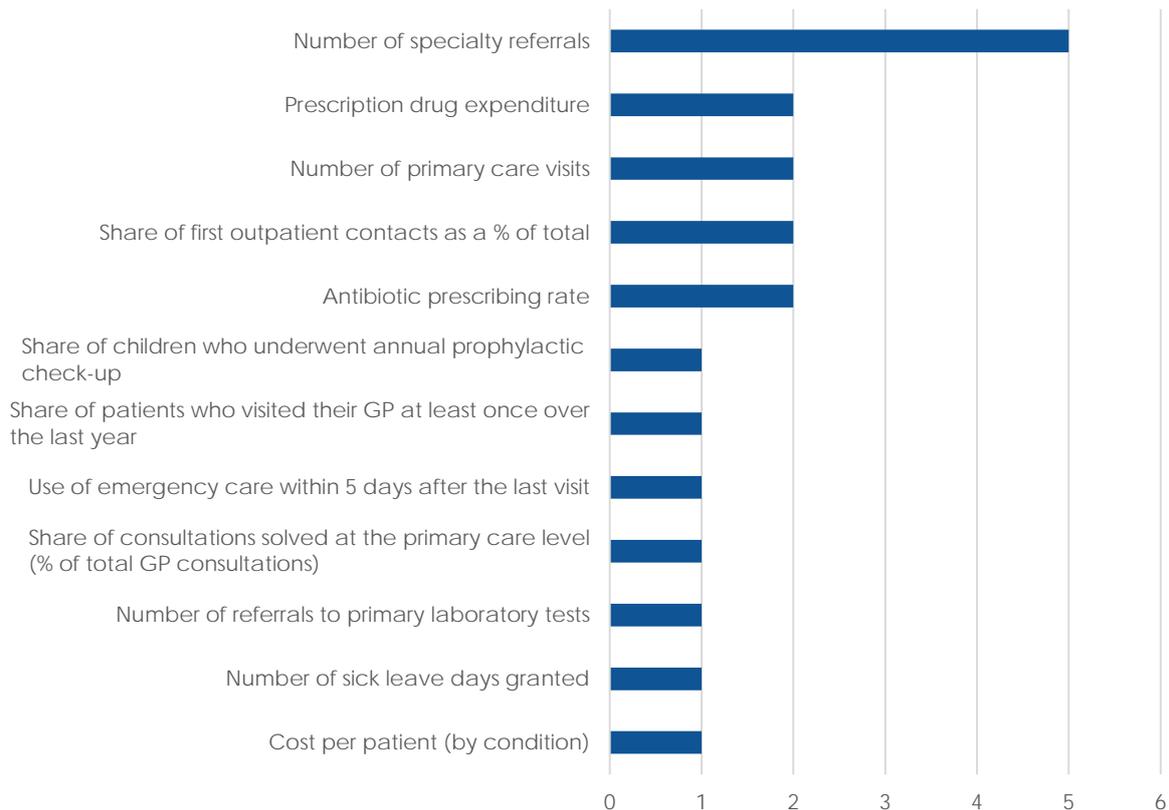
³⁰ https://www.inami.fgov.be/SiteCollectionDocuments/plan_action_controle_soins_sante_2018_2020.pdf

Indicators for primary care

Figure 10 below presents an overview of the indicators reported by survey respondents to assess the efficiency of primary care. The most frequently reported indicator is the *number of referrals to specialist care*, for

which, in a context where general practitioners are required to act as gatekeepers to specialist services, a reduction in the number of referrals may be interpreted as an indication of increased efficiency.

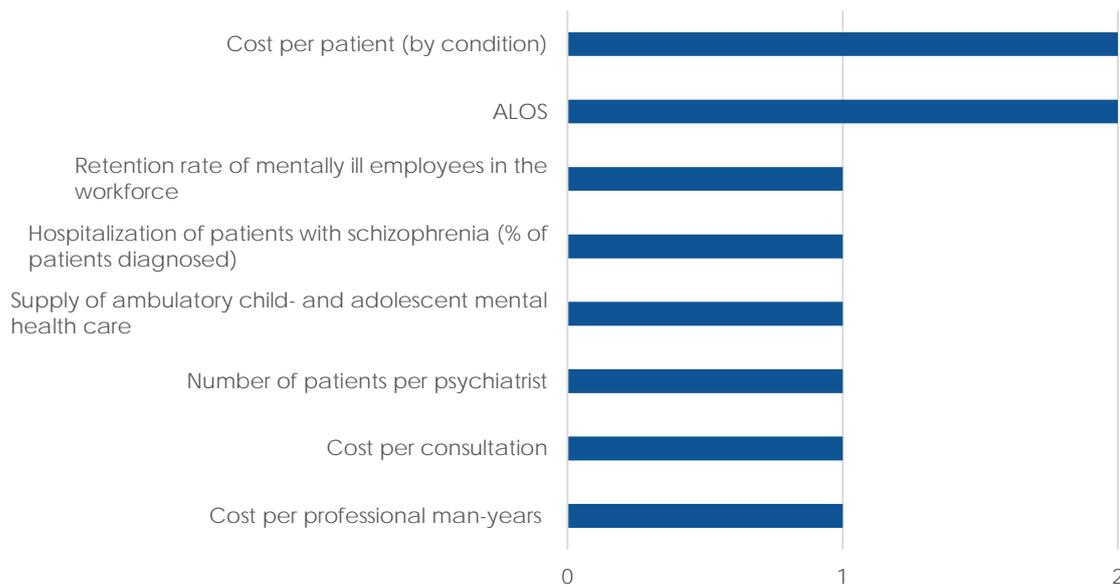
Figure 10 – Key indicators (primary care) reported by survey respondents.



Indicators for mental health care

Figure 11 below presents the list of indicators reported by survey respondents to assess the efficiency of mental health care. Besides efficiency indicators not specific to this care setting, Lithuania reported using the *share of patients hospitalized due to schizophrenia* over the total number of affected subjects; Austria reported measuring the *availability of ambulatory child- and adolescent mental health care*, and Denmark reported using the *share of people who remain in the labour market after an episode of hospitalisation*.

Figure 11 – Key indicators (mental health care) reported by survey respondents.



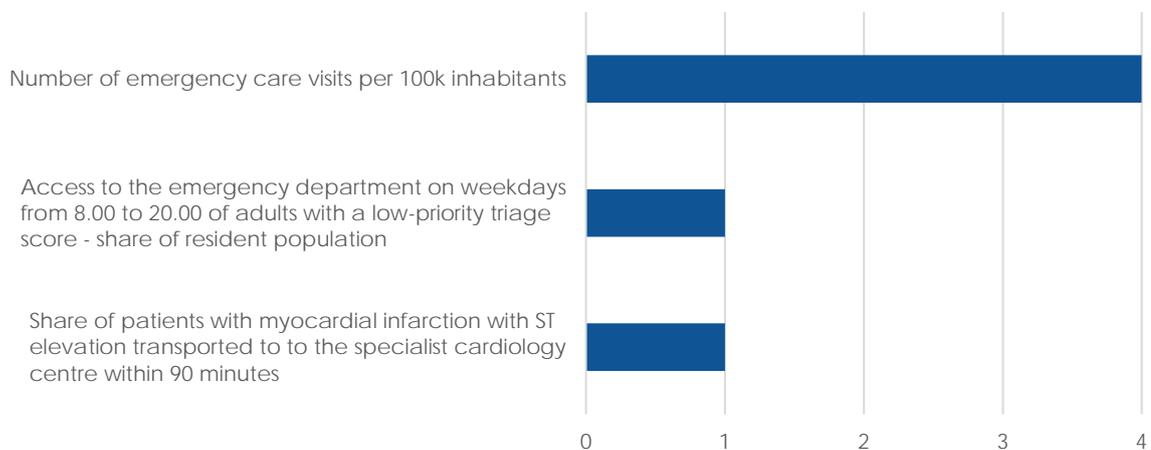
Indicators for emergency care

Figure 12 below presents the list of indicators reported by survey respondents to assess emergency care. The only indicator that was reported by a more than one country is the *rate of emergency care visits*, which can be considered an indicator of appropriateness of the utilization of emergency care, as well as a possible proxy to detect issues of accessibility to primary care services. Italy reports using a similar but more granular indicator, which looks at the *rate of emergency department*

visits on weekdays from 8.00 to 20.00 of adults with a low-priority triage score.

Lastly, Lithuania reports using an indicator that considers the ‘logistical efficiency’ of emergency care departments, which measures the *share of patients with myocardial infarction with ST elevation that are transported to the specialist cardiology centre within 90 minutes from their admission.*

Figure 12 – Key indicators (emergency care) reported by survey respondents.



Indicators' selection and risk-adjustment methods

In this section of the survey questionnaire, countries were asked to illustrate their approach for the development and selection of the indicators reported in the previous section, as well as what characteristics they consider to undertake risk adjustments.

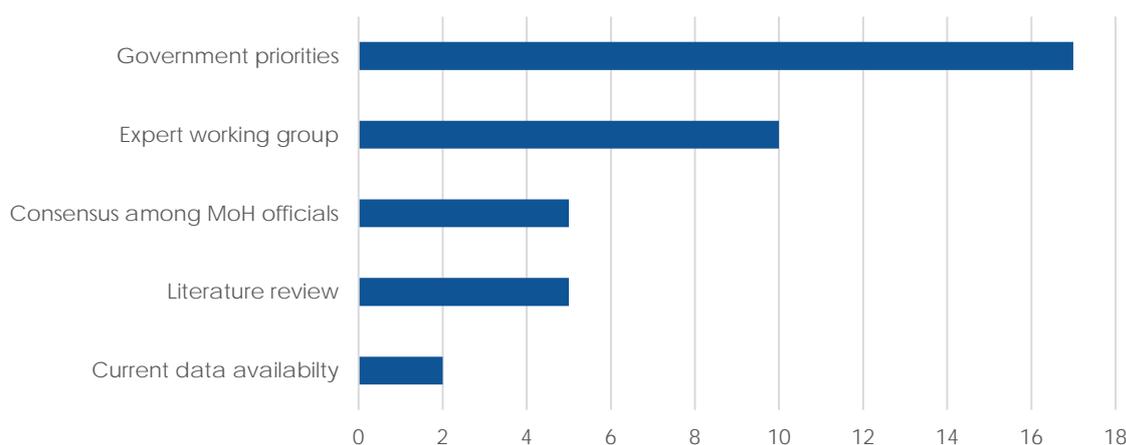
An analysis of replies (Figure 13) suggests that national priorities formulated by governments are by far the main driver that underpins the selection of efficiency of care indicators. Slightly less than half of respondents reported basing their indicator's selection on the opinion of a working group created for this purpose, through which external experts (mainly from academia and international organisations) provide guidance to government officials on how to

design and interpret their set of efficiency metrics.

Around one fifth of respondents reported that their current indicators' framework to assess efficiency of care was designed based on a consensus within the Ministry of Health; the same share acknowledged having carried out a review of the latest literature on the subject as an input to the discussion for their current selection.

Lastly, only two countries (Latvia and Sweden) acknowledged current data availability as one of the significant factors contributing to the selection process of their efficiency indicators.

Figure 13 – Input for the selection of efficiency indicators reported by survey respondents.



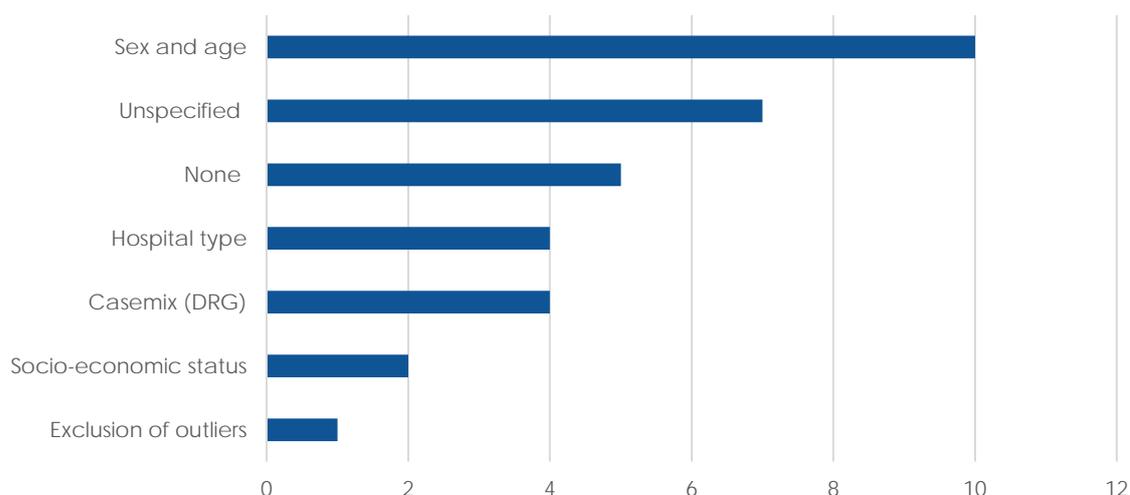
Looking at the replies on what set of characteristics countries consider to undertake risk adjustments (whenever possible) in the context of their efficiency assessment activity, it seems reasonable to distinguish four main categories of information reported:

- Demographic characteristics – for instance, sex and age;
- Clinical factors, – for instance, diagnoses and comorbidity;
- Socio-economic features, e.g. income or education.

- Other characteristics (unspecified).

Figure 14 below shows that about half of countries reported standardizing (some of) their outcome measures by age and sex; one third reported undertaking risk-adjustment without specifying what information they consider, and about one fifth reported not undertaking any risk adjustment to their efficiency metrics at the moment. Lastly, less than 20% of respondents reported adjusting measures by hospital type, case mix (DRG) and socio-economic status.

Figure 14 – Characteristics considered for risk-adjustment reported by survey respondents.



Data collection and quality assurance procedures

This section of the survey questionnaire asked countries to report whether a standard data collection method is currently used across all reporting units under scrutiny in their country, and whether any quality assurance/audit procedures are put in place to ensure that the data feeding it are reliable.

An analysis of replies shows that 15 countries reported using patient registry data as their main source of information to 'build' efficiency indicators, whereas nine countries reported using billing data as their main data source. Only Denmark and Norway reported using survey data as a source for one of their indicators (the one measuring patient experience).

As per the question on whether a common data collection methodology for efficiency indicators is used across all reporting units:

- 16 countries responded positively;
- One country (Latvia) did not present a specific reply;
- Two countries (Luxembourg, Poland) responded negatively; and
- Two countries (Ireland and Slovakia) reported that plans to establish a common data collection methodology in the near future are currently being developed.

Replies to the question: *“Which quality assurance procedures are put in place to ensure that the data feeding the assessment are reliable?”* are presented in Figure 15 below.

About one third of respondents reported that the majority of their data quality assurance controls are carried out automatically via software, with quality registers often undergoing more extensive checks compared to administrative registers.

About one quarter of countries reported having set up a special committee of technical experts tasked with overseeing compliance with reporting standards and overall making sure that the data collected is of high quality. One quarter of respondents also reported that a regular audit procedure targeting reporting units is currently in place in their system; four reported that a common data quality audit procedure will be implemented in their system the near future, and other four reported relying on the data quality assurance procedures carried out by health insurance funds (for billing data).

Lastly, one respondent did not specify what type of data quality assurance procedure had been set up in his country, and one reported using peer reviews as an instrument to check the quality of data reporting procedures.

Figure 15 – Data quality assurance procedures reported by survey respondents.



4. Policy and managerial uses of the assessment

This section of the survey aimed at exploring the rationale underpinning the implementation of efficiency of care assessments carried out by countries to understand more precisely i) how the results of these exercises are used by policymakers, and ii) to what extent they have an impact on policy choices.

The first question asked respondents to report the main objectives of their efficiency of care assessment activity in their country. As shown in Figure 16 below, about two thirds of countries reported performing general activity monitoring (e.g. to evaluate the impact of policies implemented ex-post) and benchmarking against performance plans as the main objectives of their assessment. Slightly less than half reported framing their efficiency assessment activity as one of their main instruments to promote accountability and improve governance.

About one fourth of countries explicitly acknowledged the role of their efficiency assessment activity as an instrument to ensure the sustainability of their healthcare system from a financial standpoint; the same share of respondents reported principally using its results to define the reimbursement level of care providers.

Two countries also reported the objective of ensuring equity and appropriateness of care,

and one explicitly recognized cost containment as a major objective of their efficiency assessment in the context of pharmaceutical care.

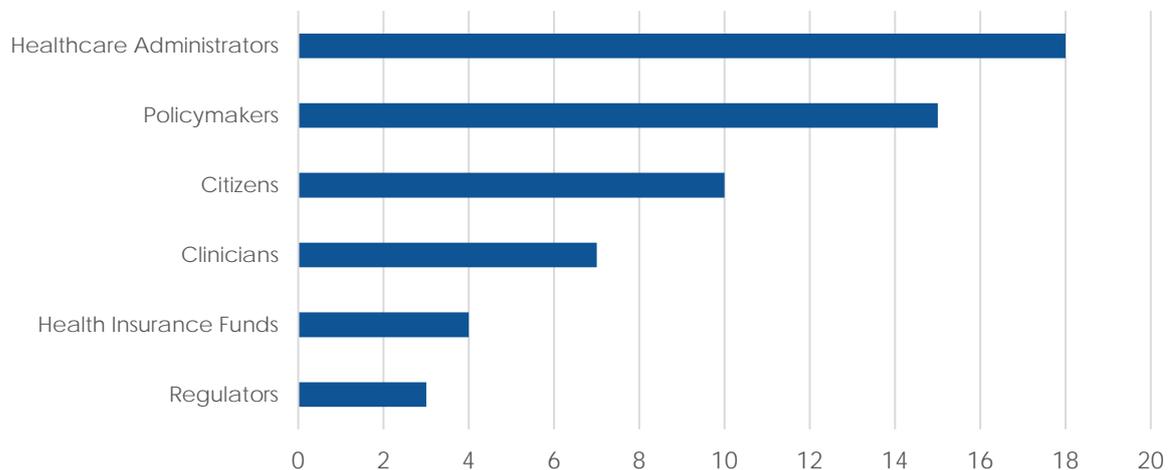
Figure 16 – Main objectives of efficiency of care assessment reported by survey respondents.



Following this enquiry, the survey asked respondents to indicate the 'target audience' of their efficiency measurement and assessment activity. Responses (Figure 17 below) show that the absolute majority of countries reported healthcare administrators as the prime target of the results of their

efficiency of care assessment, while policy-makers were indicated by about two thirds of survey respondents. Less than half indicated citizens as the target audience of efficiency of care analyses, and less than one third reported clinicians, health insurance funds and regulators.

Figure 17 – Target audience for efficiency assessments reported by survey respondents.



The next question asked countries to report whether access to the results of their health care efficiency assessment is open to the public, and to explain how they disseminate this information to their target audience. An analysis of replies in Figure 18 and Figure 19 below shows that slightly more than half of countries report the results of their efficiency

assessments to the public. Three countries release to the public only some part of their assessment, and one country reported that the assessment is not published, but that it can be made available upon request. Lastly, four countries reported that in general the results of their efficiency assessment are not made publicly available.

Looking at how information is disseminated to their target audience, nine countries reported disclosing information about efficiency of care through a series of online publications that often encompass a broader set of topics (e.g. quality); six countries publish a report specifically on efficiency of care, and five submit their efficiency of care data and assessments on a dedicated online platform.

Of those four countries that reported not publicly disclosing the results of their efficiency assessments, three reported producing classified briefings and reports, and one reported having set up a restricted access online platform that relevant stakeholders (i.e. healthcare managers) can consult.

Figure 18 – “Are assessments presented in a publicly accessible document or website?”

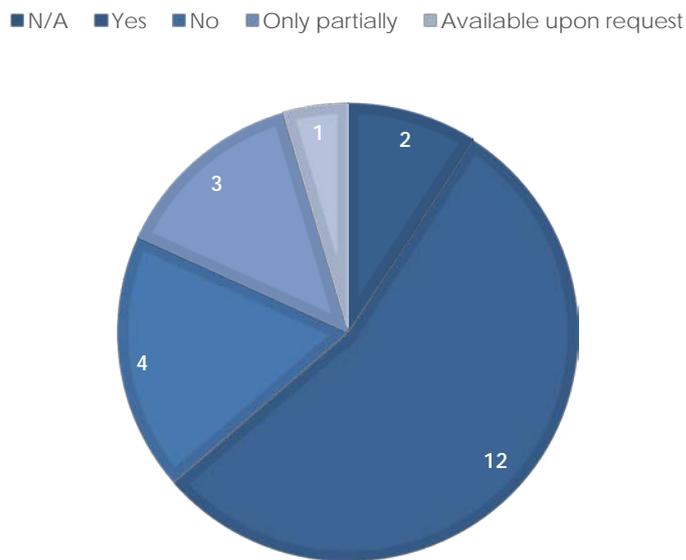
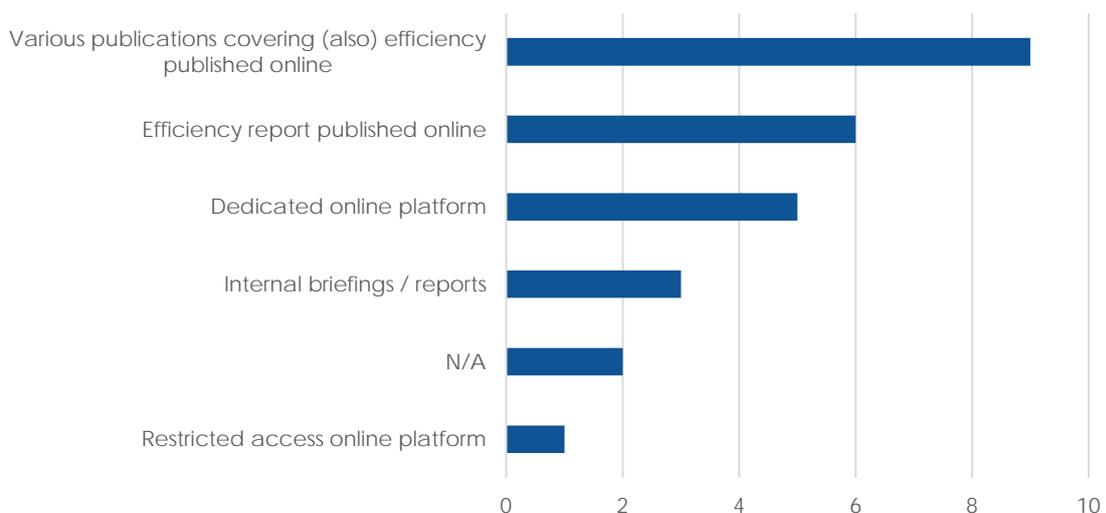


Figure 19 – Methods of dissemination of efficiency information reported by survey respondents.



With the objective of further clarifying in what way the results of efficiency assessments can ultimately have an impact on policy choices, another question within this section of the survey asked countries to articulate how the results of efficiency of care assessments are used for managerial purposes, as well as for any other purposes than managerial.

Responses show that, for managerial purposes (Figure 20), results of efficiency analyses are used as an input for strategic decision-making in 16 countries; 12 respondents acknowledged the crucial role that efficiency analyses have in the context of meeting cost containment goals, as they provide an evidence base to steer decisions towards disinvestment in wasteful health spending (preventing the occurrence of horizontal

budget cuts, which would be allegedly implemented in their absence).

With regard the use of efficiency assessment results for any other purposes than managerial (Figure 21), about half of countries reported policy formation as the primary use case for their assessments, as well as using them as an instrument to improve accountability of public services. About one third of respondents explicitly conceived the output of efficiency analyses (also) as a communication tool to interact with the media and to raise public awareness about challenges currently faced by their health systems. It is worth noticing that three respondents reported not being aware of how their analysis output is used in either of the two (managerial or non-managerial) contexts.

Figure 20 – Management use cases of efficiency assessment results reported

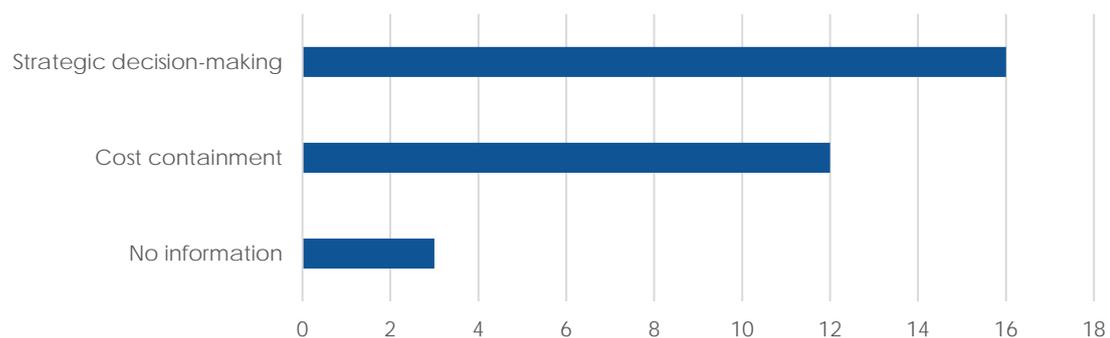
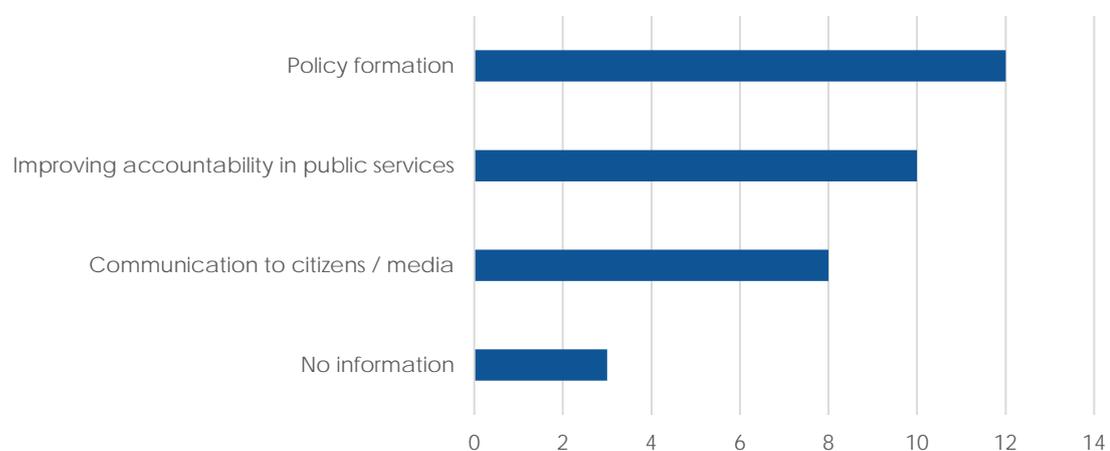


Figure 21 – Non-management use cases of efficiency assessment results reported



The last part of this section of the survey asked respondents to illustrate their country's plans for the near future with regard to the development of better instruments to assess efficiency of care in their health system. Replies are presented in Table 2 below. While the wide array of plans reported by survey respondents makes it difficult to categorise them, it is possible to highlight three broad areas for development in the near future that seem to stand out from responses:

- Plans to expand the range (across care settings) and the level of granularity of healthcare efficiency measurement, especially in the area of primary care (Estonia, Finland, Luxembourg, and Norway), mental health care (Czechia, Denmark) and long-term care / social services (Austria, Finland, and Sweden).
- Plans to invest in the development of more sophisticated methodologies and indicators, outcome-based measures and in the expansion of variables usable for better risk-adjustment (Austria, Belgium, Croatia, Finland, Hungary, Italy, Slovakia, Sweden)
- Plans to strengthen health information systems and improve the quality and quantity of data in quality registries (Portugal, Sweden, Slovakia, Finland, Croatia), especially through the implementation of better linkages of health data through e-health and analytics (Ireland, Lithuania, Norway).

Table 2 – Plans for the development of better instruments to assess efficiency of care, by country

Austria	Development of better outcome-based efficiency indicators; Expansion of measurement to areas currently not covered.
Belgium	Setup of an "Appropriate Care" Policy Unit (Box 6).
Croatia	Methodological improvements of efficiency indicators; public presentation of hospital efficiency indicators and development of P4P reimbursement model; Development of audit tool to assess application of clinical guidelines and development patient related experience measures (PREMS) and patient related outcome measure (PROMs); strengthening HTA processes.
Czech Republic	Expansion of measurement to mental health care.
Denmark	Expansion of efficiency metrics within the area of mental health care.
Estonia	Strengthening accountability through better measurement of activities within inpatient and outpatient care.
Finland	Expansion of efficiency metrics within the areas of primary and social care; improvement of data in quality registers; expansion of variables usable for risk-adjustment.
Germany	Development and operationalisation of a national HSPA framework.
Greece	Setup of a framework to start assessing efficiency of care.
Hungary	Development of more advanced risk adjustment methods than currently available; Expansion of the amount of data available for case and institutional level efficiency analysis.
Ireland	Implementation of data analytics technology to increase efficiency assessment capacity.

Italy	Development of a national comparable outcome-based system to assess the whole treatment paths (non-hospital care included). Improvement of a national comparable system to assess hospitals performance related to security, energy and technical compliance.
Latvia	Development and operationalisation of a national HSPA framework.
Lithuania	Implementation of e-health to increase efficiency assessment capacity.
Luxembourg	Implementation of a national information system in hospital and primary care; Use of analytics to assess efficiency of prescription medication.
Norway	Expansion of efficiency metrics within primary care; Development of Health Analysis Platform to facilitate advanced analysis across health registries and other sources of health information.
Poland	Update and improvement of Health Needs Maps.
Portugal	Strengthening health information systems, esp. aimed at monitoring waiting times for outpatient specialist care, surgery and diagnostics.
Romania	Preparation of first report focused on assessment of hospital efficiency.
Slovakia	Deployment of data (registry) quality audit procedure; expansion of current range of efficiency indicators used.
Slovenia	Completion of 1st national HSPA (currently being developed).
Sweden	Development of better outcome-based efficiency indicators; Improvement of data in quality registers; expansion of variables usable for risk-adjustment; Expansion of cross-sectoral efficiency metrics encompassing elderly health care and social services.

5. Governance

The last section of the survey aimed at exploring some of the health system governance features that are relevant for the process of measuring and assessing efficiency of care.

In the first part, countries were asked to detail the frequency and length of their efficiency assessment reporting cycle, and to explain whether efficiency of care assessments are carried out in their country (also) due to legal requirements.

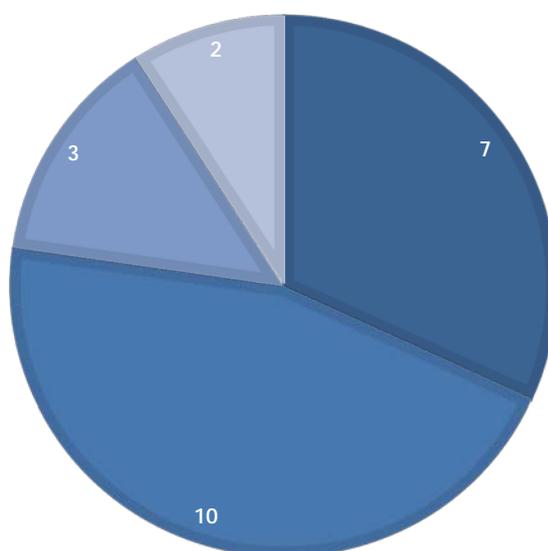
The second part of the survey asked countries to specify which institutions are generally responsible for carrying out the efficiency assessment, which bodies play a role in the development of efficiency-enhancing strategies in their country, and which other stakeholders (if any) are involved in the process (and, if so, how).

As shown in Figure 22 below, the majority of survey respondents reported not being required to carry out efficiency assessments by the law: their execution generally stems from a government request to provide an evidence base to inform policy-making.

About one-third of respondents reported that the law in their country requires them to carry out at least some part of their efficiency of care assessment. However, replies seem to suggest that the degree to which these assessments are obligatory by law varies across a spectrum, from countries where acts establish that “*publicly financed healthcare should be organised in a way that promotes cost-effectiveness*”³¹ to countries where the specifics of the national HSPA process are specified and mandated by ministerial decree³².

Figure 22 – “Is the assessment (or part of it) performed because of legal requirements? If not, what is the main driver of its execution?”

■ Yes ■ No - government request ■ No - unspecified ■ N/A



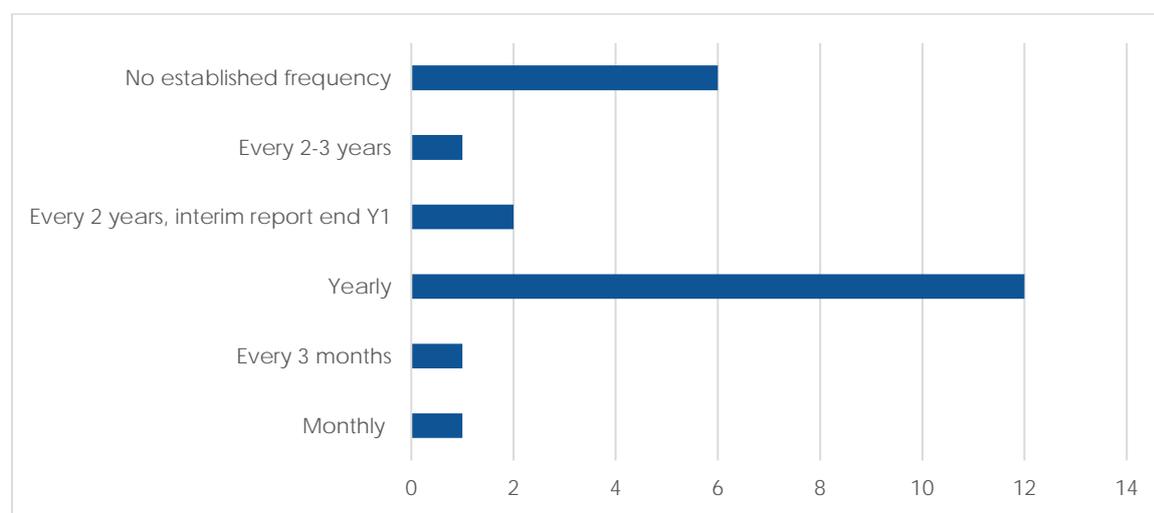
³¹ For instance, Sweden’s Health and Medical Service Act (*Hälso- och sjukvårdslag* (1982:763): http://www.riksdagen.se/sv/Dokument-Lagar/Lagar/Svenskforfattningssamling/Halso--och-sjukvardslag-1982_sfs-1982-763/

³² For instance, Hungary’s Ministry of Human Resources - decree No. 36/2013 (V.24.): http://net.jogtar.hu/jr/gen/hjegy_doc.cgi?docid=a1300036.emm

As per the frequency of reporting results of efficiency of care assessments (Figure 23), the majority of countries reported producing a report on efficiency of care every year, with one country (Portugal) producing an interim update based on a smaller subset of indicators every three months. About one third of respondents reported publishing

their assessments without following an established calendar. Hungary produces a report once every two years, publishing a smaller report at the end of the first year; Latvia releases an efficiency of care report every two to three years, and Ireland publishes a performance report on a monthly basis.

Figure 23 – Frequency of updates to efficiency of care assessments reported by survey respondents

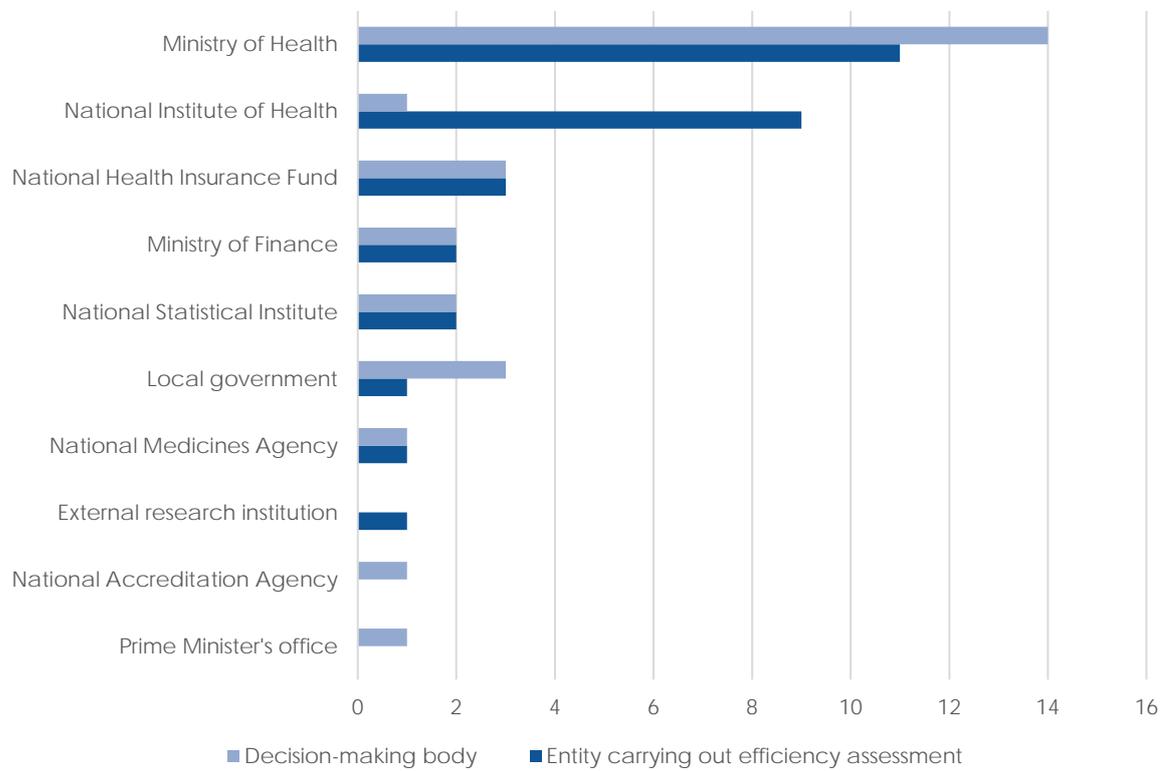


Lastly, the survey asked survey respondents to specify i) which institutions are responsible for carrying out the efficiency assessment, ii) which government bodies are in charge of the development of efficiency-enhancing strategies in their country, and iii) which other stakeholders (if any) are generally involved in the process (and, if so, how).

An analysis of responses (Figure 24) shows that the Ministries of Health and the National Institutes of Health are the most frequently reported institutions responsible for carrying out health care efficiency assessments, followed by National Health Insurance Funds. Italy and Slovakia reported the Ministry of Finance as playing a significant role, while Norway (for municipal care services) and Romania also quoted the

National Statistical Institute. Italy, Sweden and Lithuania also reported, respectively, the National Medicines Agency, non-governmental research institutions and boards of municipalities as important partners in the activities related to their efficiency of care assessments. Looking at the institutions that play an active role in transforming the efficiency analysis' output into proposals for efficiency-enhancing policies and strategies, responses show that the Ministry of Health is predictably the most frequently quoted body responsible for this task. In Denmark, Norway and Sweden, regional and local governments play a role in the decision-making process as well, as the National Health Insurance Fund does in Belgium, Luxembourg and Lithuania.

Figure 24 – Entities responsible for the execution of the assessment and for decision-making reported by survey respondents



6. Conclusions

The findings of this survey by the Expert Group on HSPA suggest that while pursuing greater efficiency and reducing wasteful health spending constitute arguably the top priority for health policy-makers across Europe, healthcare analysts and administrators are currently dealing with a series of complex challenges associated with the operationalisation of tools and methodologies to measure and assess efficiency of care.

Survey results have shown considerable variation in how countries define and conceptualise efficiency of care, even by limiting the scope of the survey to exploring the notion of technical efficiency. Several countries acknowledged the fact that measurement methodologies of efficiency of care are still at a developmental stage, with current data availability constraints often limiting analysts' capacity to identify how much of the variation in health outcomes is directly attributable to health care interventions.

As a result, measurement of efficiency of the 'health production process' is often limited to an analysis of costs and intermediate outputs. Moreover, there exists a lack of clarity over how quality should be incorporated into efficiency measurement, which may explain why some countries seem to frame efficiency as a subset of the "quality/appropriateness" dimension. However, it seems to be generally accepted that considering health service outputs as a proxy may offer a sub-optimal yet potentially more serviceable approach for the purpose of decision-making.

Looking at the reported scope for efficiency measurement within health care systems, countries have reported a high concentration on measuring efficiency of hospital care relative to other care settings. This focus is not explained by strategic considerations in countries' approach to assessing efficiency of care, but it is mainly the result of low data availability from other care settings. Several countries have acknowledged this specific limitation, and are now working towards expanding the scope of their efficiency

analysis to other settings, such as primary care and long-term care. Survey responses suggest that countries' concentration on expanding measurement of performance to these two specific care settings can be explained by the fact that these would indirectly enable better targeting of the use of hospital resources, by i) reducing avoidable hospital admissions, and ii) ensuring patient discharges are not unnecessarily delayed. Reducing overuse of hospital services through changes to these (non-hospital) care settings thus requires broadening the scope of efficiency measurement beyond hospitals, in a way that successfully captures interactions and spillover effects between these different care sectors.

As per the use of benchmarking as an analysis tool, while countries generally acknowledged its potential to foster efficiency improvements, many recognised at the same time that, especially with regard to international benchmarking, increased standardisation of data collection methodologies, reporting methods and more precise risk-adjustment are indispensable preconditions to derive more reliable and actionable insights from this tool. Some countries explicitly acknowledged the risks inherent to implementing benchmarking in a context of low data comparability even just as a merely approximate indicator, as policy choices based on the results of these hypothetical benchmarking activities would risk supporting potentially harmful decisions, should policymakers fail to sufficiently recognise the limited validity of these analyses for any reason.

With regard to the formulation and use of efficiency indicators, one of the clearest observations that arose from the analysis of responses to the survey is that a great variation exists in how countries have devised and implemented their set of efficiency metrics, with only few that seem to be measured in more or less standardised way across countries.

Overall, it seems like one of the greatest hurdles to achieving greater standardisation

of indicators' sets across countries seems to be the lack of a shared understanding of how different efficiency indicators should be read in conjunction with other metrics. In turn, this seems to prevent any of the reported efficiency indicator sets (even the larger ones) from being considered as capable of providing a sufficiently exhaustive picture of efficiency of a health care system. While careful, context-specific analysis of what indicators actually tell us will always be required to avoid biased policy interpretations, an explicit mapping of how different efficiency metrics are interrelated may serve as a powerful tool to determine a more homogeneous 'basic toolkit' of indicators that are indispensable to assess efficiency of care within different health systems.

As per the policy and managerial uses of efficiency of care assessments, survey results have shown how they constitute an integral and influential resource for the objectives of strategic decision-making about service delivery, guaranteeing financial sustainability and improving accountability of public service. Despite the complexities associated with developing metrics to assess efficiency of care, demand for an analytical base to orient decision-making by policymakers seems to be stronger than ever.

In this context, survey results show that governments generally recognise that measurement is only the first step in the quest for improving health system efficiency, and that the existence of an appropriate governance structure ensuring accountability is a prerequisite for the implementation of most efficiency-enhancing measures.

In an effort to improve accountability mechanisms and overcome stakeholder resistance to change, the vast majority of policy-makers across Europe are working steadily to make information about their health systems' performance more accessible to the public and make citizens more capable of scrutinising 'good' and 'bad' (i.e. wasteful) service delivery practice.

When asked about plans for the near future with regard to the development of better tools

to assess efficiency of care in their health system, countries have reported ambitious plans to realise the great potential for improvement highlighted throughout the survey, especially through:

- expanding the range and the level of granularity of health care efficiency measurement beyond hospitals, especially in the area of primary care, mental health and long-term care;
- investing in the development of more sophisticated methodologies and outcome-based measures, as well as in the expansion of variables usable for better risk-adjustment;
- strengthening health information systems and improving the quality and quantity of registry data, especially through the implementation of better linkages of health data through e-health and analytics.

Chapter 3

Systems thinking for monitoring efficiency: the case of managing acute care demand

1. Introduction

Improving health systems efficiency is a key goal of policy makers across Europe. However, it is not always clear which policy interventions should come first, and which areas of care efforts should be aimed at. For the purpose of this section, acute care is defined broadly as time-sensitive, individually-oriented diagnostic and curative actions whose primary purpose is to improve health [15]. It encompasses a range of clinical health care functions, including acute hospital care and surgery; urgent, emergency and critical care; and short-term patient stabilisation.

Acute care is often seen as an area where “easy” efficiency gains can be made [16]. This may be due to a number of factors. First, acute care is typically provided in hospitals, which consume a large share of health care resources, despite relatively few patients having contact with the acute care sector in a given year compared to other providers, such as primary care. Second, while it is recognised that hospital-based services are inherently expensive due to their specialised and highly complex nature, there is often a perception that some of these costs may be avoidable or excessive. Third – and not to be understated – the vast majority of data on health care use, resources and outcomes comes from the hospital setting, making its performance more visible to decision-makers. Finally, with population ageing and increasing multimorbidity, hospital-centered care models have been deemed increasingly unfit to respond adequately to the health needs of patients, who require provision of care in alternative, lower intensity settings, typically closer to home.

The Expert Group on HSPA expressed an interest in conducting a policy focus group

(PFG) to explore opportunities for managing acute care demand across the EU in the context of improving health system efficiency and sustainability. As a general framework for considering the sources of acute care inefficiency and potential for policy intervention, three stages in the care pathway were identified:

- *Before hospitalisation*: i.e. reducing the need for hospitalisation through prevention and provision of cost-effective alternatives in primary care;
- *During hospitalisation*: i.e. increased effectiveness and efficiency of hospital care;
- *After hospitalisation*: i.e. improving post-hospital care and follow up.

The Group set out to explore how health system performance assessment can best support policies aimed at these stages of the care pathway to ensure optimal quality of care across the entirety of the health system. While it was recognised from the onset that this framework is a crude oversimplification of the realities of care delivery, the PFG agreed that such an approach would be helpful for policy makers to explicitly consider the need to target areas beyond the hospital sector to improve health system efficiency, especially with regard to the acute care sector. It was indeed recognised that some measures implemented across the whole pathway of care (e.g. health promotion, disease prevention, co-ordination of care for patients with chronic diseases) could overlap across multiple care settings outside of the hospital.

The goals of the Policy Focus group were thus to:

- 1) Apply a system-wide approach to examining potential for improving efficiency in the acute care while taking into consideration not only the areas which are identified as lacking efficiency, but also account for potential spillover effects of actions directed at targeting those areas.
- 2) Discuss strategies for managing acute care demand, identified in the literature, using the aforementioned “before-, during- and after- hospitalisation” approach
- 3) Reflect on possible interpretations of selected hospital efficiency indicators used across the EU Member States
- 4) Identify possible spillovers or unintended consequences resulting from interventions targeting common areas of perceived efficiency gains and consider how to develop a comprehensive monitoring framework.

It is important to note that the concept of health system efficiency is often in practice used synonymously (and erroneously) with cost containment or cost reduction. While eliminating waste in the system is one of the aims of improving efficiency, efficiency and cost containment are distinct. The need to contain costs may heighten the urgency of finding areas that can do ‘more with less’. However, cost containment refers only to minimizing inputs (e.g. expenditures) without consideration of the effects on outputs (e.g. volume of care) or health outcomes (e.g. quality of care). Furthermore, input reductions may shift costs onto other health system sectors, with adverse consequences for overall system efficiency; for example, if cuts in primary care give rise to extra inefficient use of the hospital sector [17]. This reinforces the notion that, when considering efficiency as opposed to cost containment, it is essential to broaden the scope of analysis to reflect the effects on the entire health system.

This chapter is structured as follows: we begin by outlining the framework suggested by Cylus, Papanicolas and Smith [13] for taking a systems approach to monitoring overall hospital efficiency. We then describe some of the key strategies and initiatives to manage acute care demand along the continuum of care. We then present the summary of the discussions from the PFG, including on interpretation of specific efficiency indicators, actions that could be taken to improve efficiency and potential spillovers or unintended consequences. We also elaborate on specific country examples that were discussed during the PFG and draw broad conclusions.

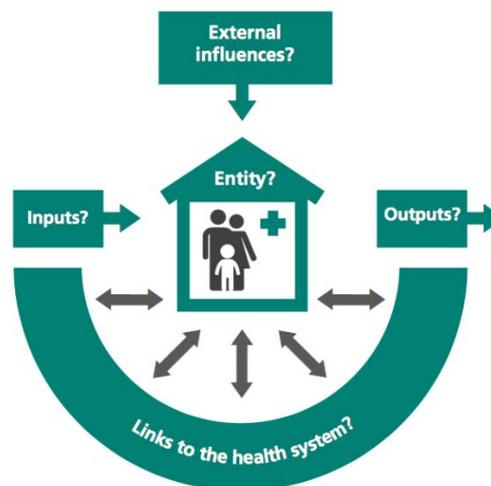
Taking a broad systems approach such as this will be useful not only to evaluate the success of those policies that aim at moderating acute care demand and improving efficiency, but most importantly, it will help to ensure that measures to reduce demand do not lead to unintended stresses on other areas of the care system or worsening of health outcomes.

2. What is meant by a systems approach to monitor efficiency?

Health systems are complex yet adaptive systems, which have many interlinked elements that respond differently and often unpredictably to various stimuli. In relation to efficiency, this means that actions targeting a particular area of perceived inefficiency, such as introducing measures to manage and, ultimately, reduce acute care demand, will inevitably have a knock-on effect on other health care settings, e.g. primary care or emergency care, as well as on health outcomes. Therefore, measures addressing acute care demand require considerations of the overall health system. To put it simply, it is necessary to not only identify the source of the problem and put in place the appropriate strategies to address it, it is also important to take into account areas where unintended effects may occur as a consequence of addressing the initial problem. Designing a comprehensive monitoring framework helps to ensure that adverse effects and unintended consequences manifesting elsewhere in the health system are avoided.

Mindful of the interconnectedness of health system processes and the need to take a systems-wide approach to understanding the myriad potential reasons for observed variations in performance, Cylus et al [17] offer an analytic framework to assist with measuring and understanding health system efficiency (Figure 25). While health systems are inherently more complex than this, the framework highlights the multitude of factors that contribute to observed efficiency of providers, including the linkages between providers of acute care (entities) and other parts of the system.

Figure 25 – A holistic approach to understanding variations in health care efficiency



Source: Cylus et al [17]

Irrespective of where inefficiency has been identified, a first step towards remedial actions is to properly diagnose the problem, i.e. to recognise the nature of any such inefficiency. In doing so, it is important to understand what a specific efficiency indicator does or does not tell, and to be able to identify ways in which an indicator may be informative, limited (e.g. reflect only some aspect of a production process) or misleading altogether. This understanding will help to interpret accurately the findings from an efficiency analysis. In doing this, the framework above suggests the five aspects of any efficiency indicator that should be explicitly considered to identify the possible reasons for variations in efficiency:

- **Entity** (what is being evaluated). This aspect determines the boundary of an indicator, e.g. specific service or treatment, provider (facility or health care professional), or the entire health system. As efficiency measurement often relies on benchmarking, it is important to ensure genuine comparability.
- **Outputs** (outcomes under consideration). Ideally measured as health gains, in practice output indicators often measure

volumes/activities (e.g. number of treatments provided, number of visits). More advanced analyses would include some form of quality or effectiveness measure, or patient-reported outcome measure, as well as some form of risk-adjustment.

- **Inputs** (physical resources, labour, costs). While these are easier to measure than outputs, it is important to note that many types of inputs are often not in the direct control or the entities under scrutiny (e.g. specific providers), at least in the short term. The level at which inputs are aggregated or disaggregated (e.g. specific skill-set vs overall labour input, hospital units vs entire hospital) needs to be taken into account in the analysis and interpreted accordingly.
- **External influences.** These are a separate set of factors (i.e. environmental), affecting organisational capacity as well as outputs. It is important to take external factors into account by either restricting comparisons to entities operating in similar environment, adjusting the outcomes or modelling constraints appropriately.
- **Links with the rest of the system.** Services available before hospitalisation (such as strong primary care, preventive services), during hospitalisation (e.g. diagnostic facilities), and post-hospitalisation (planning after discharge, rehabilitation), as well as effective co-ordination between them and other organisations are increasingly important as health systems are seeking closer care integration reflecting the changing needs of populations with growing multi-morbidities.

The intention of this framework is not to solve an existing efficiency problem, but to help identify where its root cause may be, ultimately suggesting that its drivers may be outside of the production process, and in some cases outside of the health system in itself.

The following section gives an overview of selected strategies that are available to manage acute care demand, applying the framework identified by the PFG (before-, during- and after hospitalisation).

3. Strategies to manage acute care demand on hospital efficiency

As acute care takes up a considerable share of health care resources, policy makers often think about reducing, rather than managing acute care demand. The process is often referred to as “shifting” care from hospitals to other settings, deemed more appropriate and lower in intensity. Typically, it is thought that strong primary care is effective in preventing “unnecessary” hospitalisations, while streamlining of discharge and follow-up processes is effective in preventing patients being readmitted to hospitals. At the same time, actions aimed at reducing inefficiencies within acute care providers may help to reduce the costs of service provision, e.g. through shorter length of stay, effective use of hospital beds, equipment and other resources, as well as through appropriate skill-mix. It is important to note that interventions to reduce acute care demand could impact on other settings, as discussed in Section 2, and potentially have unintended adverse consequences on access to care and therefore health outcomes, through creating barriers and widening health inequalities.

In Table 3 we identify a range of strategies available to reduce demand in secondary care in general, and hospital care in particular. We have categorised the strategies according to the initial areas of interest for the PFG, which were i) before hospitalisation; ii) during hospitalisation and iii) after hospitalisation. However, we recognise that this is not an optimal way of grouping, not only because many of the strategies may overlap and some act across all of these stages, but also because this creates an artificial break in the continuum of patient care and co-ordination.

Issues with grouping notwithstanding, existing evidence unsurprisingly suggests that strengthening primary care, optimising referral pathways, provision of specialist care in the community, patient education and empowerment, continuity in care before and after discharge, monitoring and follow-ups, as well as health promotion and disease prevention can all help to some extent to reduce acute care demand and provide care in

the most cost-efficient setting (Table 3). Many of these have been initiated and implemented in various countries, and their efficacy has been measured and validated by the literature [18-20].

Before hospitalisation

Evidence looking at strategies to prevent hospitalisation suggest that a wide array of interventions can successfully shift care away from hospitals. Among these, a systematic review of interventions to improve referrals from primary to specialist care [18] suggests that there is strong evidence that GP peer-review and feedback, as well as GPs being able to consult specialist prior to referral; e-referral systems; providing specialist care in the community (both via GPs or outreach facilities) are effective strategies in reducing referrals to secondary care (although the study only considered the volume, not appropriateness of the referrals). At the same time, interventions such as patient education, creation of referral centres or triage system, changes to payment systems and waiting list reviews showed no evidence of being effective. Evidence on gatekeeping and increasing primary care staff numbers were mixed. However, a recent systematic review of effectiveness of intensive primary care interventions (ranging from home-based alternatives to hospital care on round-the clock basis to clinic-based and primary care-based easy-to-access multidisciplinary teams, close case-management and proactive outreach) in reducing hospitalisations and mortality [21] highlighted lack of consistent effect on reducing hospitalisations, and no impact on mortality or use of emergency department.

During hospitalisation

As for strategies during the hospitalisation, another systematic review focusing on discharge interventions [19] showed that

interventions designed to improve care transition from hospital to home are effective in reducing readmissions. A particular advantage was seen for interventions starting during hospital stay and continuing after discharge (compared to those starting after discharge). In addition, interventions focussed on patient empowerment were more effective compared to all others.

Interestingly, a study using the Ideal Transitions in Care (ITC) framework, which conducted a literature review of numerous strategies to reduce readmissions [22] found that domains most associated with reducing readmissions were: monitoring and managing symptoms after discharge ($p=0.03$), social and community support ($p=0.07$), and educating patients to promote self-management ($p=0.09$). However, the study suggested that strategies to reduce readmissions are more likely to be successful if they cover more domains of the ICT framework³³.

Strategies above address management of care for patients once they have already reached the health system. However since the 2000's, a number of tools aiming at identifying patients at risk of hospital admission (or readmission) within the community to provide early intervention, were developed and employed to various levels of success in England [23, 24]. Examples of these are predictive risk models, such as Patients at Risk of Readmission (PARR), Combined Predictive Model (CPM), and Virtual Wards. The implementation of the latter in England highlighted the importance of multidisciplinary nature of case management and active involvement of GPs [24].

After hospitalisation

In terms of interventions after hospitalisation, a systematic review by Leppin et al [20] assessed strategies to

prevent 30-day readmissions. Overall, authors found that providing comprehensive and context-sensitive support to patients reduces the risk of early hospital readmission. Most interventions tested (discharge planning, case management, telemonitoring, patient education and self-management, scheduled follow-up and home visits, medication intervention, patient-centred discharge instructions, and provider continuity) proved effective in shifting care from hospitals to other settings.

Rationing as means to reduce acute care demand

While the section above addresses strategies to decrease actual volume of care provided in the hospital sector, there are other approaches. Implicit rationing of services via waiting times (through setting targets/limits) affects the use of publicly financed care. Excessive waiting times for public services may force patients to seek services in the private sector, which undermines equity [25] and poses risks of catastrophic expenditure for those who incur high costs at the point of service. Hospital use can also be impacted by the ability and willingness of patients to pay for care if there is a user charge to be paid. For example, during the economic crisis 11 EU countries have introduced or increased user charges in inpatient care, hoping that this measure would reduce unnecessary use of care as well as help to increase health system revenues [26]. Such measures, however, risk to undermine financial protection, increase inequalities and worsen access, as well as increase administrative cost and costs of treatment in the long term due to forgone care at the right time.

³³ The ten domains of the ITC framework [7] are: 1) Complete communication of information; 2) availability, timeliness, clarity and organisation of information; 3) medication safety; 4) educating patients to promote self-management; 5) monitoring and managing symptoms after discharge; 6) enlisting

help of social and community supports; 7) advanced care planning; 8) coordinating care among team members; 9) discharge planning; 10) follow-up with outpatient providers.

Table 3 – Examples of strategies to manage acute care demand

Before hospitalisation	During hospitalisation	After hospitalisation
<p>Strengthening primary care</p> <p>Gate-keeping; GP education, training and development; Screening / testing facilities in primary care; Designated appointment slots / fast track; Specialist consultation prior to referral; Decision support tools; Waiting list review; Payment system; community provision of specialist services by GPs; changes to tasks and skill mix</p> <p>Creating alternative specialist care settings</p> <p>Strengthening community-based specialist services; Outreach / community provision by specialists; Outpatient care; Day care / day surgery</p> <p>Patient empowerment</p> <p>Expert patient programmes, Patient education</p> <p>Referral management</p> <p>E-referral, Re-design of referral pathway, Referral management centres, telephone triage systems</p>	<p>Discharge interventions</p> <p>Discharge Planning, Case Management, Telephone Follow-up/ Telemonitoring, Patient education and self-management, Medication intervention, home visits and scheduled follow-ups; patient-centred discharge instructions, provider continuity</p> <p>Understanding acute care demand</p> <p>analysis of hospital data along the pathway (admission, stay and discharge); comparisons within country and internationally</p> <p>Improving quality of care</p> <p>Reducing rate of complications and re-admissions; hospital infection control;</p>	<p>Strengthening integrated care</p> <p>Chronic disease management programmes; multidisciplinary teams; active patient participation</p> <p>Strengthening follow-up in the community</p> <p>provider continuity; provision of outreach specialist care</p> <p>Re-admission risk stratification tools</p> <p>PARR, CPM, Virtual wards</p>
<p>Health promotion and disease prevention Comprehensive chronic disease care</p>		

4. Measuring acute care efficiency – insights from the Policy Focus Group

The purpose of the Policy Focus Group was to bring together country experts to discuss why acute care demand is perceived as a problem at the national level in the first place; secondly, which indicators are used to measure the scale of the problem, and, finally, what can be potential spillovers or unintended consequences when taking action to target areas of perceived inefficiency.

The PFG facilitators (European Observatory on Health Systems and Policies) sought feedback in the format of semi-structured discussions in three areas: i) reviewing the most frequently reported efficiency indicators from the survey (see Chapter 2) relating to assessing efficiency of hospital care (see Figure 26 and Figure 27); ii)

applying the “pre- during- and after hospitalisation” approach to a selected set of strategies for managing acute care demand (Figure 25 and Table 3); and iii) identifying spillovers from a set of actions perceived as improving efficiency in acute care.

In summary, the PFG was seeking to “diagnose” the efficiency problem, assign “treatment” through available strategies, and anticipate “complications” on the form of spillover effects. Where members of the PFG further elaborated on country experiences, this was captured and followed-up (e.g. section on efficiency in acute care in Portugal).

▪ Do common measurement approaches contribute to the perception of an efficiency problem in the acute care sector?

Acute care, as part of hospital care, is one of the most commonly measured health system areas due to the wealth of available data and comparatively clear definitions of episodes of care. All key indicators of efficiency commonly used by Member States rely on data on hospital inputs (typically resources) and outputs (typically hospital activity). In addition, there are comparatively few indicators of appropriateness and quality of hospital care (e.g., such as avoidable admissions, adverse events and complications, risk adjusted average length of stay, etc.). The interpretation of these indicators on the basic level typically suggests to policy makers that the higher the inputs and outputs are, the more potential is there to shift care away from hospitals. However, a more nuanced approach, particularly in countries with more advanced information systems, suggests that this is less than straightforward. For example, previous HSPA expert group report “So what? Strategies across Europe to assess quality of care” (2016) [2] shows that hospital admissions for diabetes can be viewed differently, to the extent that in countries with comprehensive programmes for early

detection of diabetes, admission of diabetic patient to hospital was not necessarily seen as inappropriate, but in fact a necessary one, in order to prevent further complications (e.g. amputation).

According to the PFG, the drivers behind interest to improve efficiency ranged from simply using international comparisons of one indicator (e.g. international statistics on hospital discharge consistently showing very high levels) to more far-reaching consideration that the model of reliance on acute care is increasingly not meeting the needs of population (e.g. population ageing and managing patients with multi-morbidity). Other frequently mentioned drivers behind the concerns about acute care demand were:

- High share of spending on acute care;
- Long waiting lists;
- Inappropriate use of emergency care;
- Need for community care model to address population ageing and chronic disease management;

- Focus on efficiency in acute care due to data availability and possibility to hold hospital sector accountable;
- Need for strengthening of primary care;
- Variations in re-admission rates, linked to availability of long-term care.

Despite the range of perceived drivers, the consensus was that the disproportionate presence of acute care indicators among efficiency measures might lead to the impression that the issue of acute care demand is indeed related directly to the provision of acute care. Despite this, the common agreement of experts was that it is not possible to interpret high-level efficiency indicators in isolation (or without further disaggregation) as measures of the efficiency of acute care. Nevertheless, it was recognised that decision-making was frequently based on these high-level indicators, while the many complexities behind the figures were not taken into account. Furthermore, there was a general recognition that services in various other settings (e.g. primary care, community care, long-term care) contribute to hospital efficiency, however the extent of this contribution often remains unclear due to scarce information coming from those non-acute settings.

It has to be noted, however, that some hospital indicators may serve as a proxy for other settings. Particularly this is the case with avoidable hospital admissions, which shows how many patients being treated in hospitals for conditions, which should be effectively treated in primary care (such as asthma, COPD, diabetes, hypertension). However, beyond this, very few measures reflect efficiency of health care services beyond acute care settings.

As presented in Chapter 2 of this report, members of the Expert Group on HSPA were asked to provide the key set of indicators that is used to measure and assess efficiency of care in their country. Table 4 provides a selection

of indicators that were reported by countries in their responses to the survey. The indicators in Table 4 were then loosely grouped by areas based on the efficiency framework (Figure 25) to map out where national efficiency indicators focus, and which indicators may go beyond separate processes within the acute care and reflect wider health system performance. As highlighted in Chapter 2, it has to be noted that the conceptualisation of efficiency indicators reported in the questionnaire varied. Some countries only reported efficiency indicators directly linked to inputs and outputs, while others have taken a broader view and included indicators that are used in assessing the entire health system and sometimes beyond.

Table 4 shows that hospital indicators prevail in the national HSPA frameworks for measuring efficiency, which is in line with the overall amount of data collected from the acute care, in contrast to other settings. Nevertheless, some of the measures are clearly outside of acute care (e.g. number of primary care units) and sometimes reflect broader health policies (e.g. smoking rates). Therefore while a problem may be identified within acute care (e.g. high levels of hospital discharges), additional indicators (e.g. low number of primary care units) may provide a better sense of the context and reasons for observed variations in acute care efficiency. In the same way, monitoring indicators beyond the acute sector may help to monitor spill overs.

In summary, existing (largely hospital-focussed) approaches to measuring performance may contribute to the perception of efficiency issue as solely or mainly acute care one. The role of other settings is often considered as a contributor; however, due to scarcity of good quality and reliable data, there are few examples (other than avoidable hospitalisations) where performance in relation to efficiency in other settings can be monitored or evaluated.

Table 4 – Selection of indicators commonly used to measure efficiency

Hospital care		Health system	
Inputs	Outputs	External factors	Links
Number of health workers Nurse to physician ratio Total costs Costs per bed / doctor Costs of medicines Reimbursement rate Structure-adjusted healthcare costs per capita	Number of hospitalisations / discharges ALOS LOS for specific conditions No. of patients by age group and diagnosis Number of bed-days Day case / day surgery Overuse of investigations Relocations (between and within providers and departments) Appropriateness of care pathway Case mix index Waiting times (days) Readmissions 30-day survival after AMI Hospital infections Total revenues Revenues per bed / doctor Patient satisfaction Bed occupancy rate Overcrowding/over occupancy Number of cases per health care worker / FTE Cost per DRG / episode Hospital productivity	HLY at birth Smoking rate Life expectancy	Number of primary care units Share of population treated in primary health care Patients enrolled in chronic disease management programme Use of emergency care within 5 days from attending GP Avoidable hospitalisations Vaccination rates Referrals to secondary care Use of outpatient setting Multidisciplinary ambulatory specialist care providers Waiting time for rehabilitation (days) Retention of ill employees in workforce 5-year cancer survival Cardio-vascular mortality Satisfaction with health system Patient involvement Proportion of respondents with high health literacy

▪ Interpreting international variations of efficiency indicators

Ways to interpret variations in efficiency indicators have been described recently in a policy brief by European Observatory - “*How to make sense of health system efficiency comparisons?*” [17]. In order to understand how some of these basic efficiency indicators can be perceived and interpreted in practice by users of the data, the PFG was presented with a chart showing European OECD countries according the number of curative beds per 1,000 population (i.e. inputs), curative care discharges per 1,000 population (outputs), as well as the share of health spending on curative inpatient care (bubble size) (Figure 26). The use of these three dimensions intends to combine a sample of high-level efficiency indicators from acute care setting in order to consider how they may relate to each other.

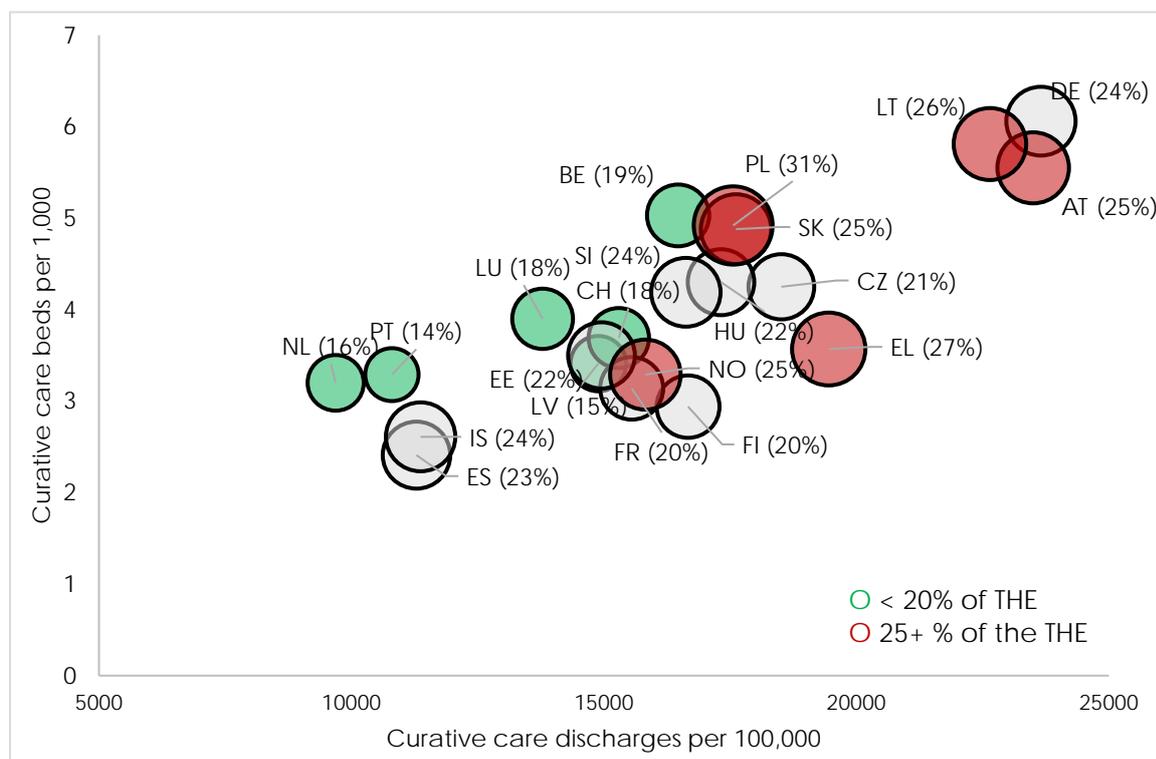
The graph prompted a discussion on countries’ relative positions as well as possible explanations. Generally, countries on the bottom left of the figure were seen as having “more efficient” health systems (e.g. Netherlands and Portugal), whereas those on

the top right were seen as performing less well in term of hospital efficiency (e.g. Austria, Germany and Lithuania).

Nevertheless, it was mentioned that caution is needed when drawing conclusions on the efficiency of the entire health system from this graph, as it provides an incomplete picture and can mainly serve as a starting point for countries with high levels of beds, discharges and share of expenditure on inpatient care to investigate the causes behind those figures.

Interestingly, it was suggested that for countries on the other end of the spectrum, such as Netherlands and Portugal, such data may serve as a reaffirmation of the health system performing well in terms of efficiency, therefore may justify inaction. In order to investigate whether indeed countries at the bottom left are as efficient as they look on the graph, we broaden the range of the indicators and focus on Portugal in the following section.

Figure 26 – Curative care beds, discharges and expenditure, European OECD countries, 2016 or latest available



▪ **Case study: is Portuguese acute care more efficient than in other countries?**

During the discussion, some members of the PFG drew attention to Portugal's low share of spending on curative inpatient care (14% of the total health care spending), coupled with comparatively fewer beds (3.3 per 1,000 population) and fewer discharges (10.8 per 100 population) and debated whether this was a reflection of efficiency of the acute care sector. It was suggested that the low volume of hospital discharges can potentially indicate

the strength of primary care but due to limited data available at the PFG, we were unable to come to any firm conclusions. In this section we explore the case of Portugal further, using selected indicators of the quality of primary care, inputs and utilisation of hospital care, as well as quality, effectiveness and access to health care services in general (Figure 27).

Figure 27 – Selected indicators of HSPA in Portugal (highlighted in red) and European OECD countries, 2016 or latest. Source: Eurostat and OECD Health database.

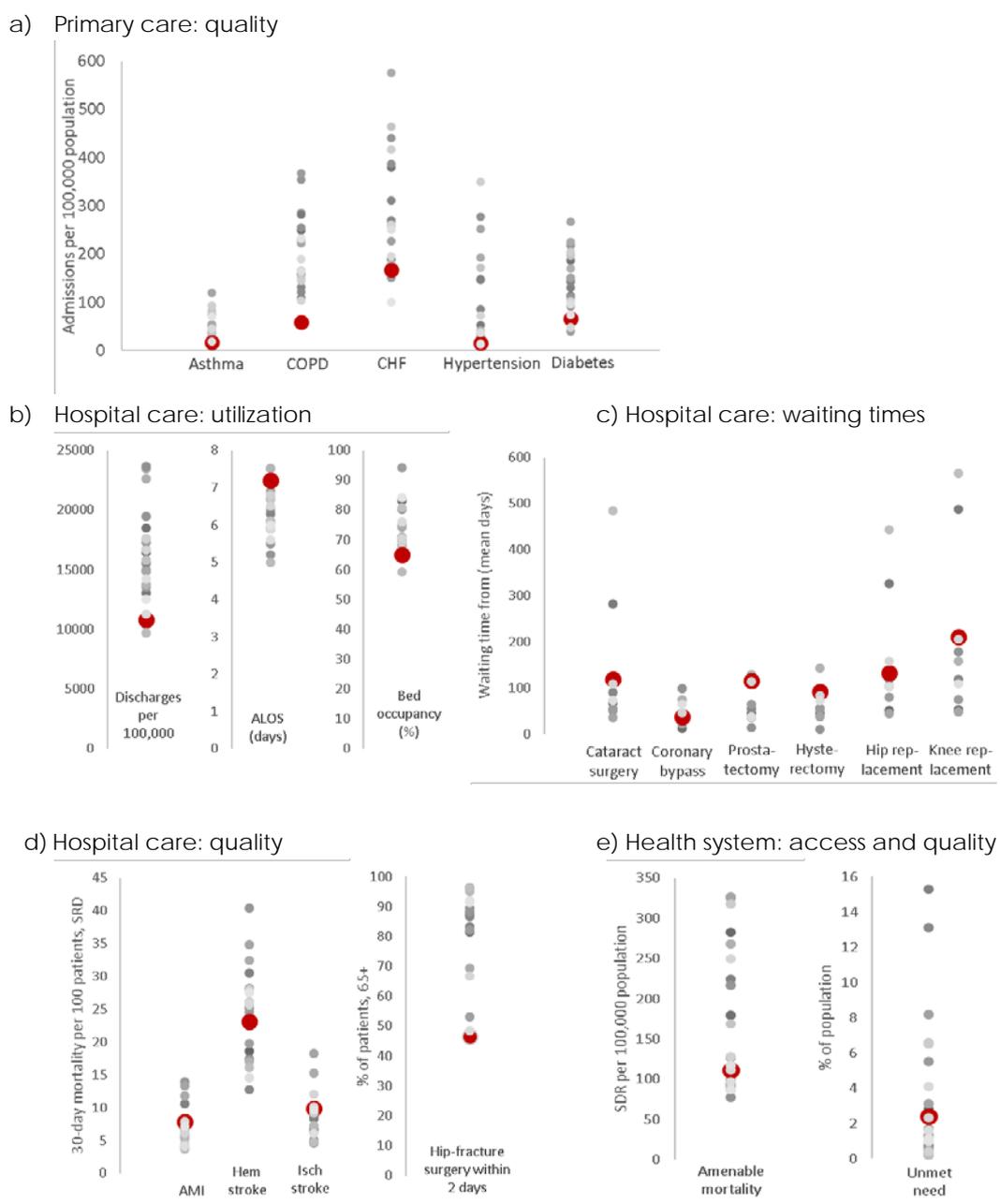


Figure 27-a shows that comparatively low volumes of avoidable admissions are treated in hospitals in Portugal. This further confirms the assertion made by the PFG that low hospital use can indicate strong primary care with ability to manage a wide range of more prevalent chronic conditions, such as asthma, COPD, congestive heart failure, hypertension and diabetes. Indeed, since 2005 Portugal has been pursuing a major reform in primary care, which aimed at expansion of the Family Health Units, improvement of quality of primary care and optimising referral pathway [27]. As a result, primary care physicians provide a comprehensive range of services, including treatment and follow-up of chronic diseases, such as bronchitis, CHF, diabetes and mild depression. Nevertheless, while primary care seems to be fairly strong in terms of providing services, and some practices have arrangements for joint consultations with specialists, in general there is no close co-operation between GPs and other medical specialists [28].

Figure 27b shows hospital discharges in Portugal together with other indicators of hospital activity - average length of stay and bed occupancy rate. Despite the generally low number of hospitalisations, average length of stay is one of the highest among the European OECD countries. At the same time, the levels of bed occupancy are among the lowest.

Despite generally lower levels of hospital care utilisation and low bed occupancy, waiting times, measured in mean number of days from assessment to treatment of cataract, coronary bypass, prostatectomy, hysterectomy as well as hip and knee replacement are among the highest among European OECD countries in five out of six selected procedures (Figure 27c). Pita Barros et al (2013) show that the implementation of the new waiting time management system in 2004 reduced waiting times substantially [29]. However, the study, which measures and compares waiting times in selected OECD countries, found Portugal does not compare favourably, particularly when using the mean, rather than median number of days [30]. The same report also shows that the decrease in waiting times achieved by the end

of 2000s has been reversed in subsequent years.

Figure 27b and Figure 27c prompt further questions: why are the waiting times generally high in Portugal, while there seems to be a large proportion of hospital beds underutilized? In addition, what are the reasons behind the relatively high average length of stay?

Indicators on the quality of hospital care (30-day mortality from acute myocardial infarction, haemorrhagic and ischaemic stroke) show that Portugal performs worse than average, with the exception of haemorrhagic stroke, where it is close to the average (Figure 27d). Furthermore, Portugal has the lowest share of patients admitted with hip fracture undergoing surgery within the 2 days of admission.

The next possible question could be - is there a relationship between the quality of care and patients needing to spend longer time in hospitals (for example, because of higher risk of complications)?

Despite the issues with hospital care, such as long waiting times and not optimal quality, mortality from conditions amenable to health care, as well as levels of unmet medical need in Portugal are below the EU average. This, however, does not contradict the overall picture as it may be further evidence of strength and good accessibility of primary care services, as i) many of the conditions amenable to health care are also ones which are mainly treated in primary care (such as ischemic heart disease, stroke, diabetes); and ii) perceived unmet need may also reflect largely availability of primary care services, as in Portugal GP serves as a gate-keeper.

International statistics can be supplemented further by findings from the published academic literature. For example, a recent study of hospital efficiency levels in Portugal [31] has shown that a quarter of hospitals displayed "poor performance" (i.e. combined efficiency score below 0.8 out of 1.0, with the following indicators taken into account: overall costs, number of beds, number of FTE clinical workforce as inputs; and number of

hospitalisations, number of medical appointments, number of patients attending emergency department, and number of surgeries as outputs). While the authors note that overall hospital efficiency in Portugal has improved over the past 15 years, performance of other countries suggests that potential further gains.

While this goes beyond the scope of this example, the next steps could focus on disaggregating the average length of stay by condition and/or hospital, and performing some risk-adjustment to understand whether some of the variability is due to inefficiencies for particular types of care. Similarly, bed occupancy rate could be disaggregated by hospital or department. This example does not include data on human resources, however it may be instructive to look at the number of doctors by specialty, as well as their distribution, to see whether shortages of staff may play a role in quality of care or in hospital care utilisation patterns. Another

area not covered by the indicators included in Figure 27 is emergency care: the Primary Care Reform of 2005 was mainly initiated to reduce pressure on emergency services overuse [27], and therefore it would be useful to analyse changes in emergency care utilisation over this period of time.

The objective of looking deeper into Portuguese data is not to say that Portuguese hospitals are inefficient. Rather, it is to illustrate the complexities when drawing conclusions from a small set of indicators. The initial perception from Figure 26 that Portugal compares more favourably to many other OECD countries in terms of acute care efficiency has been challenged. On the contrary, there seem to be areas that require much deeper investigation in order to understand that reasons behind comparatively worse performance on many of the indicators reflecting performance of acute care.

5. Monitoring the (un)intended consequences and spillovers

As seen in the previous section, uncovering actual causes of inefficiency within a country can be challenging and indicators that are available can mostly serve as clues to identify the next area of investigation, rather than provide an actual measure of the scale of inefficiency. But where the root cause has been clearly identified and strategies to deal with it have been proposed, careful consideration is needed of how these actions will affect other health system elements and whether there are any areas of potential spillover or unintended effects.

In small groups, participants of the PFG discussed potential spillovers from a set of actions aimed at managing acute care demand, e.g. setting caps on volume of services provided; introduction of co-payments for emergency visits; applying financial penalties to hospitals for readmissions; strengthening primary care. Most spillover areas identified were related to access to care. For example, if high demand in emergency care is tackled through introduction of co-payment, that may lead to

obvious financial barriers in accessing care for patients with low income or high levels of need. However, other actions that ration care, such as placement of caps on volume or penalising providers for readmissions may have a number of adverse consequences not only in terms of access, but also in terms of quality of care. For example, hospitals may be reluctant to admit patients from groups at higher risk of readmissions or, potentially, avoid necessary re-admissions [32]. Ultimately, these initiatives may lead to care being less efficient, as outcomes may worsen due to issues with accessing care, or due to acute providers being unable to treat patients effectively as a result of perverse incentives.

To further elaborate on how actions aimed at tackling inefficiency may affect other parts of the system, we use the example of introduction of Diagnosis Related Groups (DRG) based reimbursement in Switzerland from a study by Busato et al [33]. Switzerland introduced a DRG-based system for hospital financing in early 2000s, aiming to increase efficiency and transparency in acute care.

Variation in the pace of implementation across cantons allowed the authors of the study to analyse differences of volume and quality of care indicators between areas with or without DRG-based hospital reimbursement using population-level data. Results for the areas using DRGs showed lower hospitalization rates, shorter hospital stays, reduced in-hospital mortality and lower outpatient cost weights, but higher 90-day re-hospitalisation rates. At the same time, in areas using DRGs there was a 10% increase in outpatient care compared to a 2% decrease in non-DRG areas. Authors concluded that implementation of DRG-based hospital reimbursement system had both desired and harmful effects. There was a welcomed shift to practice-based outpatient care, while higher rehospitalisation rates posed questions of the value of a DRG-based payment system from a quality of care as well as from an economic perspective. [33]

The Swiss example, as well as the PFG discussion show that actions to improve efficiency may be i) based on incomplete information, and ii) limited in terms of anticipating and trying to avoid potential spillovers. In practice, the complex issue of improving efficiency in the health system is dealt with in a more pragmatic and simplistic way. Briefly:

- A problem is identified largely through very crude interpretation of few high-level efficiency indicators (e.g., hospital discharges). Sometimes, however, indicators are used as a justification to take specific actions.
- Actions are applied directly to the area that has the biggest potential to affect the indicator (e.g. caps on volume of care provided). This may achieve an effect of change (or “improvement”) in the indicator.

The process tends to stop there, and changes in the indicator(s) of interest, where they are subsequently evaluated, may quickly be interpreted as policy success, without adequate and systematic assessment of the consequences. However, in order to avoid potential unintended adverse consequences

to other parts of the health system, and population health outcomes, based on the PFG discussions one could consider the following sequence of actions:

- Once an area needing efficiency improvement has been identified using a specific indicator, it requires further disaggregation for better understanding of where inefficiencies may occur at sub-national, sub-system, specialty or population group level. These data have to be combined with other indicators of efficiency (input, process, and output) across different settings, as well as with other broader indicators of health system performance.
- Before any action to tackle inefficiency is taken, a careful consideration needs to be given to the potential spillover effects, e.g. access to care, quality of services, pressures on other settings, etc. The costs of these spillovers need to be weighed against the potential savings from the proposed action, both in the short- and in the long-term.
- If spillovers are unavoidable, investment is needed in areas of the system that are able to mitigate the potential negative effects.
- These actions demonstrate that while efficiency is often viewed as cost-containment, it actually should be the process optimising the use of available resources through good health system governance and appropriate levels of financing.

6. Conclusions

This chapter of the report aimed at understanding how to use a systems approach for measuring and monitoring efficiency, particularly in the acute care setting. During the PFG, we applied the framework suggested by Cylus et al (Figure 25) to explore how efficiency is linked not only to within-hospital production processes, but also to other health system areas as well as external factors.

The PFG explored strategies documented in the literature that have been considered effective in reducing acute care demand. It also explored indicators use by most Member States in their HSPA processes, and how countries are currently monitoring efficiency in the health system. There was a general agreement that acute care is perceived as the main target for efficiency measures, but largely because of the availability of data in this sector, and the relatively high share of expenditure devoted to it, rather than because of specific concerns about the way in which care in hospitals is being delivered or other hospital-level features.

The discussion of the indicators presented led to the consensus that a proper diagnosis of efficiency areas that need strengthening requires a combination of measures not only from hospitals, but also from other settings. In addition, it can be damaging to take actions to tackle inefficiency based solely on few high-level indicators. While at the national level there is a wealth of data allowing disaggregation and linkage of multiple indicators, there is rarely a process in place that assesses the impact of measures on other areas of health system performance, including access, health outcomes, and impact on other settings.

Chapter 4

Conclusions

European governments are increasingly faced with the difficult policy challenge of reconciling increasing demand for health care services with available resources while ensuring long-term sustainability of public finances. Based on the understanding that wasteful spending is still widely prevalent in several segments of modern health care systems, improving efficiency is an objective of first-order importance for health policy-makers.

The need to minimise wasteful health spending is made especially urgent by the historically high government debt levels in several European countries. This may ultimately act as a mechanical stop to further growth in health expenditure, with negative consequences on patients' health. Exploiting the many opportunities that exist at present to release resources from within health care systems to deliver better-value care and reform health systems is therefore an absolute priority to avoid this 'systemic crash' in the future and guarantee sustainable, universal access to good quality health care in Europe.

This report has documented how the seemingly simple concept of efficiency conceals a number of technical and methodological challenges that complicate its operationalisation by health care policy-makers. Besides the fact that it is not always clear which health outcomes fall under the 'responsibility' of the health care system, the relationship between health system inputs and health outcomes is complex and driven by factors outside of the control of health service providers. It thus becomes difficult to establish causal relationships between specific interventions and health gains, and to secure fair comparisons across entities when assessing performance.

Moreover, the complexity of the 'health production process' and data limitations often hinder the development of indicators

based on this definition of efficiency, which may constrict analysts to use health system outputs as a proxy for the *value* of those outputs (i.e. to what extent they contribute to achieving better health outcomes). All these complications make measuring efficiency of health care a very complex endeavour in practice.

In an attempt to bring some clarity to this discussion, Chapter 1 of the report presented an overview of the key concepts and definitions relating efficiency in health care. A typology of efficiency was laid out, examining the notions of *technical* and *allocative efficiency* at different levels of analysis, as well as that of *wasteful spending on health*. To enable an analytical scrutiny of efficiency in light of the complexities outlined above, the chapter presented a conceptual framework that renders explicit the selection of relevant inputs and outputs that analysts should consider, as well as the elements required to capture the dynamic nature of processes that make up the health care system.

The main takeaway from this chapter is that no single efficiency metric at any level of analysis can give, on its own, a sufficient indication of whether an entity is efficient or not. Available indicators providing limited information about discrete segments of the 'health production process' should instead be read in conjunction with others, to extrapolate relevant information about where inefficiency may be located. While difficult to systematise, this approach is the only one that, at present, allows carrying out an exhaustive and sufficiently sophisticated analysis that takes into account the contingent strengths and weaknesses of each efficiency indicator used.

The second chapter considered countries' experiences in assessing efficiency of care, on which information was gathered by the Expert Group on HSPA through an internal

survey. Survey results have shown considerable variation in how countries define and conceptualise health care efficiency. Several countries acknowledged that their efficiency measurement methodologies are still at a developmental stage, and that low data availability significantly hinders their capacity to measure and assess efficiency beyond hospital care.

Acknowledging this limitation, about half of countries announced plans to expand the scope of their efficiency analysis to other care settings – most notably, primary care and long-term care. Expanding efficiency measurement to these two care sectors would allow health managers to retain greater control over the ‘non-hospital’ factors, still within the health care system, that often determine the overuse of hospital services – respectively, ambulatory-care sensitive admissions, and delayed transfers of care.

As per the use of benchmarking, while countries generally acknowledged its potential to foster efficiency improvements, several recognised at the same time that, especially with regard to international benchmarking, increased standardisation of data collection, reporting methods and better risk-adjustment are needed to derive more reliable and actionable insights from this tool.

With regard to the formulation and use of indicators to measure efficiency of care, survey responses showed that considerable variation exists in how countries have devised and implemented their set of indicators, with only few that are measured in a more or less standardised manner across countries. Referring to one of the conclusions from Chapter 1, which observes that a comprehensive efficiency analysis requires analysts to ‘triangulate’ information from several indicators, survey responses seem to suggest that the lack of a shared understanding of how this study should be conducted constitutes an obstacle to achieving greater standardisation of efficiency indicator sets across countries.

On the one hand, designing a ‘one-size-fits-all suite’ of metrics may be difficult and possibly

counterproductive, since careful, context-specific analysis of what indicators actually tell us will always be required to avoid misleading interpretations. On the other hand, survey responses suggest that defining an explicit “investigative methodology of inefficiency” that lays out how different efficiency indicators should be read and interpreted in conjunction with other ‘contextual’ metrics may be a powerful instrument to increase the analytical rigour of efficiency analyses, and to foster the development of a more homogeneous efficiency measurement methodology across countries. In turn, this development would likely increase the power of international efficiency comparison as an instrument to detect possible performance weaknesses in health care systems.

As to the policy and managerial uses of the output of efficiency of care assessments, survey results have shown how they constitute an integral resource for policy formation, decision-making about service delivery, guaranteeing financial sustainability and improving accountability of public service. In this context, the survey confirmed that governments generally recognise measurement as a crucial, but only the first step towards improving health system efficiency, and that the existence of a governance structure ensuring accountability is a prerequisite for the implementation of most efficiency-enhancing measures. In an effort to improve accountability mechanisms and overcome stakeholder resistance to change, the vast majority of policymakers across Europe are working to make information about their health systems’ performance more accessible to the public, and make citizens more capable of scrutinising ‘good’ and ‘bad’ (i.e. wasteful) service delivery practice.

The third and final chapter of the report presented an account of a policy dialogue attended by national HSPA experts that aimed at bringing together the components of ‘theory’ and ‘practical experience’ outlined in the first two chapters of the report. In occasion of this ‘policy focus group’ (PFG), national HSPA experts gathered to discuss strategies to moderate demand for acute care

(as a major area of expenditure) using an analytical perspective that encompasses the entire care pathway.

Under the steer of experts from the European Observatory on Health Systems and Policies, country experts analysed the efficacy of a wide range of strategies using a framework that clustered them according to whether their implementation took place *before*, *during* or *after* hospitalisation. This discussion confirmed that monitoring the impact of efficiency-enhancing strategies in acute care requires measuring efficiency in a broader perspective, to ensure that reductions in hospital utilisation do not generate inefficiencies of a greater magnitude in other areas of the health care system or even in other HSPA dimensions (e.g. access, equity).

Attaining such broader analytical perspective is however technically difficult, in light of the low availability of efficiency data relating to non-hospital care sectors that countries currently have at their disposal. PFG participants agreed that the resulting over-representation of hospital care relative to other care sectors in efficiency measurement frameworks can potentially lead decision-makers to the impression that excessive use of hospital care is only related to how efficiently acute care is provided in itself – a perspective that discounts the efficiency of other care settings (e.g. primary care, community care, long-term care) as determinants of hospital efficiency.

The PFG thus concluded on the importance for policy-makers to make full use of available hospital efficiency metrics that may serve as a proxy for efficiency of *other* care settings (e.g. avoidable hospital admissions for primary care) to broaden as much as possible the analytical scope of efficiency analyses given current data limitations. This is especially relevant in the European context, where hospital-centred health care delivery models need to shift their focus from disease treatment to disability prevention/chronic disease management to cope with the anticipated increase in multi-morbidity expected in the coming decades.

Finally, the PFG analysed a selection of indicators of hospital efficiency commonly used by European countries, in view of i) studying how these metrics relate to each other, and ii) scrutinising their possible interpretation(s) by policy-makers. Through the in-depth analysis of a country case study, the PFG explored the complexities and potential pitfalls analysts may fall into when drawing their efficiency assessment using only a limited set of indicators. The case study showed how an analysis of efficiency of acute care based on a limited set of metrics suggesting an initially positive assessment turned out to be considerably less positive when other contextual indicators from other care areas were used to ‘dig deeper’ into the first, seemingly correct, efficiency analysis.

Avenues for future improvement

This report has documented the numerous conceptual and methodological problems encountered by researchers and analysts as they seek to develop better tools to measure and assess efficiency of health care at the system level. However, a clear conclusion that stems from its findings is that despite these difficulties, there is an ever-increasing interest from health sector policy-makers and managers to receive greater analytical support to inform their decisions about how to make a more efficient use of their health care budgets without adverse consequences on patient access and quality of care. Policy-makers’ interest in achieving greater efficiency of care is further heightened by the growing consensus among researchers that a significant share of resources is wasted at present, which offers a chance for health care analysts to advance their research agenda and potentially gain a more important role in the policy-making process.

The information contained in this report thus indicates that there are several opportunities for European countries to improve their tools and methodologies to measure and assess efficiency of care – the most prominent examples are:

- **Increasing the quality and granularity of cost data**

Cost data are a fundamental piece of information that underpin decisions on resource allocation across the health care system. While acknowledging the peculiarities of costing practices specific to the health care sector, reported country experiences revealed that cost structures behind specific procedures or treatments often vary significantly from one country to another and even between providers within the same countries because of differences in costing methods and classification rules. In this context, obtaining more consistent and detailed costing of the care provided up to the level of individual patients, possibly using an activity-based approach to allocate indirect costs, would enable analysts to use more reliable cost data to support efforts to measure (and improve) efficiency of care. While obtaining cost-per-patient data from care sectors beyond hospitals is probably unfeasible for the time being, the rapid development of e-health and information systems may offer opportunities to generate patient-level cost data from other care sectors in the future. In this regard, the development of cost-per-patient systems documented in Chapter 2 by Sweden (Box 4) and Norway (Box 5) may be considered an example of the potential that investing in the development of more granular costing systems can offer to support policy-makers.

- **Improving measurement of health outcomes**

This report has analysed the many methodological challenges associated with developing comparable outcome-based measures for the purpose of comparative efficiency assessment. While outcomes expressed in terms of quality-adjusted life years (QALYs) are a generally accepted measure of outcomes, their direct use for benchmarking efficiency of care is unfeasible. Research initiatives such as EuroHOPE (Box 2) offered interesting analytical insights in this regard, showing that using a disease-based approach to benchmark efficiency of care provided in the whole care cycle (not only for specific

procedures) using register data is feasible also in the international context. Several countries have also recently intensified their efforts to develop patient-reported outcome measures (Box 1), which offer a promising opportunity to improve outcome measurement for a series of treatments. In the long term, achieving an international agreement recommending the use of standardised and validated outcome measures would permit greater advances in this area.

- **Expanding the scope for efficiency measurement beyond hospital care**

The report's discussion on strategies to moderate demand for acute care has shown that a significant share of efficiency-enhancing interventions requires a broader analytical perspective that looks beyond measuring efficiency of hospitals. However, survey results have shown that countries' efficiency assessment frameworks disproportionately concentrate on measuring efficiency of hospital care relative to other sectors, not because of 'strategic' decisions in their approach to assessing efficiency, but mainly due to the lack of data from other care settings. This imbalance can potentially lead decision-makers to discount the efficiency of other care settings as determinants of hospital efficiency. Expanding efficiency measurement to other care sectors – especially primary, mental and long-term care – would allow health care managers to retain greater control of the 'non-hospital' factors that cause unnecessary use of hospitals, which would also offer some insight of allocative efficiency at the system level. Investing in broadening the scope for efficiency measurement, as well as making full use of available hospital efficiency metrics that can serve as a proxy for efficiency of other care settings (e.g. avoidable hospital admissions for primary care) is thus a precondition for efficiency of care assessments to become more useful to policy-makers.

- **Designing communication of results with stakeholders in mind**

The report has found how the target audience of efficiency assessment reports consists of a broad range of stakeholders, which ranges from health managers to policymakers, citizens and clinicians. Based on the premise that message design can significantly influence its effectiveness [34], customising communication about efficiency of health care based on the 'capacity to react' of different audiences can increase stakeholder engagement and the effective translation of analytical insights into action leading to efficiency improvement. In this context, it is important to bear in mind that policy-makers and managers are more likely to respond to efficiency analyses if data are presented in a way that is designed to deliver a relevant message for their specific area of competence. An area that offers interesting prospects for further development is the way findings are presented: data visualisation tools can act as a powerful instrument to 'bridge the communication gap' between health care analysts/researchers and policy-makers and help translate technical analysis into more evidence-based policy options.

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Annex A

Members list

A. Members of the Expert Group on Health Systems Performance Assessment (HSPA)

Chairpersons

- Dr Kenneth E Grech³⁴ (Malta),
- Dr Andrzej Ryś (European Commission)

Members

Austria	Herwig Ostermann, Florian Bachner, Patrizia Theurer, Andrea Schmidt, Eva Kernstock.
Belgium	Pascal Meeus, Lieven De Raedt.
Bulgaria	Petko Salchev, Zlatimira Dobрева, Ivelina Georgieva, Ivian Benishev.
Croatia	Jasna Mesarić, Vili Beroš.
Cyprus	Vasos Scoutellas, Anna Demetriou.
Czech Republic	Tomas Troch, Klara Kabicka, Katarina Sebestova.
Estonia	Pille Banhard, Eleri Lapp, Ulla Raid.
Finland	Ilmo Keskimäki, Liisa-Maria Voipio-Pulkki.
France	Johann Gutton.
Germany	Philip Wahlster.
Greece	Georgios-Filippos Tarantilis.
Hungary	Zsuzsanna Ajtonyí.
Ireland	Patrick Black, Muiris O'Connor.
Italy	Mario Braga, Giampaolo Grippa.
Latvia	Laura Boltāne.
Lithuania	Rima Vaitkienė, Justina Januševičienė, Edita Bishop.
Luxembourg	Françoise Berthet, Anne Calteux.

³⁴ Dr Kenneth E Grech was appointed as new country co-Chair of the Expert Group in July 2018, following the retirement of Dr Daniel Reynders (Belgium)

Norway	Beate Margrethe Huseby, Birgitte Kalseth.
Poland	Wojciech Niemczyk.
Portugal	Andreia Jorge Silva, Sofia Mariz.
Romania	Alexandra Cucu.
Slovakia	David Balla.
Slovenia	Dušan Jošar.
Spain	Angeles Gogorcena Aoiz, Elena Bartolomé Benito.
Sweden	Birgitta Lindelius, Ingrid Schmidt.
The Netherlands	Luc Hagens, Patrick Jeurissen, José Van Dijk.
United Kingdom	Uma Moorthy.
The OECD	Gaetan Lafortune, Ian Brownwood, Niek Klazinga, Michael Van Den Berg.
The WHO Regional Office for Europe	Gabriele Pastorino, Ihor Perehinets.
The European Observatory on Health Systems and Policies	Josep Figueras, Jonathan Cylus, Marina Karanikolos.
European Commission	
DG Health and Food Safety (SANTE)	Sylvain Giraud, Philippe Roux, Filip Domański, Federico Pratellesi.
DG Economic and Financial Affairs (ECFIN)	Santiago Alvaro Calvos Ramos, Borianna Goranova, Benedetta Martinelli.
DG Research and Innovation (RTD)	Sasa Jenko, Leslie Pibouleau.

B. Members of the sub-group on efficiency of care

Austria	Herwig Ostermann, Florian Bachner, Andrea Schmidt, Eva Kernstock.
Belgium	Pascal Meeus, Lieven De Raedt.
Estonia	Pille Banhard.
Finland	Ilmo Keskimäki, Unto Häkkinen.
France	Johann Gutton.
Lithuania	Ramunė Vaitkevičienė.
Poland	Kamila Malinowska, Andrzej Tolarczyk.
Slovakia	David Balla.
Slovenia	Dušan Jošar, Mircha Poldrugovac.
Sweden	Birgitta Lindelius, Karin Bodell, Camilla Salomonsson, Ingrid Schmidt, Anne Tiainen, Emma Lund, Almina Kalkan.
The OECD	Gaetan Lafortune, Ian Brownwood.
The European Observatory on Health Systems and Policies	Jonathan Cylus, Marina Karanikolos.
DG Health and Food Safety (SANTE)	Filip Domański, Federico Pratesi.

C. Members of the Policy Focus Group – “*Systems-thinking for monitoring efficiency: the case of managing acute care demand*”

Austria	Herwig Ostermann.
Belgium	Pascal Meeus.
Croatia	Jasna Mesarić.
Czech Republic	Tomas Troch.
Estonia	Pille Banhard
France	Johann Gutton.
Greece	Georgios-Filippos Tarantilis.
Hungary	Balazs Babarczy
Ireland	Patrick Black.
Italy	Mario Braga.
Norway	Beate Margrethe Huseby, Birgitte Kalseth.
Portugal	Sofia Mariz.
Romania	Alexandra Cucu.
Slovakia	David Balla.
Slovenia	Dušan Jošar.
Sweden	Almina Kalkan.
The OECD	Ian Brownwood.
The European Observatory on Health Systems and Policies	Josep Figueras, Jonathan Cylus, Marina Karanikolos.
European Commission	
DG Health and Food Safety (SANTE)	Sylvain Giraud, Philippe Roux, Filip Domański, Federico Pratellesi.

Annex B

Questionnaire to collect national experiences on the assessment of efficiency of care

Country	Click here to enter text.
Name of respondent	Click here to enter text.
Organisation	Click here to enter text.
Email	Click here to enter text.

Introduction

As a result of i) rising health care costs due to population ageing, advances in medical technology and increasing service demand, together with ii) observed large (potentially unwarranted) variation in care at various levels, many countries are striving to increase the efficiency of their health care systems and optimise the use of available resources to provide consistently high-quality care in a financially sustainable manner. This crucial objective has created considerable pressure to develop instruments to measure the efficiency of health care systems and providers, so that it can be evaluated, monitored and improved over time.

However, evidence on what methods are most appropriate to assess health care efficiency and develop reliable metrics for decision-making is still incomplete. Besides the fact that the term 'efficiency' is often used by different stakeholders to connote various constructs, the complexity of matching health care systems' inputs and outputs is exacerbated by the significant influence of a large set of factors that are often unaccounted for, such as non-health related determinants of health outcomes. While efficiency measures have been developed despite these uncertainties, a greater understanding of how well these available tools capture the relevant area of interest given their limitations is necessary to improve assessments' quality and avoid unintended consequences (e.g. engender resistance from providers subject to measurement).

As a result, there is a growing demand for exchanging information and learning from foreign experiences as a means to hone currently available tools and methodologies used to assess efficiency of care. In the context of the work on the 2018 HSPA report, the objective of this questionnaire is therefore to collect information about how authorities across Europe are currently measuring and assessing efficiency in their health care systems, in view of analysing different systems' strengths and weaknesses, identify unexploited areas and facilitate the dissemination of best practices, ultimately enabling policy-makers to make better-informed decisions.

For the purpose of this questionnaire, efficiency of care is defined as the extent to which the inputs to the health system, in the form of expenditure and other resources, are used to best effect to secure their outputs and/or outcomes.

Please answer all questions in English. If answer is unknown, enter UNK; if answer is not applicable, enter N/A. Click the appropriate checkbox for multiple-choice questions and type in the textbox for closed-ended/open-ended questions.

- PART A -

1. *Start*
2. *Scope for measurement*
3. *Data quality and availability,*
4. *Policy and managerial uses of the assessment*
5. *Governance*

- PART B -

6. *Good practice example / case study (optional)*

* * *

PART A**Start**

How is efficiency of care defined in your country's health care system?

[Click here to enter text.](#)

Is a comprehensive assessment of efficiency of care regularly³⁵ carried out in your country?

[Click here to enter text.](#)

Besides regular assessments, have any one-off or occasional studies of efficiency of care ever been carried out in your country?

[Click here to enter text.](#)

→ If YES, when was the last study carried out and by whom?

→ If NO, please elaborate on how efficiency of care is conceptualised in your country's health system monitoring framework (e.g. is efficiency a sub-dimension of quality of care?) and complete the rest of the questionnaire as much as possible when (even if just partially) applicable.

Scope for Measurement

In what health system settings is efficiency of care measured for the purpose of the (regular, if applicable) assessment? (e.g. hospital care, primary care, emergency care, chronic care, long-term

³⁵ i.e. deliverables which systematically report on the efficiency of the health system or significant parts of it at regular intervals (e.g. annually). May be used for monitoring, target-setting and/or accountability purposes. Systematic assessments do not therefore include sporadic reviews (e.g. academic studies). These assessments may also be part of a more general assessment and reporting process of the status of the health system.

care, mental health services, pharmacies and pharmaceutical care, cross-sectoral, etc. (more settings can be added by the respondent))

[Click here to enter text.](#)

Which are the levels of data reporting?

- national
- regional
- local health authority / institutional
- individual health care provider
- other - (please specify)

Up to what level are data pooled/analysed?

- national
- regional
- local health authority / institutional
- individual health care provider
- other - (please specify)

For each level, what benchmarks are used and why?

[Click here to enter text.](#)

Is international benchmarking used?

[Click here to enter text.](#)

→ If YES, what is the benchmark?

[Click here to enter text.](#)

Data Quality and Availability

For each level (national, regional etc.), please present the key set of indicators used to assess efficiency of care in your country. For each indicator listed, provide a description, the data source(s),

and briefly explain how its results are interpreted – also in conjunction with other metrics – to assess the performance of the entity under scrutiny.

Indicator	Description	Level	Data source(s)	Is indicator linked to a goal in the national strategy?	Additional information
Indicator	Description	Level	Data source	YES / NO) – if YES, to which goal?	Additional info

Please present your methodological approach. In particular, explain how indicators and benchmarks are developed³⁶, how unwarranted variations and their possible causes are detected, what risk adjustment methods³⁷ (if possible) are used, etc.

[Click here to enter text.](#)

Is a common data collection methodology adopted across all reporting units under scrutiny? Which quality assurance / audit procedures are put in place to ensure that the data feeding the assessment are reliable?

[Click here to enter text.](#)

Policy and Managerial Uses of the Assessment

What are the stated objectives of the assessment? (e.g. general reporting, benchmarking against plans and peer performance, reimbursement, accountability, funds allocation etc.)

[Click here to enter text.](#)

What is the target audience of the efficiency assessment report? (e.g. policymakers, senior/operational management, regulators, clinicians, patients etc.)

[Click here to enter text.](#)

How is efficiency performance information presented to healthcare organisations and providers?

³⁶ For instance, how are indicators selected? More specifically, to what extent the choice of indicators to be used in the efficiency assessment framework reflects the pursuit of pre-defined strategic objectives (as opposed to data availability)?

³⁷ I.e. all those methods that aim at creating a 'level-playing field' that allow for an unbiased comparison of efficiency of the entities assessed by accounting for differences unrelated to their performance (for example, differences in patients' demographic characteristics.)

Click here to enter text.

Has the assessment been presented in a publicly accessible document or website?

Click here to enter text.

→ If YES, please provide a reference and/or a link to the online publication

How are the results of the efficiency of care assessment interpreted and used for managerial purposes?

Click here to enter text.

How are the results of the efficiency of care assessment used for any other purposes than managerial (e.g. communication / improving accountability in public services, policy formation etc.)?

Click here to enter text.

To what extent do the results of the assessment have an impact on policy choices? In what way?

Click here to enter text.

What are your country's plans with regard to the development of better instruments to assess efficiency of care?

Click here to enter text.

Governance

Please provide a description of the efficiency assessment's main content and process features.

Click here to enter text.

Is the assessment (or part of it) performed because of legal requirements? If not, what is the main driver of its execution?

Click here to enter text.

What is the frequency of the re-assessment and its reporting cycle?

Click here to enter text.

Which body commissions the assessment?

[Click here to enter text.](#)

Which organisation leads the assessment?

[Click here to enter text.](#)

What organisation or agency leads the development and management of efficiency policy and strategies?

[Click here to enter text.](#)

What other stakeholders are involved and how?

[Click here to enter text.](#)

PART B

Good practice example / case study (optional)

Please present 1 - 2 examples or case studies from efficiency assessments performed in your country in the last years. Each example would preferably include information on the objective of the assessment, the context, methodology, tools/techniques, data and indicators used, results and how these were used, including a description of challenges encountered and of the solutions that were devised and implemented to overcome them.

[Click here to enter text.](#)

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