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EXPERT PANEL ON EFFECTIVE WAYS OF INVESTING IN HEALTH

(EXPH)

Tools and Methodologies for Assessing the Performance of Primary Care

The EXPH adopted this opinion at its XXth plenary on XX Month 20xx

The EXPH approved this opinion for public hearing
at the XXth plenary on XX Month 20xx

The EXPH adopted this opinion at the XXth plenary on XX Month 20xx
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About the Expert Panel on effective ways of investing in Health (EXPH)

Sound and timely scientific advice is an essential requirement for the Commission to pursue modern, responsive and sustainable health systems. To this end, the Commission has set up a multidisciplinary and independent Expert Panel which provides advice on effective ways of investing in health (Commission Decision 2012/C 198/06).

The core element of the Expert Panel's mission is to provide the Commission with sound and independent advice in the form of opinions in response to questions (mandates) submitted by the Commission on matters related to health care modernisation, responsiveness, and sustainability. The advice does not bind the Commission.

The areas of competence of the Expert Panel include, and are not limited to, primary care, hospital care, pharmaceuticals, research and development, prevention and promotion, links with the social protection sector, cross-border issues, system financing, information systems and patient registers, health inequalities, etc.

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The opinions of the Expert Panel present the views of the independent scientists who are members of the Expert Panel. They do not necessarily reflect the views of the European Commission nor its services. The opinions are published by the European Union in their original language only.

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The declarations of the Working Group members are available at:

http://ec.europa.eu/health/expert_panel/experts/working_groups/index_en.htm

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ABSTRACT

The report "Tools and methodologies for assessing the performance of primary care" starts with a definition of the role and goals of primary care, based on previous opinions by the EXPH. From the primary care definition formulated in 2014, 8 domains and dimensions of primary care can be defined. Additionally, the domains of primary care organisation and human resources are added, so that 10 dimensions are eventually identified. This opini onuses the adapted framework of structure, process and outcome as developed by Donabedian. Starting from the question "How is primary care structured?", a performance assessment system for primary care is defined, focusing on how access to primary care services occurs, how providers of primary care are organised, and how resources are managed in the system. With regards to the processes through which primary care is delivered, coordination of care and integration are described.

When it comes to "outcomes" of primary care, the opinion examines relevance, equity, quality and financial sustainability. The need for using professional, contextual and policy evidence, when describing quality of care is emphasized.

All these dimensions are translated into indicators: presenting on the one hand, a set of comparative key-indicators, and on the other hand, descriptive additional indicators.

The EXPH proposes examples of comparative key-indicators related to the 10 domains of primary care that are identified. The procedural steps that are required for a performance assessment system are explored including: multi-dimensionality, shared design, evidence-based, benchmarking of results, timeliness and transparent disclosure.

As a reality check, recent experiences from European countries, as documented by the EU Expert Group on Health Systems Performance Assessment, are considered.

Actual problems and bottle necks in performance assessment in primary care are debated in the discussion, paying special attention to the importance of context when outcomes are reported. Finally, the report formulates recommendations for further development of the framework in the European Union.

Keywords: EXPH, Expert Panel on effective ways of investing in Health, scientific opinion, primary (health care) care, performance assessment

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BACKGROUND

The Expert Group on Health Systems Performance Assessment was established in November 2014, at request from the Council Working Party on Public Health at Senior Level. Among the main goals of the Expert Group there is the identification of tools and methodologies to support policy maker in assessing the performance of health systems.

The Expert Group decided to focus each year of activity on a specific priority area: in 2015 it was the assessment of quality care (see report in attachment), and in 2016 the assessment of the performance of integrated care (report under finalisation).

The priority area for the year 2017 is the assessment of the performance of primary care. The final goal, according to the group's terms of reference, is to identify tools and methodologies to support policy makers in the assessment and improvement of the performance of primary care services.

Practically, the collection and analysis of tools and methodologies is done by a subgroup of experts appointed by Member States. The sub-group's findings will be collected in a report that will be published at the beginning of 2018. This report will be presented and discussed in the Council Working Party on Public Health at Senior Level and likely presented to the Ministers of Health at their EU meeting.

TERMS OF REFERENCE

The Expert Panel on effective ways of investing in health may provide useful inputs to contribute to the debate and it was requested to provide its views on:

a) Dimensions and domains to be taken into consideration in assessing the performance of primary care. The Expert Panel should identify both classical dimensions of HSPA that can be applied to the assessment of primary care (effectiveness, access, etc.) and tailored domains that are specific to primary care.

b) Specific indicators to be collected and analysed to give a better understanding of the performance of primary care. The Expert Panel should distinguish whether the indicators are already available and used regularly, or if they are still in their piloting phase. The Panel will present indicators that are comparable across countries, but also indicators that are only collected according to specific national or subnational methodologies, but whose development is worth exploring

c) How the analysed indicators are fitted for policy making: do they allow the identification of specific levers and policy actions to respond to the highlighted issues?

d) Advice for an EU agenda on performance assessment of primary care: goals, opportunities, activities, and possible deliverables.

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1. Role and goals of primary care

Primary care represents the entry level and cornerstone of many health systems and it is at the core of providing accessible person-centred, appropriate and equitable care from a population-based perspective. It constitutes a crucial point of contact between people and the health system, as it responds to a wide range of health needs both preventive and curative. Indeed, it aims to include disease prevention at an early stage, health promotion across the population, and comprehensive acute and chronic care involving rehabilitative and palliative approaches. Primary care covers the complete life-cycle and includes Long Term Care services.

Primary care has proven to play a fundamental role in improving not only population health but also population well-being, since it covers both medical health needs and the broader contextual or social determinants of health such as social conditions, employment and environment (Starfield, 2012). As such, primary care is an effective tool to reduce inequities in societies (De Maeseneer et al., 2007).

To pursue its goals, primary care should guarantee the provision of services that are: 1) universally accessible, 2) integrated, 3) person-centred, 4) comprehensive and community oriented, 5) provided by a team of professionals accountable for addressing a large majority of personal health needs. These services should be delivered in a 6) sustained partnership with patients and informal caregivers, in the context of family and community, and play a central role in the overall 7) coordination and 8) continuity of people's care" (EXPH, 2014).

Health systems acknowledging how primary care plays a crucial role in delivering outcomes for the reference community, invest and support health professionals working in this setting of care. With regards to the primary care workforce, the Expert Panel lists, among others, the following health professionals that should work in multidisciplinary teams: dentists, dieticians, general practitioners/family physicians[1], nurses, midwives, occupational therapists, optometrists, pharmacists, physiotherapists, psychologists and social workers.
Moreover, primary care is in charge of the person along all his life, and should operate in synergy with every other care setting involved along the delivering process, from birth until the end of life. Indeed Primary care should systematically collaborate with social services,

[1] In this report, we will use 'general practitioners' and 'family physicians' interchangeably. In some countries, 'general practitioners' just have a MD-degree, but in this document, both terms indicate practitioners with a specific post-graduate training in family medicine and primary care.

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hospital settings when necessary, and ,in the last part of a person's life, with long term care settings and, hospices.

Due to the central role played by the health professional workforce in influencing primary care results, two other dimensions: 9) Primary Care Organization and 10) Human Resources were added to the eight key dimensions arising from the EXPH definition of primary care. Table 1 displays in greater detail the ten primary care dimensions.

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Table 1. Domains and dimensions in Primary Care (PC)	
Domains	**Primary care dimensions**
1) Universal and accessible	• Population covered by PC services • Affordability of PC services • Geographic access and availability of PC services • Accommodation of accessibility; acceptability of PC services • First-contact accessibility and availability; accommodation • Timeliness and responsiveness of PC services (e.g. PC consultations)
2) Integrated	• Integration of public health services and approach in PC: e.g. community-oriented primary care • Integration of pharmaceutical care in PC • Integration of mental health in PC • Integration between PC and social care
3) Person-centred	• Person-centred care, shared decision making, focusing on the "life goals" of the patient • Patient-provider respect and trust; cultural sensitivity; family-centred care • Consider patients/people as key partners in the process of care • Maintain a holistic eco-bio-psycho-social view of individual care
4) Comprehensive and community oriented	• Comprehensiveness of services provided (e.g. health promotion, disease prevention, acute care, reproductive, mother and child health care, childhood illness, Infectious illness, chronic care (NCDs…), mental health, palliative care) • PC takes into account population and community characteristics • PC is integral part of the local community
5) Provided by a team of professionals for addressing a larger majority of personal health needs (quality)	• Quality of diagnosis and treatment in PC for acute and chronic conditions • Quality of chronic care, maternal and child health care • Composition of the inter-professional team • Health promotion; primary and secondary prevention • Patient safety • Advocacy
6) Sustained partnership with patients and informal caregivers	• Policies for coordination between professionals and informal caregivers • Policies to support informal caregivers • Patient engagement over time • Participation of informal care givers/citizens in the development of PC services • Participatory power of patients/informal care givers/citizens
7) Coordination of people's care	• Coordination between primary and secondary care: appropriateness of referrals, gatekeeping, integrated patient records, protocols for patients with chronic conditions • Coordination between primary and social care • Policies for respite care
8) Continuity of people's care	• Continuity of care (longitudinal, informational and relational) • The provision of care throughout the life cycle • Care that continues uninterrupted until resolution of an episode

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	of disease • Role of PC in continuity and interaction with Emergency Departments
9) Primary Care Organization	• Accountability: a formal link between a group of providers and a defined population (list-system, geographical area, …) • Primary care payment and remuneration system (e.g. capitation, FFS, P4P); • The presence and strength of market forces in PC; • Office and facility infrastructure (e.g. information systems and medical technology, Point-Of-Care testing); • Organizational components of coordination and integration: structure and dynamics (job descriptions and team functioning, management and practice governance, clinical information management, organizational adaptivity and culture (traditional command-and-control versus Complex Adaptive Systems Approach), team-based organisation; • Volume and duration of PC provider consultations, home visits, and telephone consultations; • Organisational aspects of referrals to medical specialists; referrals to specialised trajectories (e.g. in mental health, occupational health,..) • Quality of management • Primary care budget in relation to total health care budget
10) Human Resources	• Needs, supply, profile and planning of PC workforce; • Status and responsibilities of PC disciplines; role of academic institutions and professional associations; • Training and skill mix; • Human resources management, including provider well-being, competence and motivation; • Role of nurses (task delegation and substitution, competency sharing); • Role of community pharmacists in PHC and pharmaceutical care; • Role and function of managers • Income of PC workforce; • Development of undergraduate and post-graduate specific (interprofessional) training

Based on Hogg et al., 2008; Kringos et al., 2010; Bitton, 2017.

What emerges from the definition of primary care is its intrinsic complexity, which arises from multiple dimensions, stakeholders and governance levels. To manage this complexity, these dimensions should be assessed in a formal framework that supports policy-makers and other stakeholders in addressing each of them from a systemic perspective.

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Even though several frameworks of performance assessment in health care have been developed (see among others Arah e al., 2006 and Murray and Frenk, 2000), the EXPH proposes to use as a reference framework the one outlined by Donabedian. which allows multiple dimensions to be addressed when assessing performance (1988). The framework identifies the causal relationships between *Structure*, *Process* and *Outcomes* of care.

According to Donabedian (1988), structures include strategic tangible and intangible resources. *Structure* in primary care consists of three interrelated components: society, the individual, and the health-care system. Society presents a so-called epidemiological community, characterised in terms of population health status, morbidity, socioeconomic status, employment, education, housing, and other variables; a cultural community (referring to an anthropological frame of reference); and a support community, with formal, informal, and professional networks. At the level of the individual, bio-psychological status, knowledge (health literacy), skills (coping and resilience, self-care), and attitudes (health perceptions and health beliefs) affect clinical care. For the health-care system, organisational aspects (accessibility, continuity, sustainability) and characteristics of health-care providers (competence, empathy, orientation toward cooperation) affect the performance of primary care (De Maeseneer, 2003).

Processes consider both patients' (seeking care) and health professionals' activities (making a diagnosis and treating patients). Process quality largely depends on adequate communication, medical decision-making, and management of care. In primary care, process quality is also related to integration of care (see second domain in table 1). Integrated care covers both vertical integration between governance levels (e.g. government, authorities and professionals) and coordination of similar units or setting of care at the horizontal level (Kodner, 2009; Nuti et al., 2016). Structure and process are inextricably linked in a continuous interaction and shape the care outcomes.

Outcome is intended as the health status of patients and populations. Outcome is determined by how patients and providers perceive health and disease, and this perception has shifted from disease-orientation to goal-orientation, especially in the context of multimorbidity (Mold et al., 1991; De Maeseneer and Boeckxstaens, 2011). This consideration leads to a range of relevant outcome indicators that can be measured, from signs and symptoms, physical functions (e.g. blood pressure, blood-glucose, peak-flow), quality of life (that is increasingly linked to functional status), happiness, strengths of individuals and communities, social equity, patients' satisfaction, and experience.

Building on what was conceptualized by Donabedian, a further step is to relate outcomes' achievement with the overall cost of care; a relationship also known as "value for money"

(Porter, 2010; Gray and El Turabi, 2012; Gray and Porter, 2009). Donabedian's general assessment framework, which is applicable to every health system and setting, allows us to link the primary care setting with the structures, processes and outcomes of the other components of the health system (e.g. hospitals) and, thus, to assess primary care's overall contribution in terms of value for money. Figure 1 describes the Donabedian-triangle framework for primary care, as it was presented in 2003. In the meantime, new insights have to be added, as we described in the text. Importantly, all the determinants in Figure 1, are continuously interacting, leading to 'circular processes, rather than to linear relationships.

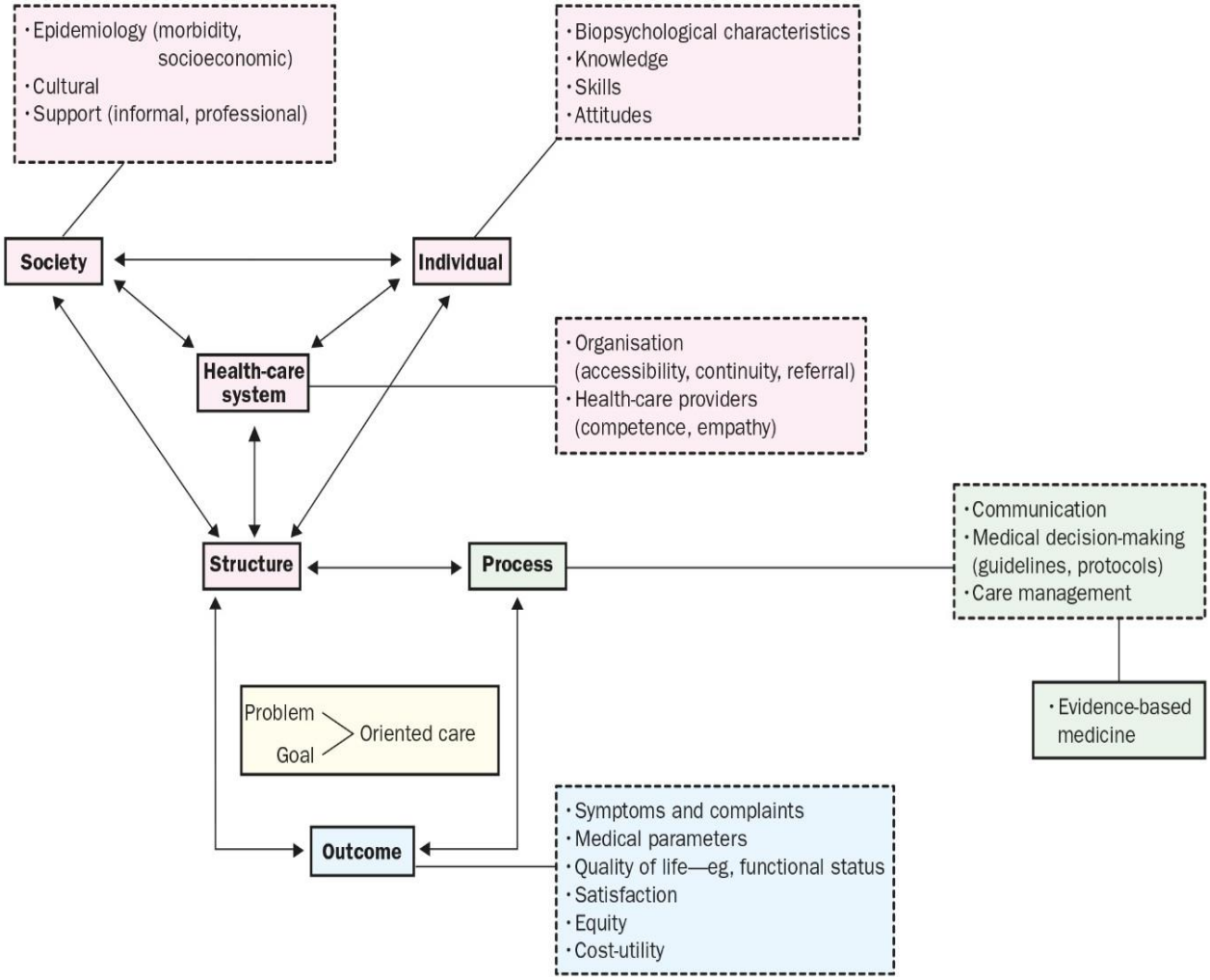

Figure 1: Theoretical framework of structure, process, and outcome (De Maeseneer et al., 2003; courtesy The Lancet)

According to the framework, the core elements of primary care can be classified as follows:

Table 2. Core elements in primary care	
Universality	Structure
Accessibility	Structure
Organisation of professionals and workforce	Structure
Integration	Process
Sustained partnership	Process
Coordination	Process
Continuity of care	Process
Person-centeredness	Outcome

In the next sections, primary care's structures, processes and outcomes are explored in greater detail. Then, two sections will respectively analyse the implementation of the measurement system of primary care and the procedural steps that relate to its implementation.

2. Defining a performance assessment system for primary care: *how is primary care structured?*

To understand how primary care operates, policy-makers need tools that allow them to assess how primary care ultimately contributes to their health system and satisfies the dimensions of relevance, accessibility, integration, person-centeredness, affordability, equity, sustainability, workload and workforce satisfaction.

When addressing the structure characterizing primary care, is it due to mention that recently, in some countries, new forms of "market oriented" contracting are emerging (see …). Even though the objective of this document is not oriented at evaluating these new contracting forms, it may provide some interesting insights on this topic. As a first step, the structure of the primary care setting can be assessed by a set of measures related to a) how access to primary care services occurs (EXPH, 2016), b) how providers of primary care are organized and how resources are managed in the system.

Access to primary care is a multifaceted concept. One key dimension of access is the proportion of the population covered by primary care services. Most (but not all) European countries have universal coverage (or close-to universal coverage), and this includes primary care. The type and amount of services covered within primary care is another dimension of access. However, being entitled to primary care does not necessarily imply that patients will access primary care, or to the same extent.

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Access to primary care depends on physical proximity, timeliness, promptness and financial affordability. Therefore, even if every person in the country is formally assigned to a family physician/general practitioner, access will be limited if there are high barriers, such as high out-of-pocket payments, cultural barriers, long distances and long waiting times to book an appointment. For example, some rural patients may live in an unfavourable geographic location and have to travel long distances to reach the general practice. Frail patients may struggle to reach practices located even at short distance. If there is an excess of demand for the primary care services, waiting times will be long and discourage people from seeking primary care assistance. High demand and workload may compromise the ability of general practitioners to respond to citizens' health needs in a prompt and timely manner.

High levels of accessibility involve the design of a comprehensive set of services, which are financially and culturally affordable, easily available and geographically accessible, and responsive to users' multiple needs (and goals) and time-saving. Higher levels of accessibility may, however, be expensive. Policymakers need to assess the trade-off between better access in primary care against alternative interventions in other parts of the health and welfare system and other public services, or against the feasibility of raising additional resources through taxation or contributions.

Access to primary care can also be conditional to access secondary care when the latter is contingent on referral. In such instances, primary care has a 'gatekeeping' role, controlling and orientating the patient's entry into the secondary care. The idea is that primary care can prevent unnecessary use of secondary care and reduce avoidable costs, and take responsibility not only for providing care but also for coordinating specialised care through referral. Gatekeeping can, therefore, be seen as an organisational mechanism to promote appropriate and coordinated care (Saltman et al., 2006). However, if access to secondary care is too strict, patients may experience unduly delay in accessing specialist services. In this case, some patients who should receive treatment may not receive it, and patients may go straight to use emergency departments to access hospital specialists. A study in 11 European countries (Reibling et al., 2013) concluded that gatekeeping lowers utilisation of specialist care and reduces inequity in access by people from diverse educational backgrounds.

In the opinion on Primary Care (EXPH,2014), the Expert Panel makes a distinction between different types of referral. **Referral** as a '**linear**' process is concerned with people with new (non-life threatening) health problems that seek care. Usually, only around 10 % of these problems will require (linear) referral to other providers. For people with chronic conditions, especially those with multiple conditions, a '**spiral**' model of referral may be more appropriate,

where patients are referred within primary care and between different levels of the system on an ongoing basis. This requires a pro-active and reputation-based collaboration across primary and secondary care that may be built through both systematic benchmarking and sharing responsibilities on outcomes of care (Valentijn et al., 2016).

Box 1: Improving the appropriateness of GP referrals in Italy

To respond to rising demand for referrals and diagnostic procedures, a number of Health Authorities, known as Local Health Units, in Italy have responded by implementing formalised waiting-time prioritisation tools, giving rise to what are known as Homogeneous Waiting Groups (HWGs). This approach identifies five clinical groups: A (maximum waiting time of 3 days), B (not more than 10 days), C (not more than 30 days), E (without a maximum wait), P (planned follow-up examination).

An effective management of waiting lists for outpatient services calls for a prioritisation process in which GPs and specialists co-operate and agree upon the definition of clinical criteria for timely referrals. Evidence from the pilot Local Health Unit suggests that the degree of agreement between GPs and specialists regarding the priority groups assigned has improved. Continuing collaboration between GPs and specialists, and the implementation of Information Technology tools in primary-secondary care setting may, improve the prioritisation of patients waiting to see a specialist or to receive a diagnostic test.

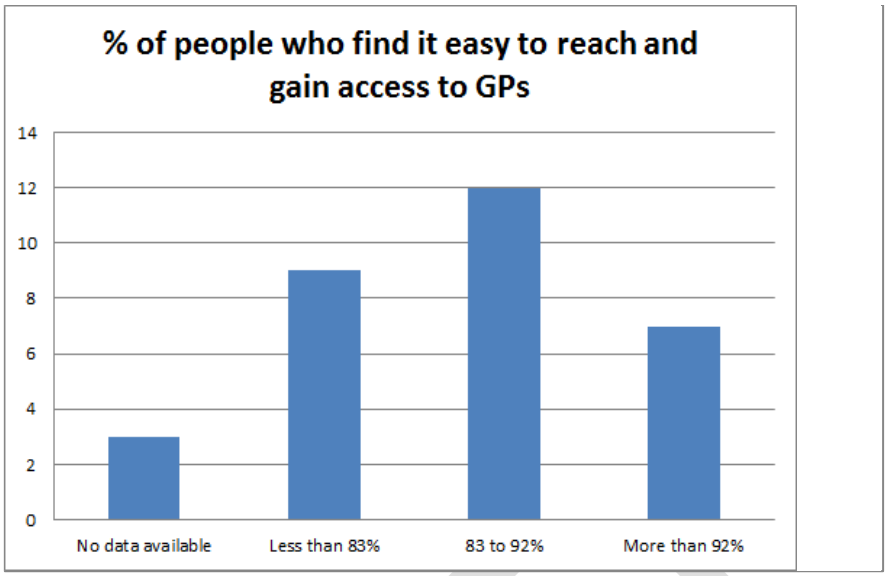
Source: Mariotti et al. (2014)

According to data from two studies - PHAMEU[2] and QUALICOPC[3] (Schäfer et al., 2011) -, in some European Countries access to primary care is impaired by both financial and non-financial barriers.

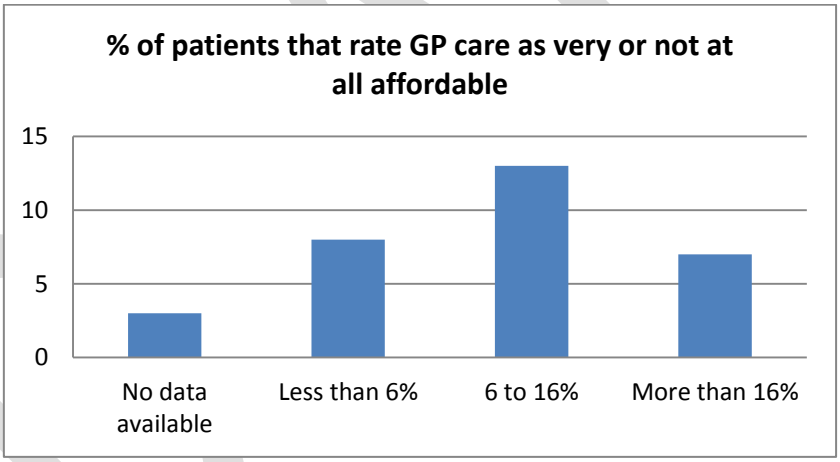
The following figure suggests that in 7% of European countries primary care services are not affordable for more than 16% of the population, and that in 13% of the countries they are not affordable for 6-16% of the population. In two countries, more than 50% of the population delayed a primary care visit for financial reasons.

[2] PHAMEU was a health system oriented data-collection with information provided per country by people involved in health policy.

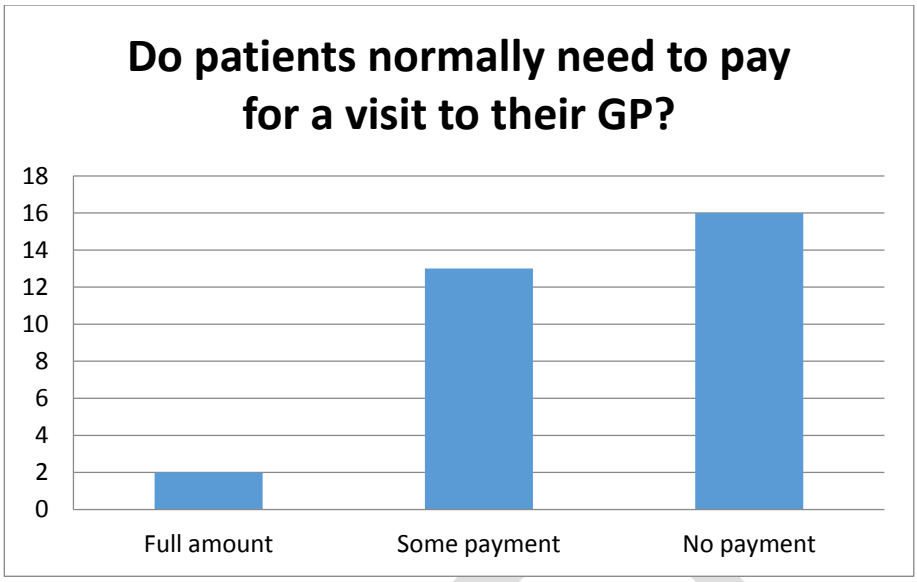
[3] QUALICOPC sampled GP-practices in different countries and collected data at GP-level and patient-level (10 patients per practice).



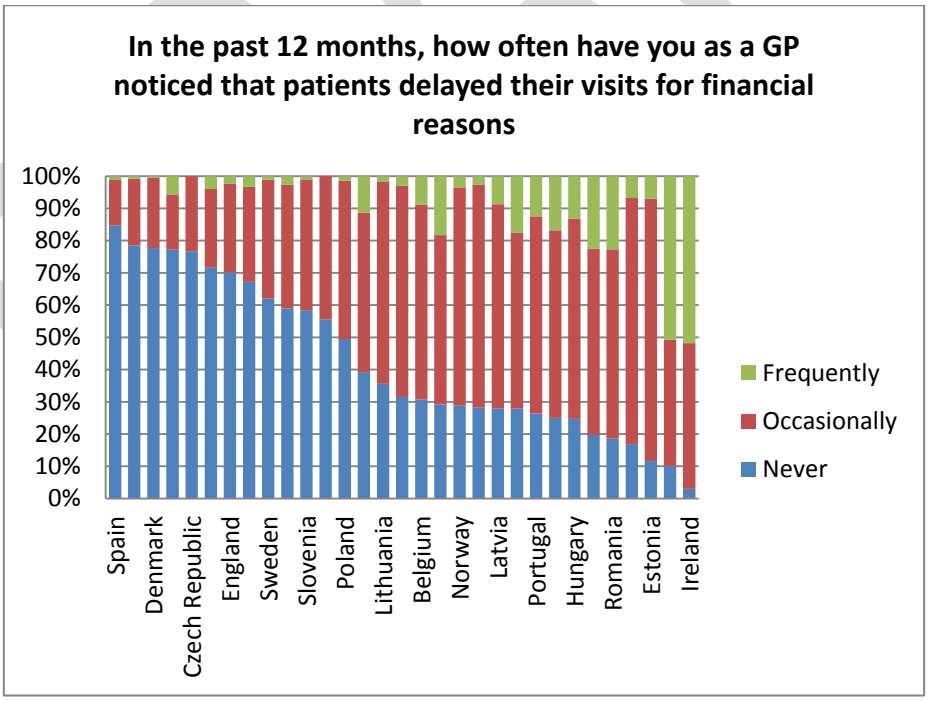
No data available in Iceland, Norway and Switzerland. Less than 82,7% in Bulgaria, Denmark, Greece, Latvia, Lithuania, Portugal, Romania, Sweden and Turkey. 82,7 to 92,0% in the Czech Republic, Estonia, Finland, Hungary, Ireland, Italy, Luxembourg, The Netherlands, Poland, Slovakia, Slovenia and The United Kingdom. (Kringos et al., 2010)



No data available in Iceland, Norway and Slovenia. Less than 6% in the Czech Republic, Denmark, Hungary, Latvia, Luxembourg, Sweden, Switzerland and The United Kingdom. 6 to 16% in Austria, Belgium, Bulgaria, Estonia, France, Germany, Italy, Lithuania, Malta, The Netherlands, Poland, Slovakia and Spain. More than 16% in Cyprus, Finland, Greece, Ireland, Portugal, Romania and Switzerland. (Kringos et al., 2010)

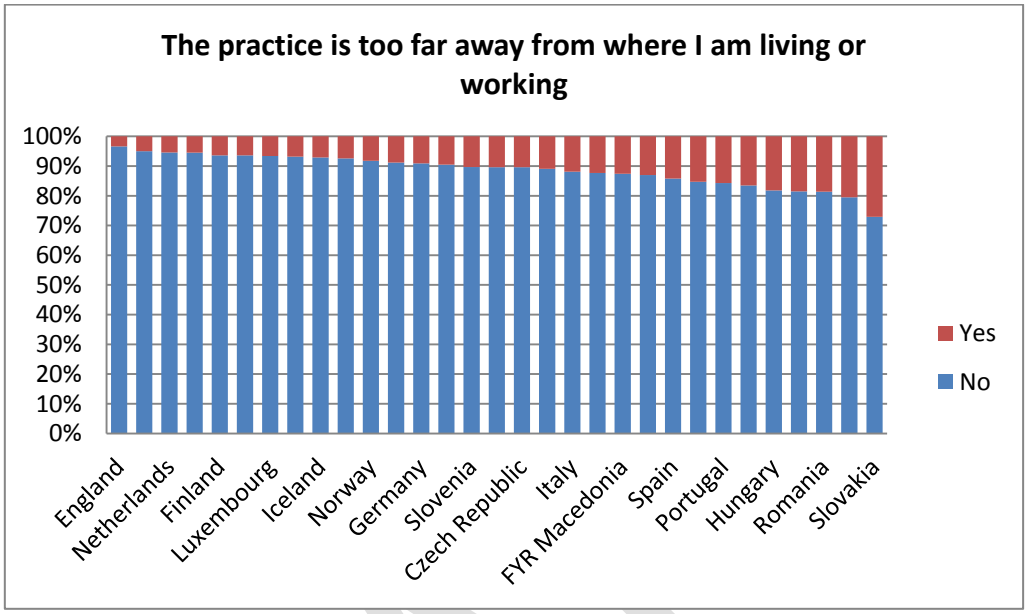


Payment of the full amount in France and Ireland. Some payment in Belgium, Bulgaria, Czech Republic, Finland, Germany, Latvia, Luxembourg, Norway, Portugal, Sweden and Switzerland. No payment in Austria, Cyprus, Denmark, Estonia, Greece, Hungary, Italy, Lithuania, The Netherlands, Poland, Romania, Slovakia, Spain, Turkey and The United Kingdom.
(Kringos et al., 2010)



(Schäfer et al., 2011)

In Ireland and Estonia, more than 50 % of the GPs noticed that patients delayed frequently their visits for financial reasons, in Spain over 80 % of the GPs noticed that patients never did so (Schäfer et al., 2011).



The next two figures describe from the patients' perspective two important features of access. In all but three of the listed countries 10 to 20% of the patients report that they had to postpone a visit to the GP in the last 12 months (Schäfer et al., 2011).

For about a third of the countries, more than 10% of the patients waited more than a week to visit the practice. In most of the countries, more than 20% of the patients waited for more than two days; and in at least a third of the available countries, more than 50% of the patients waited more than two days (Schäfer et al., 2011).

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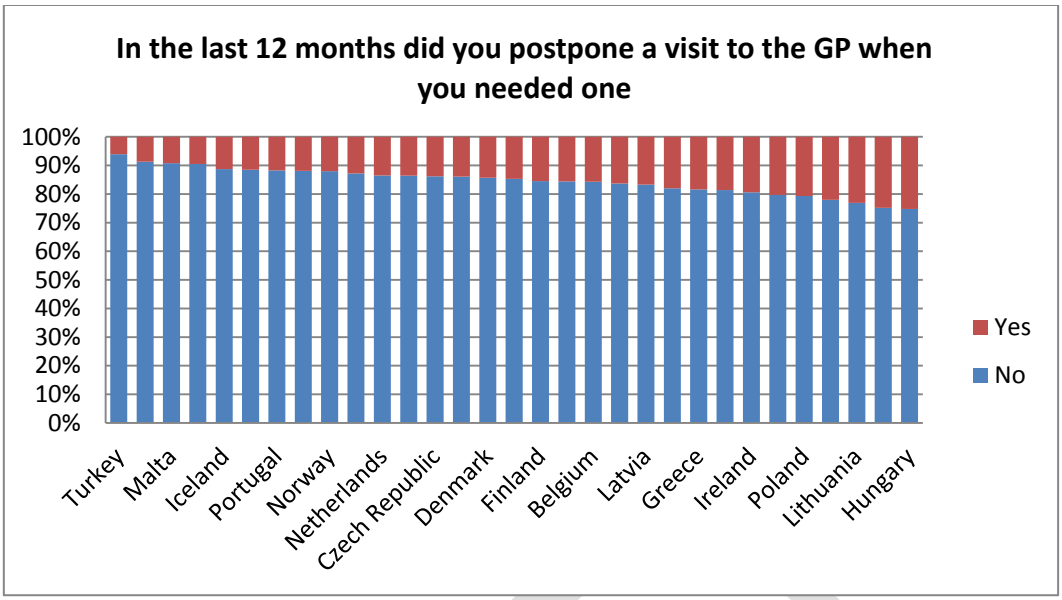
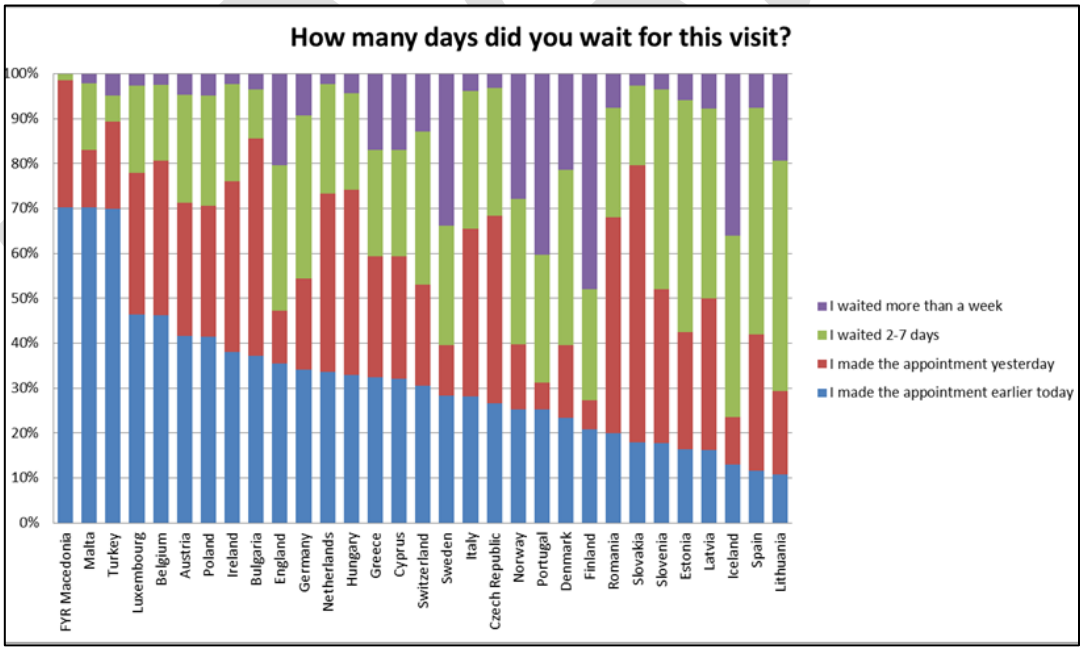
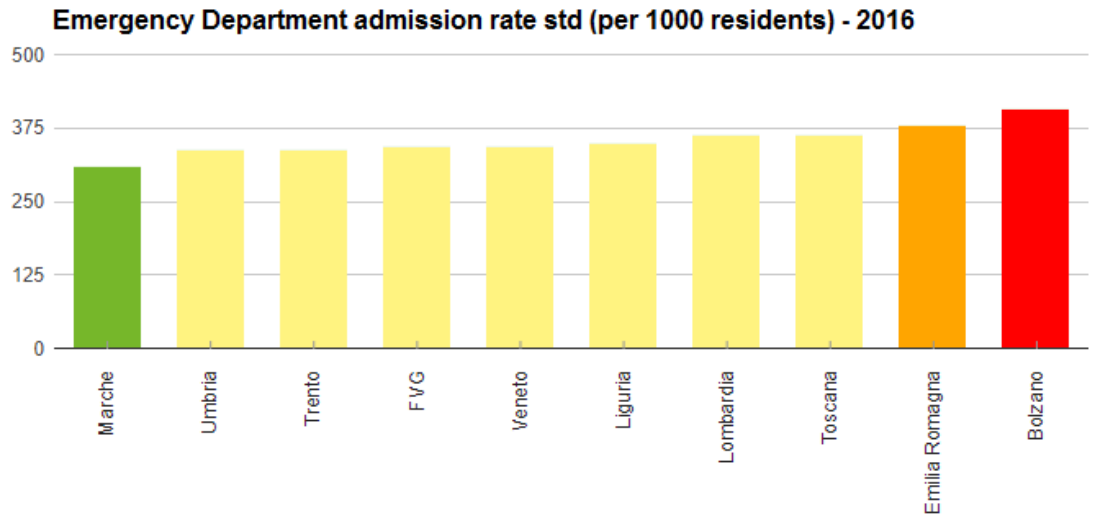


(Schäfer et al., 2011)



(Schäfer et al., 2011)

Access could also be assessed with an indirect approach, i.e., measuring the standardized Emergency Department access rate per inhabitants. As an example, the following figure shows these data for different geographic areas among 13 Italian Regions.



Indicator calculated for a network of Italian Regions by the MeS-Lab (Sant'Anna School of Avanced Studies) – year 2016. These data are public available at the link http://performance.sssup.it/netval/

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A high rate of Emergency Department (ED) admission could be an indicator of poor access to primary care if patients look for care in other settings when facing barriers to primary care. But this leads to higher care costs and decreased continuity of care and people-centeredness, which could be provided by primary care instead. In turn, overcrowding of EDs may lead to dysfunctional behaviour introducing congestion and reducing the quality of care for patients with urgent and acute needs.

A second relevant aspect relates to how providers of primary care and the primary care system are organised. The importance of assessing **provider organisation** is reflected in possible failures which emerge from a lack of organization in primary care or in the system as a whole: an inefficient organisation may impact on patients' health status and the ability of general practitioners to respond to patients' needs. Different health systems are characterized by different organisational structures and dynamics, which are the result of differences in health policy, organisational culture, multidisciplinary collaboration and practice, team functioning and jobs description.

The health workforce is at the core of the provision of primary care services, and it is, therefore, particularly important to understand how the workforce is organised, whether general practitioners work in single-handed practices or within a team with other healthcare professionals (e.g. nurses).

Provider payment and remuneration system (capitation, pay-for-performance, fee-for-service, etc.) affects the overall resources available to primary care and the incentives to provide appropriate care, which will in turn affect patient health and satisfaction. For example, a flat capitation scheme could induce primary care providers to underprovide some treatments, while a fee-for-service scheme could result in overprovision, for example, by delivering more services than necessary, thereby contributing to medicalisation.

The *size and organisation* of a primary care practice may affect their ability to deliver appropriate and quality care in an efficient manner. The average and maximum number of patients assigned to a single provider or, eventually to a group of collaborators, can differ significantly across countries.

A varied mix of tangible and intangible assets (professional skills and personal expertise but also office and facility infrastructures and available technologies) for primary care is likely to affect the quality level of the services delivered. Volume of consultations initiated by the

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patients (first access to care for a new 'episode') is a possible measure of the capacity of primary care to meet the needs of the patients. However, total volume of consultations may be less informative, especially if primary care is paid by fee-for-service schemes.

Also, the number of referrals to medical specialists may assume either a positive or a negative connotation, since it could respectively mean that general practitioners have the promptness to detect their patients' health needs and properly address them or, on the other hand, it could betray a tendency by general practitioners to delegate, even improperly, some clinical cases to specialists.

Analogous considerations can be extended to the differences in human resource management within different health systems across member countries.

The **organization of human resources** in Primary Care includes:

- *Supply, profile and planning of the primary care workforce*: Can the workforce cover the health needs of the population? Does the supply of primary care services satisfy the demand for primary care services? Is the professional profile of physicians, nurses and other care providers adequate for this setting of care? Is there a plan according to which human resources are managed in order to continuously cover and sustain the needs of citizens and the potential patients?
- *Status and responsibilities of primary care disciplines*: Are common perceptions about the status of general practitioners in conflict with the demand for primary care services? For example, in the US and also in European countries like France and Greece, there is a severe undersupply of primary care services because of the widespread belief that being a family physician is less prestigious than being a specialist. What kind of impact does professional autonomy and societal accountability of family physicians have on people's health conditions? A blatant example is the case of defensive medicine (a search for 'certainty' by multiplying investigations or over-prescribing), especially present in Italy (Nuti and Vainieri, 2012).
- *Role of Professional Associations*: Is greater continuity of care (out-of-hours), timeliness and promptness guaranteed?
- *Role of nurses and pharmacists, and mid-level care workers* (subsidiarity and task-shifting): do differences in the roles played by nurses and pharmacists have an effect on efficiency on the one hand and patients' satisfaction on the other hand? Does a higher degree of responsibility for nurses and pharmacists in the setting of care impact patients' health conditions? Does a greater involvement of nurses and pharmacists in

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the setting of care change the perception of patients regarding the quality and effectiveness of primary care?

- *Pharmaceutical regulation*: Is pharmaceutical regulation linked with patients' health? Is a stricter attitude towards pharmaceutical regulation connected to people's healing?
- *Provider well-being, competence and motivation, and income of primary care workforce*: Is it possible to identify any kind of correlation between provider satisfaction, competence and motivation and patients' satisfaction with the health care services received? Does the same reasoning hold when it comes to the income of primary care workforce? In other words, is there a correlation between the level of income received by primary care workforce and patients' satisfaction and health status? Is there an intrinsic association between primary care providers' financial incentives, their personal and professional motivation and their capability of addressing patients' health needs?
- *Training and skill mix*: Is it possible to evidence any sort of interdependence between care providers' training and patients' satisfaction with received care? Likewise, does the same hold for the type of skills mix in place?

A synthetic representation of the features characterizing the structure of primary care with regards to organisation and human resources is provided in table 1, points 9 and 10, on page 10.

The graphs that follow, show some selected data related to how primary care human resources are organized based on the PHAMEU-study conducted on primary care. These represent some preliminary measures that policy-makers should explore when analysing how primary care in organized.

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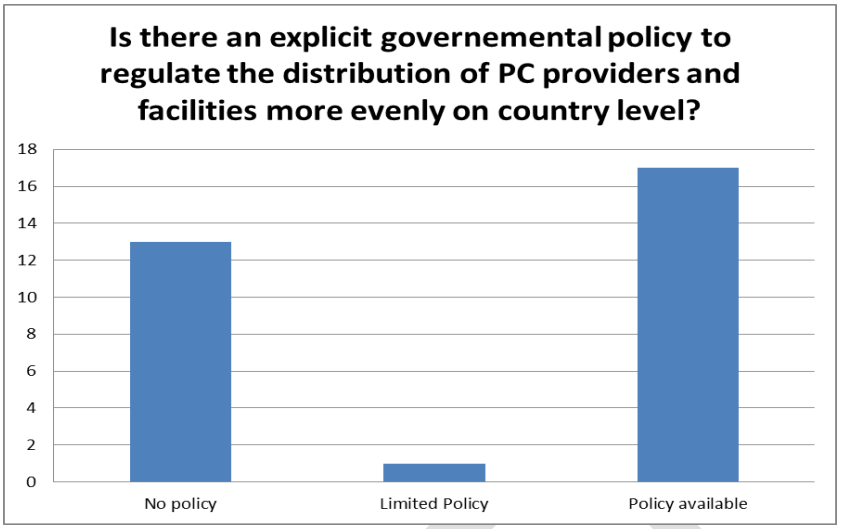
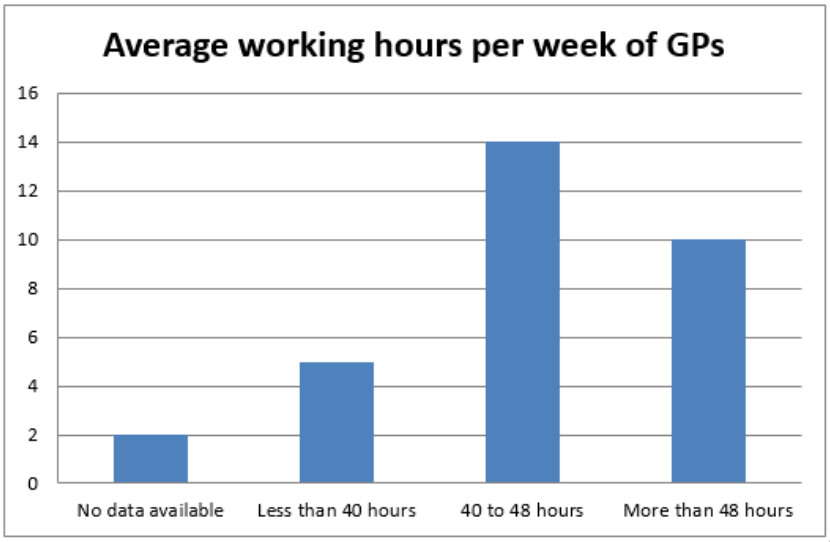
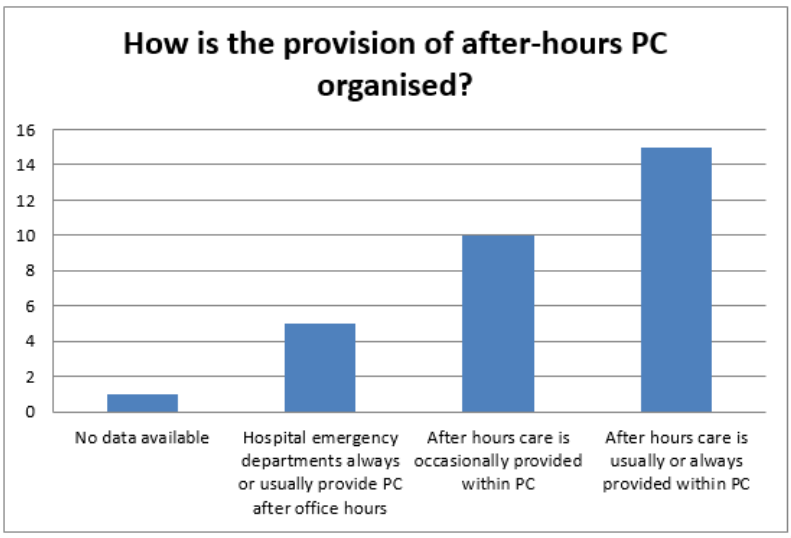


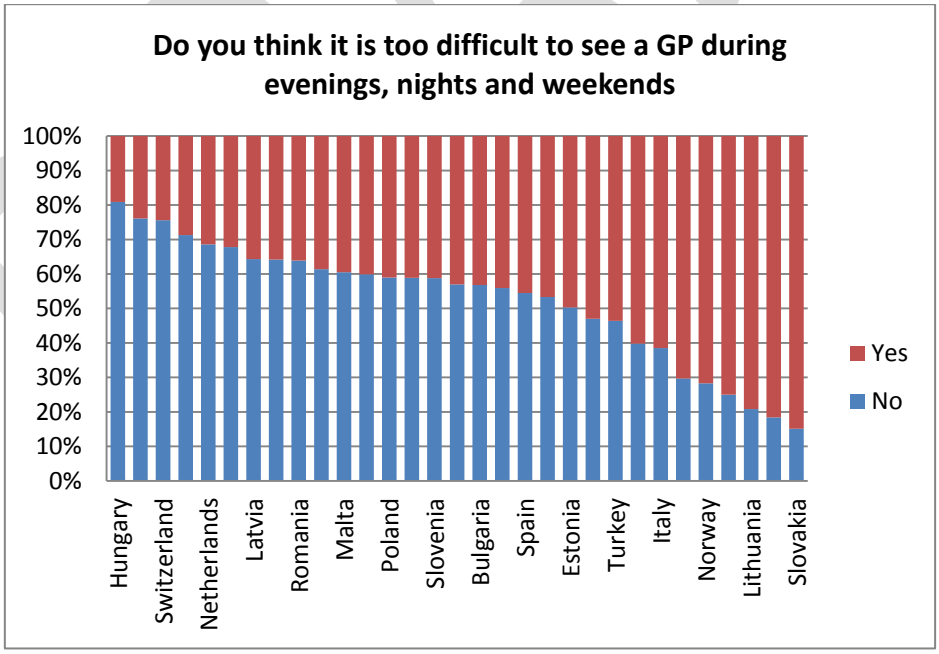
No policy available in: Czech Republic, Denmark, Finland, Greece, Hungary, Iceland, Lithuania, Luxembourg, Norway, Poland, Slovakia, Switzerland and Turkey. Limited policy in Belgium and policy available in: Austria, Bulgaria, Cyprus, Estonia, France, Germany, Ireland, Latvia, Malta, The Netherlands, Portugal, Romania, Slovenia, Sweden, Spain and the United Kingdom (Source: Kringos et al., 2010)



No data available in: Cyprus and Sweden. Less than 40 hours in: Bulgaria, Finland, Hungary, Italy and Lithuania. 40 to 48 hours in: Czech Republic, Denmark, Estonia, Iceland, Ireland, Latvia, Malta, The Netherlands, Portugal, Slovakia, Slovenia, Spain, Switzerland, and the United Kingdom. More than 48 hours in Austria, Belgium, France, Germany, Greece, Luxembourg, Norway, Poland, Romania and Turkey. (Source: Kringos et al., 2010)



No data available in Malta. Hospital emergency departments usually or always provide PC after office hours: Cyprus, Estonia, Latvia, Lithuania and Luxembourg. After hours care is occasionally provided within PC. Austria, Belgium, Denmark, France, Germany, Iceland, Italy, Romania, Switzerland and Turkey. After hours care is usually or always provided within PC in Czech Republic, Finland, Greece, Hungary, Ireland, The Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden and The United Kingdom.
(Source: Kringos et al., 2010)



Source: Schäfer et al., 2011

3. Defining a performance assessment system for primary care: *through which processes is primary care delivered?*

Having presented the structure of primary care, we now discuss how to assess the processes through which primary care services are delivered. Primary care is delivered by a multiplicity of providers operating in different types of networks (Stukel et al., 2013). As such, their activities require consistency and coordination with those of other providers, settings and governance levels.

Integration of care is a broad concept with a number of aspects. This includes the ability of a practice to coordinate and synthesize care received from external sources, such as specialists and other providers from non-health sectors (Safran, 2003; Hogg et al., 2008). Integration between primary and secondary care (also interpretable as appropriateness of referrals) is also related to the service supply chain of care delivery. Synergies between primary and secondary care professionals can both improve outcomes (e.g., reducing hospitalizations) and reduce waste of resources (e.g. reducing inappropriate medical prescription).

Integration of primary care is also required with regards to social care to ensure an acceptable quality of life for a wide range of people. Dysfunctions in one of the two settings may have serious consequences for the other. Alignment of objectives between primary and social care is pivotal for the development of consistent processes. This is especially the case when we care for people with multi-morbidity and complex conditions, where functional status and living conditions become an important frame of reference in the patients' goal-setting process, and when we are confronted with increasing social inequities in health and the need to address social determinants and other upstream social causes of ill-health.

Other key elements, in which integration plays a fundamental role, include the continuity of care in all its forms (longitudinal, informational and relational continuity) and the responsiveness to population and community specificities. In this context, coordination should entail intervening not only with respect to providers, but also involving patients through effective communication (Donabedian, 1988).

Vertical integration focuses on coordination between governance levels. As a result of new public management reforms (Hood, 1991), public health-care systems are characterized by a highly fragmented governance structure (Christensen and Laegreid, 2007). This often results in tension between different policies and organisations, duplication and contradiction of action programmes, and fragmentation of service provision to patients (e.g., health authorities, regions, etc.) (Pollit, 2003; Head and Alford, 2015). To overcome these limits, health care providers and governance levels are called to align their goals and expectations (Christensen

and Laegreid, 2007), and especially greater integration of Primary Care and Public Health is required when it comes to "person- and people-centered" care. Positive experiences with the model of "Community Oriented Primary Care", blending both approaches, could be inspirational (Rhyne et al., 1998).

Supporting coordination (both horizontal and vertical) can be pursued through a number of mechanisms that range from care coordination of case management to shared care plans and both financial and non-financial incentives. In recent years, ICT health information systems for sharing information between providers have also assumed a key role in facilitating this process, taking into account privacy-issues.

In conclusion, when focusing on patient outcomes, care needs to be assessed by adopting a pathway perspective and a "spiral model of referral" (see p. 14) in which the multiple care providers (both from primary and secondary care) are working together to deliver integrated care – see for example, the diabetic foot case (Nuti et al., 2016). To achieve this, all professionals will need to be engaged in a process of cultural change in which their activities are less constrained by organisational boundaries (when they are operating in organisations) and they are more oriented toward the creation of value for patients in a systemic and population-based perspective (Nuti et al., 2016).

4. Defining a performance assessment system for primary care: what are the outcomes of primary care?

The common goals of health systems, in particular public ones, are relevance, equity, quality of care and financial sustainability. Primary care can play a critical role in achieving an equitable distribution of high quality services across societies in a financially sustainable environment.

Relevance is about care "that matters", that contributes to the achievement of the life-goals of the person. This means that the care delivered addresses problems agreed upon by the patient and the provider, in the context of a shared-decision making process. A recognised challenge here is the "making of diseases" (Moynihan, 2003) and the medicalisation of daily life, leading to impaired "relevance" of care.

Primary care can also impact on **equity**, in all its meanings and dimensions such as health inequities in access based on need, and fairness of financing. Primary care can improve

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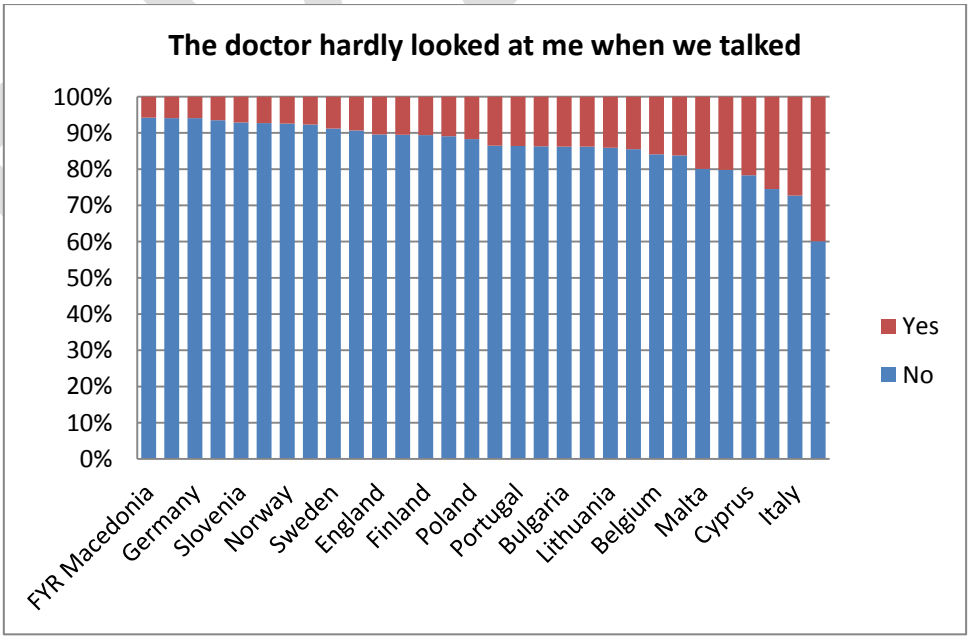
horizontal (equal access for equal need) and vertical equity (more services for higher levels of need), and intergenerational equity (young and old people should equally benefit from primary care services). The concept of equity intended as *fair access* should not be disembodied from the concept of equity intended as *fair financing* (Nuti and Vainieri, 2016).

Quality of care is a multifaceted concept. In the context of primary care it includes dimensions such as accurate diagnosis and appropriate treatment for acute and chronic conditions, quality of care for chronic conditions, quality of maternal and child healthcare, effective health promotion and primary and secondary prevention, appropriateness of care (explicable through specialist referrals and prescribing behaviour), quality of person-centred care entailing both shared decision-making and patient engagement, the degree of patient-provider respect, trust and cultural sensitivity, quality of family-centred care and patient safety and advocacy (...).

To this extent, it may be useful to develop patient-related-experience-measures (PREMs) and patient-related-outcome-measures (PROMs) through specific surveys to patients. In this perspective, the centeredness of people is represented by taking into account what matters to them in the healthcare system evaluation. Through these surveys, also issues such as safety and responsiveness can be properly assessed.

The following graph shows an example of a measure related to patients' experiences.



(Schäfer et al., 2011)

Financial sustainability concerns the efficient and effective allocation of resources to support equity and quality of care. Based on their financing system (e.g., Beveridge, Bismarck, private insurance, etc.) countries are called to allocate resources to guarantee a certain level of population health and wellbeing. As such, financial sustainability in health-care should be assessed in a value for money perspective, where the benefits of different interventions are assessed against their opportunity costs. An important first step in doing that is to measure and define benefits and costs, and make transparent the per capita cost of care for a defined population (Berwick et al., 2012).

To achieve these goals within the healthcare system, three types of evidence are required related to primary care: **Professional, Contextual and Policy Evidence**. Clinical decisions to improve quality of patients' care require having good knowledge of the health condition (professional evidence), have to take into account patient-specific aspects of medical care (contextual care), and contrive policy strategies to guarantee equity and appropriate use of resources, including avoiding waste (policy evidence) (EXPH, 2017).

Professional evidence

The role of professional evidence in primary care is hardly debated because of the tension between clinical research and clinical practice (De Maeseneer et al., 2013). Traditional Evidence-based medicine approaches refer to research generated in well-defined settings with specific groups of patients and precisely diagnosed diseases. Primary care instead is usually concerned with patients of varying age, from diverse ethnic and socioeconomic groups, presenting early-stage diseases or undefined illnesses or with varying levels of multimorbidity. Moreover, since clinical research is often driven by commercial interests and many studies are conducted on pharmacological treatments rather than on the effects of clinical and behavioural interventions, most of the research conclusions are given back in a yes/no decision formula, which does not facilitate general practitioners in addressing the health needs of very varied groups of patients. In order to address these issues, there are three proposals in place that are; 1) shifting the focus of research from definitions of treatments to an analysis of symptoms, the quality of interventions, processes and care; 2) adopting a "Goal-oriented approach", that consists of assessing how the interventions based on existing evidence may contribute to the achievement of patient's' goals, and 3) learning from the past, as negative findings may help in identifying erroneous interventions.

Contextual evidence

Contextual evidence helps general practitioners understand the best way to treat a patient with specific characteristics. In principle, it is based on doctor-patient communication, with

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good communication including both instrumental and affective behaviours. It is influenced by both the provider's and patient's character and personality and by the patient's personal history, disease characteristics and family, socio-economic and cultural circumstances. However, contextual evidence also presents some drawbacks. In particular, communication itself is a kind of intervention and, moreover, an innovative one, meaning – it may be unique and vary significantly. This fact implies that trial design often tends to undervalue (because of a too rigorous standardization of qualitative information) or overvalue the new method of ? over the traditional ones. Moreover, the principle of doctor-patient communication often induces general practitioners to fall into a dilemma that consists of identifying the best possible balance between promoting treatment regimens or structured health plans and patient's autonomy. Given such a premise, it becomes necessary to rely on contextual information in order to bridge the gap between efficacy (isolated case) and effectiveness (routine practice). Moreover, the importance of the context requires that, when comparing outcomes and measuring quality, especially in relation to primary care, a careful description of the context is of utmost importance, in order to understand variation (van Weel et al., 2017).

Policy evidence

At national or international level, pursuing individual best quality of care may challenge wealth distribution across population. The best evidence-based choice for an isolated clinical case probably differs from the best evidence-based choice in a population perspective. In a solidaristic perspective, to promote an equitable division of wealth between rich and poor patients, it is necessary that general practitioners also understand how different choices contribute to the stimulation or impediment of best practice for all patients. Therefore, it is extremely important to develop a body of policy evidence and enrich medical practice with more political commitment, by raising general practitioners' awareness about concepts of efficiency, equity, resource rationing and waste management.

5. Defining a performance assessment system for primary care: comparative key-indicators and descriptive additional indicators

Following the definition of primary care and the identification of the core dimensions, a number of indicators can be developed to capture the performance of primary care. The development of these indicators should aim to link stakeholders' actions to performance results, which in

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turn allows the monitoring of the achievement of health system outcomes and the identification of future policy developments and improvements.

There is a wide variety of indicators used across member countries to measure performance in primary care. However, in many cases, the set of indicators available to policy-makers are insufficient or focused on a subset of dimensions

Indicators can be split into comparative key-indicators and descriptive additional indicators. Comparative key-indicators are those whose score may be evaluated in comparison with a target or a benchmark (e.g., waiting time for first visit bya physician). Descriptive (observational) indicators are those whose score provides useful information for decision makers but whose interpretation is potentially ambiguous. For example, the rate of frail people who receive domestic help at home depends on both organisational features of the healthcare system and other certain social characteristics (e.g., the family role) which may be different across countries and regions. Therefore, a higher rate cannot be evaluated as a good or bad performance. However, it provides useful information if correctly contextualized in a specific health system.

To assess the performance of primary care, the EXPH recommends the collection of performance indicators along ten domains: the eight domains identified in the definition of primary care, plus two additional domains capturing features of primary care organisation and its human resources, since the latter are key determinants of the delivery of high-quality, efficient and equitable primary care services.

Examples of indicators along the ten domains are provided in Table 2. A comprehensive list of indicators is also provided in Table A1 in the Appendix.

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Table 2. Examples of comparative key-indicators along its key domains	
Domains	**Examples of Indicators**
1) Universal and accessible	• % of the population fully covered or insured for PC costs and medicines prescribed in PC • Total expenditure on PC as % of total expenditure on health • Amount patients have to pay for a GP/PC consultation and amount reimbursed • % of patients who rate GP/PC Team care as not very or not at all affordable • Difference between region, province or state with highest and with lowest GP/nurse/social worker/… density • Average number of days waited to see a GP/PC provider when confronted with a health problem
2) Integrated	• Extent to which GPs/PC Teams carry out preventive activities such as: Testing for sexually transmitted diseases; Screening for HIV/AIDS; Influenza vaccination for high-risk groups; Cervical cancer screening; Breast cancer screening; cardiovascular risk assessment. • Is there a structured cooperation between PHC and social care? • Does the pharmaceutical care integrate the contribution by GP/community pharmacist/nurse e.g. through an integrated pharmaceutical record? • To what extent are disciplines like occupational therapy, physiotherapy, speech therapy,… integrated in PC Teams?
3) Person-centred	• Duration of regular visit (minutes) of different types of providers • % of patients who rate that they i) trusted the GP/nurse/social worker/…; ii) were involved in shared decision making ; iii) were satisfied with PC visit.
4) Comprehensive and community oriented	• Extent to which patients visit a GP for first-contact care for specific health conditions; people with a first convulsion; suicidal inclinations; alcohol addiction problems. • Is FP/GP the only medical discipline in PHC? • Are there activities related to Community Oriented Primary Care? • Is there palliative care at home organised?
5) Addressing personal health needs (provide high quality PC)	• % of infants vaccinated within PC against e.g. diphtheria; tetanus; pertussis; measles; hepatitis B; mumps; rubella; % population aged 60+ vaccinated against flu; HPV vaccinations • The defined daily doses of antibiotics use in ambulatory care per 1000 inhabitants • Percentage of individuals with COPD or asthma who have had a lung function measurement during the last year • Percentage of diabetic population with blood pressure above 140/90 mm Hg observed in the last 12 months • Percentage of patients stating that the treatment contributed to achievement of their life-goals
6) Sustained partnership with patients and informal caregivers	• % of informal caregivers who receive support from primary care • % of patients reporting help by informal care givers • Presence of organisations of informal caregivers in a community
7) Coordination of people's care	• Is there a gate-keeping system (access to specialists through referral)? • Do patients need a referral to access the paramedical and nursing disciplines, to access social care? • Is it common for GPs to have regular (electronic) face-to-face meetings (e.g. at least once per month) with the following professionals? Other GP(s); Practice nurse(s); Nurse practitioner(s); Home care nurse(s); Midwife/birth assistant(s); PC physiotherapist(s); Community pharmacist(s); Social worker(s); Community mental health workers; medical specialists.
8) Continuity of people's care	• Do GP-practices have a patient list system? Or another form of defined population? • % of patients reporting to visit their usual PC provider for their common health problems • % of GPs/PC Teams keeping electronic clinical records for all patient contacts routinely.

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	• % of patients who are satisfied with their relation with their GP/PC provider • Do PC practices receive information within 24 hours about contacts that patients have with out-of-hours services?
9) Primary care organisation	• PC payment system, revenues, and operating costs • Percentage of income of GPs through FFS, Capitation, Salary, P4P • Average income of 1FTE GP compared to average income of specialist; of PC nurse compared to hospital nurse,… • Quality control audits • Clear Vision and Mission statements of PC Teams • Existence of continuous quality improvement processes • Is there an organisation at meso-level of the support structures for PC, e.g. in Primary Care Zones? • Is there an organisation at macro-level of PC e.g. a regional/national Institute for PC?
10) Human resources in primary care	• Average number of working hours per week of GPs/nurses/pharmacists/social worker/.. • Average age of practising providers in PC • Total no. of active GPs as a ratio to total no. of active physicians • Total n°. of nurses active in PHC compared to total number of nurses in PHC, secondary and tertiary care

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The choice of indicators should be guided by, at least, the following criteria: alignment with policy objectives (indicators are to be informative about policy objectives defined by the health system), ability to routinely collect the information, either from administrative sources or from specifically-designed surveys (indicators have more meaning with a time dimension to assess progress), and reliability of information (indicators need to be based on credible sources and survey instruments need to be validated, for example). For each indicator, each criterion needs to be assessed. An example would be to introduce a valuation scale 1 (low) – 2 (medium) – 3 (high) for each criterion, and consider only indicators ranking 8 or above (only one medium assessment in one criterion is possible).

Finally, an appropriate understanding and interpretation of the data often requires an additional qualitative data collection, apart from the quantitative data, measured through indicators.

6. Defining a performance assessment system for primary care: *procedural steps*

The existence of a performance assessment system, even though technical and scientifically sound, does not guarantee its adoption by policy-makers and other stakeholders. Also, it may happen that a performance management system leads to dysfunctional performances (also called performance paradoxes) such as perverse learning - i.e., when organisations or individuals have learned how measurement works and manipulate their performance results (van Thiel and Leeuw, 2002).

In order to limit the occurrence of these paradoxes and support a successful implementation and adoption of performance evaluation systems in health, the literature has identified some key features that should permeate its development process (Van Peursem et al., 1995; Brown et al., 2012; Nuti et al., 2016, Bevan et al., 2006).

- **Multi-dimensionality** is an important characteristic to account for the complexity of the primary care system (Van Peursem et al., 1995; Nuti et al., 2016). A systemic and multi-dimensional performance perspective implies the need to overcome the organisational and institutional boundaries that characterize every care system. Also, performance evaluation systems that provide measures that go beyond financial aspects, and are based on indicators related to quality of care and equity, may be perceived as closer to the professionals' interests, thereby reducing the conflict existing

between the different governance levels involved in service delivery (Abernethy and Stoelwinder, 1995; Nuti et al., 2016; Leotta and Ruggeri, 2017).

- **Shared design** of the evaluation system (involving evaluators, managers, policy-makers and clinicians). The design of performance evaluation systems should allow stakeholders to provide insights and suggestions (e.g., new indicators, revision of existing indicators) in a continuous fine-tuning process. This supports the acceptance of the system from a wider range of people.

- **Evidence-based** data collection and information provision. This may be defined as the "systematic application of the best available evidence to the evaluation of managerial strategies'' (Kovner & Rundall 2006, pp. 6). According to McColl et al. (1998), "primary care group indicators should be based on robust evidence. If not, their use is unlikely to lead to improved health outcomes". Comparability of indicators across countries and regions creates an added value. Of course, this includes "professional evidence", "contextual evidence" and "policy evidence" (see pp. 29)

- Shift from monitoring to **evaluation**, that includes systemic **benchmarking** of results among providers and geographic areas and, if it is possible, against shared standards. This allows one to compare performances and to learn from best practices (the health system as a "learning community").

- **Timeliness** is a core element of every performance evaluation systems. This allows policy makers to make decisions promptly (e.g., correct poor performance or dysfunctional behaviours).

- **Transparent disclosure** to stimulate data peer-review and leverage professional reputation (Brown et al., 2012; Nuti et al., 2016). According to Hibbard et al. (2005) making performance information public stimulates long-term improvements, provided the performance evaluation is appropriately contextualized (e.g. through information on case-mix). These improvements can then be linked to quality improvement efforts that begin following disclosure. Disclosing performance information is particularly important, in a universal coverage healthcare system, to assure public accountability and transparency. However, in order to avoid the rise of potential "performance paradoxes" it is pivotal to set up measures that are properly risk-adjusted so as to take into account patient case-mix and contextual characteristics of each geographic area evaluated. Moreover, when patients are involved in the development of

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performance measures (e.g. PREMs and PROMs) they expect to have a proper feedback which may be given by publicly disclosed reports.

A common element that emerges from the outlined procedural steps relates to the **engagement of health professionals**. Healthcare problems cannot be solved by experts from other fields (Mintzberg, 2012) but require a pro-active engagement of professionals operating in the health sector due to the strong positive association between organisational performance (both clinical and financial) and the degree to which health professionals are engaged in maintaining and enhancing it (Spurgeon et al., 2011; Ham and Dickinson, 2008; Ham, 2009).

Finally, when choosing the indicators that should be used to assess primary care performance in a specific context, policy-makers should ensure that the set of indicator:

- is consistent with strategies;
- considers different dimensions of performance;
- includes indicators measurable over time;
- includes indicators measured in a systematic way.

Moreover, assessment can take advantage of SMART indicators: Specific, Measurable, Achievable; Relevant and Timely.

7. Reality check: recent experiences from European Countries

The EU Expert Group on Health Systems Performance Assessment conducted in March 2017 a survey to collect information on national experiences in performance assessment of primary care. Policy makers and assessment experts from twenty-one countries replied to the survey; this chapter of the Opinion presents the main findings from the survey, clustered by the most relevant recurring topics.[4]

Almost all respondents reported carrying out recurrent assessments on the performance of primary care in general, or on important parts of the primary care system. The majority reported having an assessment system in place that specifically targets the performance of primary care, or important parts of the primary care system. Just in a few countries, the primary care assessment is part of an assessment of the health system in general, but even in those cases, the assessments include aspects that mirror primarily activities in primary care

[4] A more detailed analysis is presented in the report of the EU Expert Group on HSPA, which is expected to be published in March 2018.

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(e.g., use of medicines for diabetic care, data on waiting times for a GP appointment, rate of registered users in local primary health care, etc.).

Eight countries state a priority on a specific dimension of primary care (Belgium, Estonia, Finland, Luxembourg, Netherlands, Portugal, Slovenia, and Spain); the most frequently mentioned are care for specific diseases, delivery of preventive services, uptake of vaccination and immunisation programmes and prescribing.

Monitoring of policy actions, general reporting and accountability are reported by almost all of the countries as a reason behind monitoring the performance of primary care. In some cases, these reasons are presented together with performance-based reimbursement schemes and comparative benchmarking.

Primary care assessment is usually addressed to policy makers, followed by healthcare managers and clinicians. To a lesser extent, the reports are intended to reach the public and patient users.

When it comes to the scope of the assessment, almost all countries assess the performance of General Practitioners and Family Practice. Some of them extend the scope of the assessment to other areas such as midwifery, nursery, paediatrics, gynaecology, preventive services, pharmacy and social workers.

Box 2: Scope of primary care assessment and areas of data collection. Some examples.

In *Norway*, municipalities have established a comparative SAMDATA system on health and social care services with the main purpose of monitoring resources, accessibility and quality of primary care services at the municipality level. This system targets home care, institutional long-term and short-term care, GP's, physiotherapists, school nurses, health services for new-borns and preschool children, social services to support the person's possibilities to be active and participate in society.

In the *Netherlands,* the National Institute for Primary Care (NIVEL) and the Dutch Healthcare Authority (NZA) gather data of individual GP practices, out-of-hours GP-on duty services, primary mental health care, pharmacists, physiotherapists, speech therapists and dieticians.

In some *Italian Regions*, e.g., Tuscany and Emilia Romagna, a comparative data system on services provided, cost and patient outcomes has been put in place. This considers networks of 25-30 GPs - see "AFT" (Aggregazioni Funzionali Territoriali) required by the national law No. 189/2012 and the Patto per la Salute 2014-2016 to the end of sharing practice and avoid

unwarranted variation. Based on this information, targets are set both for primary and integrated care with other settings.

In *Slovenia*, the National Institute of Public Health and National Health Insurance Institute collect data on GPs/family medicine practices, paediatric practices and women's reproductive health practices at primary healthcare level, dental services for children and adolescents, preventive services for children and for adults, community nurse services, primary mental health care, speech therapist and physiotherapist services.

Indicators considered

Descriptive information about providers, access and patient-centeredness are the main dimensions considered by most of the Member States when assessing the performance of primary care. Clinical performance is measured by half of the respondents. Aspects such as equity, workload and workforce satisfaction in primary care are less frequently reported. In more detail:

- Most countries measure access to primary care. Indicators include the supply of providers, the availability of specific assistance agreements, geographical access (Poland), access during out-of-hours (Cyprus), waiting times for an appointment and financial barriers, including out-of-pocket payments (Malta).

- Almost all respondents provide descriptive information about primary care providers and utilisation of care. Examples include the volume of check-ups for different age groups, the average number of patients served per day at a GP practice and the number of patients who have had a dental check-up in a given year (Latvia); the number of maternal and child health checks by municipality, users of nursing help provided at home or institutional care for older people, waiting times and patient experience (Norway).

- Some countries consider patient centeredness. Indicators include satisfaction rates with the GP, availability of essential patient information in records, communication, chronic care management, continuity of care and patient safety.

- Some countries measure costs, waste and efficiency (Belgium, Finland, Spain, Portugal, UK, the Netherlands and Slovenia). Indicators include expenses for prescribed medication with user reimbursement (Portugal), prescription in accordance to guidelines (Netherlands), and use of emergency department for cases that could be treated within primary care (Spain, Malta and some Italian regions).

- Some countries measure clinical performance, with indicators like immunisation rates for various diseases, number of patients who have been advised/consulted by GP or nurse to

change their unhealthy habits (Estonia, Finland, France, Italy, Latvia, Lithuania, Portugal, Slovenia, Spain, and UK).

- A small set of respondents explicitly address equity in primary care. Malta reports on a breakdown of access, quality, or outcome indicators by specific population groups (gender, socio-economic status, education or ethnic background). Slovenia performed extensive qualitative survey on barriers to access to primary care and preventive services for deprived/vulnerable individuals. In the UK, the numbers of patients registered at GP practices is available by age band for each available year. In Italy, Tuscany measures avoidable hospitalizations through the Emergency Department access rate standardized per education degree.

- Workload and workers satisfaction is assessed by eight respondents (Belgium, Finland, the Netherlands, Portugal, Slovenia, Spain, Sweden, and Tuscany region), e.g., the ratio of users per quota and the burden of chronic patients is used to assess the primary care workload. In most cases, this information is not part of the primary care assessment, but is the result of other types of investigation.

For virtually all respondents, the selection of indicators was established through the involvement of different advisory boards composed by external independent experts, senior health managers, clinicians, health care professionals, academics, and in some cases patients.

Survey respondents reported mainly routine data obtained from administrative and national registries. It is usually not specified if administrative registries were set up just for primary care assessment or also for other different purposes.

Box 3: Impact on policy making. Some examples

In *Slovenia*, several assessments of different dimensions and services of primary health care have been conducted to provide evidence used to develop the National Healthcare Plan, the Strategy for Development of Primary Health Care, the upgrading of the national programme for prevention of NCDs and reducing inequalities in health, and other programmes.

In *Finland,* some indicators considering access have been used in the current debate on reforming health and social services; thus, data are used to strengthen and support the need for reform. Moreover, the information on the health centre recruitment situation has been used to motivate an increase in enrolment to medical schools. Finally, the vaccination monitoring system highlighted low rates for measles in some areas to the extent that the herd immunity is endangered.

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In *Latvia*, the post-graduation training programme on team work (composed by the GP and the nurse/physician assistant) for GP practices was developed and realised by reporting information on primary care assessment to the Cabinet of Ministers.

In *Italy*, in the region of Tuscany, performance measurements are structured with the aim of fostering a process of systematic benchmarking among groups of GPs. This stimulates quality improvements and the reduction of unwarranted variation (see http://performance.sssup.it/netval). In Lazio, primary care quality indicators are systematically used by the Health Plan Directorate to evaluate health patterns for chronic conditions, to set clinical and organisational objectives for healthcare providers, and to link the level of achievement of these objectives to annual budgets and/or contract extensions for healthcare professionals.

In *Spain,* performance indicators have helped to target strategic areas of improvement in health centres. Various national strategies have been developed after assessments were conducted: chronicity, health promotion, ischemic heart disease, chronic obstructive pulmonary disease, diabetes and stroke (among others). In this regard, there is evidence of a slight improvement in coordination between levels of care and evolution in the definition of the baskets of benefits.

Limitations

The most common constraints encountered when assessing the performance of primary care are the lack of routinely collected data for primary care, problems with data quality (low reliability), contextual interpretation of the definition of indicators and the appropriateness of indicators used. Other limitations highlighted by participants with regards to primary care performance assessment are listed below:

- Performance information does not have a clear position in the policy cycle;
- Lack of permanent dashboards, and therefore, difficulty to monitor indicators over time;
- Monitoring systems operating in isolation; no data linkages;
- Some stakeholders remain excluded from the process;
- Lack of resources;
- Activities link to primary care are difficult to assess through registries;
- Data collection systems are developed for payment and therefore, not tailored to the needs of patients/ public;

- Low development of indicators that refer to multiple chronic conditions and indicators that reflect multi-professional care;
- Low development of indicators that reflect outcome of care instead of process of care;
- Providers that are identified as poor performers are more likely to question the validity of the data, particularly when the results are first released;
- Problems with registration and integration of information systems among care levels and with other care actors.
- Limited use of typical Primary Care classification like the "International Classification of Primary care-2", developed by the WONCA International Classification Committee (WICC)(WICC, 2010), that is electronically linked to ICD-10.

8. Discussion

A first observation is that a lot of indicators are constructed that do not take into account the specific contribution made at the primary health care level, when indexing access and quality of care. In the Lancet article on: "Health Care Access and Quality Index based on mortality from causes amenable to personal health care in 195 countries and territories, 1990-2015" , the contribution of primary health care interventions is limited to: "3 doses of diphtheria-pertussis-tetanus vaccine; at least 4 antenatal care visits; and children with diarrhoea receiving appropriate treatment". This is a quite "reductionist" description of the contribution of primary care.

When it comes to workforce, there is only a composite indicator of physicians, nurses and midwives per 1000 population, without making a distinction as to whether those providers are working at the primary, secondary or tertiary care level (GBD 2015 health care access and quality collaborators, 2017). Moreover, the Health Care Access and Quality index (HAQ index) is a very broad brush for measuring personal health care with considerable heterogeneity, especially when facts from infectious diseases and non-communicable diseases are combined. Most chronic conditions require a personal as well as a population approach to affect risk-enhancing lifestyles, environments and customs. This is a core component of primary health care. Measuring primary care is more challenging, because it is provided by a range of health-care professionals, and a mix of organisational models, in dispersed rather than centralised locations, and data collection is very often limited (Goodyear-Smith and van Weel, 2017). This reminds us of the paradox of primary care (Stange and Ferrer, 2009): focussing on the level of diseases makes the contribution of primary health care hard to see, whilst it is readily apparent at the level of all people and populations.

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Moreover, in primary care there is a need to include variation in context (e.g. data on characteristics of the population and society, the health system, the social welfare system,…) when comparing outcomes. Therefore, van Weel et al. (2017) proposed to include in comparative approaches that want to support policy makers, the principal that "context matters". In Box 4 we reproduce their overview of the information on context of care that could be included in a reporting exercise on outcomes related to the contribution of primary care providers.

Whenever feasible use of administrative data, collected directly from source databases, instead of explicit reporting by institutions, will speed up the collection process and decrease the possibility of errors.

Box 3: Presentation of context when reporting outcomes

Domain	Item	Information	Presentation
Health System	Structure	Yes/no primary care based	Narrative
	Insurance	No/restricted/comprehensive	Narrative
	Financial barriers	Yes/no co-payment, deductible	Narrative, Euros
	Availability services	Waiting lists, shortages	Narrative, numbers/ population
	Provider payment	Capitation/item for service/ Performance incentives	Narrative
	Patient's contractual relation with provider	Preferential provider/rostering- Panels of patients/free access	Narrative
Social welfare	Pensions	Yes/no	Narrative
	Unemployment benefits	Yes/no	Narrative
	Sickness benefits	Yes/no	Narrative
	Community support services	Yes/no	Narrative
Population and society	Demographics	Age	Standard age classes
		Sex	F/M
		Social class	Standard class
		Education:e.g. health literacy	
		Ethnicity	
		Religion	

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	Population health	Life expectancy Main causes of death Dominant health problems	
Objectives of interventions	Diagnostic	Rule-in/rule-out/risk assessment	Narrative
	Therapeutic	Preventive/curative/palliative functioning	Narrative

Source: van Weel (2017) *Primary Health Care Research & Development,* 18: 183 – 187.

Nowadays, the confrontation with multi-morbidity and chronic conditions requires an improvement of the comprehensiveness of the data, including data that are gathered by the inter-professional team. This brings into the debate the question of appropriate classification systems. In primary care, very often, the "International Classification for Primary Care-2" is used but certain disciplines e.g., occupational therapy, physiotherapy etc., use the more comprehensive "International Classification of Functioning and Disability in Health (ICF)" (WHO, 2001). This classification may offer an integrating framework that enables consideration of different dimensions in a dynamic way, including contextual information. Special attention is required for the classification of the "goals" as formulated by the patient. These "life goals" may be related to different domains (work, social cohesion, family, …). In the care process, goals are translated into "objectives" that then are operationalised trough strategies and implemented using specific methods in the care processes. There remains a fundamental conceptual problem when we try to reconcile 'goal-oriented' care with 'performance assessment'. Quality care is the care that contributes to the achievement of the goals of a person, and can ultimately only be assessed at the level of that individual. How to reconcile this with performance assessment at population level?

In practice, a lot of data collection, is taking place in the framework of vertical disease-oriented programmes, and isolates the data related to the interventions for that single condition. This raises the question of the relevance of these data in terms of addressing multi-morbidity, which has become the rule rather than the exception nowadays. Especially in situations with multi-morbidity, the "goal-oriented" approach becomes more relevant (De Maeseneer and Boeckxstaens, 2011).

In data collection, we encounter difficulties in combining outcome and process (intermediate) measures. As such, it may happen that some health performance systems adopt exclusively "process" indicators to approach "outcomes"; vice versa, in some other cases we may find systems mainly oriented toward broad outcome measures with few intermediate indicators.

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Data can also be influenced by the context/aim they are collected for. This is especially the case for "pay-for-performance" and "pay-for-quality" data which can be "adapted" to the "desired standards". Moreover, it has been documented that one of the "side"-effects of the " Quality and Outcomes" framework in the UK has been that the providers has diverted their attention from the immediate needs of the patient, and orientated towards the indicators that were assessed in the framework. This requires careful consideration, both for policy makers, providers and researchers. Moreover, the first comprehensive assessment of the "Quality and Outcomes" framework has concluded that this intervention was not associated with significant changes in mortality for the composite outcome, for ischemic heart disease, cancer or all non-targeted conditions (Ryan, 2016).

A last but not least consideration regards the issue of the "reasonable" number of indicators and targets that should be included in a performance evaluation system for Primary Care. Both an excessive and a scarce number of performance indicators can result in a performance paradox which refers to a weak correlation between performance indicators and performance itself (Van Thiel and Leeuw 2002). The confusion generated by many targets might disorient the actors of the organisation who may then behave differently from the priority actions. On the other hand, a limited number of targets may induce tunnel vision as a consequence of narrowing the managerial attention only to some aspects of the global performance. Therefore, the process of management by objectives needs to solve the following dilemma: whether to rely on a limited number of indicators, in order to clearly communicate the organisation's goals to the controlled actors, or to focus on the containment of the paradox problem by enlarging the number of indicators, at the expense of clarity (Nuti et all. 2017).

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Box 5: Priority detection and target selection in a network of Italian Regions.

A methodology that could support policy makers in this difficult challenge of the priority detection and target selection has been adopted by a network of Italian Regions. The method identifies regional priorities by jointly evaluating four different issues that should be relevant in the strategies of Regions working in a universal coverage context: 1. Performance achieved, mainly focused on quality of care and measured in benchmarking, 2. Improvement capacity, 3. Reduction of geographical disparities, and 4. Financial impact that each indicator might have in the short-medium term (Nuti et all. 2017). Priorities are identified when results related to quality of care are lower than the other regions, when they didn't improve in the last period measured and have a large impact on the financial sustainability. After this selection phase, a dialogue and discussion with the health professionals should take place.

In conclusion, it is important to involve primary health care staff at all levels both in the design of the health performance assessment systems to support improvements in processes and in the phase of identifying priorities and targets.

All the procedural steps highlighted in the previous section (e.g., public disclosure, evidence-based measurements, challenging and achievable targets) are effective mechanisms only when used as tools to activate a positive comparison and discussion process based on reputation (Bevan et al., 2017) and not on "punishment" mechanisms. This results in an improved quality of care and a reduction in unwarranted variance.

Finally, in any system of data collection and indicator selection, there is a risk of "reductionism". Therefore, certainly at the local level, complementing the quantitative information with qualitative data (focus groups, interviews etc.) will help to assess the relevance of the collected information. As Isaac Newton made clear: "Not everything that is countable, counts and not everything that counts, is countable".

9. Recommendations

The Expert Panel on Effective Ways of Investing in Health formulates the following recommendations in relation to the development of tools and methodologies for assessing the performance of primary care in the European Union:

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- The Expert Panel recommends the use of tools and methodologies for assessing the performance of primary care that really encapsulate the essence of primary care in the framework of the broader health care system. The Expert Panel proposes 8 dimensions that are derived from the definition of primary care as it was formulated by EXPH in the opinion: "Definition of a frame of reference in relation to primary care with a special emphasis on financing systems and referral systems" (EXPH, 2014). The Expert Panel suggests to complement those 8 dimensions with indicators on "primary care organisation" and "human resources" in order to build a comprehensive set of indicators. Therefore, the 10 domains that EXPH proposes are: universality and accessibility, integration, person-centeredness, comprehensiveness and community orientation, a team of professionals that addresses the larger majority of personal health needs, sustained partnership with patients and informal care givers, coordination of people's care, continuity of people's care, primary care organisation and human resources.
- Starting from these 10 domains the EXPH proposes a set of indicators, both comparative key-indicators and descriptive additional indicators that will contribute to a better understanding of the performance of primary care. In this Opinion, the actual situation in relation to health system performance assessment for primary care is documented based on the first data from a survey conducted in March 2017 by EU-Expert Group on Health Systems Performance Assessment (see chapter 7). In an Appendix the Expert Panel presents an inventory of indicators that are actually used in Europe. The selection of a set of indicators relevant to each health system should respect, at least, three criteria: alignment of indicator with objectives of health system, ability to routinely collect the indicator, and reliability of information. The Panel recognizes that nowadays a lot of indicators are restricted to the functioning of GPs/FPs, and that broadening the scope to the inter-professional Primary Care Team is essential. Moreover a lot of indicators are related to specific diseases, overlooking the need for a comprehensive approach. New outcome indicators should be able to look at strengths, capabilities, of people and include dimensions like happiness at the individual level and social cohesion at the broader societal level.
- In order to further develop the performance assessment of primary care in the EU-framework, it will be important that the European Union strengthens its goals and activities in the field of (primary) health care in order to secure for all citizens, access to relevant, high-quality, cost-effective and sustainable service delivery.
- The creation of a widespread EU learning community would be a powerful step to develop appropriate tools and methodologies for assessing the performance of primary care and transparently inform the public on the findings. The European social pillar and

the Sustainable Development Goals may offer the policy framework to develop these activities, which can build upon the experience of the EU expert group on Health Systems Performance Assessment.

- In healthcare, and particularly in primary care, one of the main asset determining quality of care is related to human resources. Due to that, a big effort should be put in place to understand the determinants of professionals' motivation and engagement. As such, actions oriented at creating good working conditions avoiding professional burn-out are needed. To this aims it is important that performance assessment systems are designed in order not to erode professional motivation. This is also closely linked to the management skills that should be activate to organize and manage the correct use of performance information and to put in place strategies and actions to enhance primary care.
- Finally, the Panel affirms its view that strengthening primary care will contribute to improved population health and wellbeing and greater social cohesion in the European Union.

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Appendix

Table A1. Domain 1) "Universality and access"		
Dimension	**Indicators**	**Rationale**
Financial coverage	% of the population fully covered or insured for PC costs and medicines prescribed in PC.	One of the most consistent policy characteristics in countries with a strong PC system is universal financial coverage
Affordability	Do patients normally need to pay for: i) a visit to their GP? ii) medicines or injections prescribed by their GP? iii) for a visit of their GP at the patient's home? iv) for a visit to a specialist prescribed by their GP? [no payment/ some payment/ payment of the full amount]	One of the most consistent policy characteristics in countries with a strong PC system is low or no patient cost-sharing for PC services
Affordability	% of patients who rate GP care as not very or not at all affordable.	Financial access to PC services is a key feature of a strong PC system
Affordability	% of people who report barriers in PC access	This indicator reflects user-reported access barriers
Geographic access	Availability of GPs by region, province or state per 100 000 population. Difference between region, province or state with highest and with lowest density of GPs (per 100 000 population).	Equality in geographical accessibility of PC contributes to an optimal functioning PC system. Geographic areas with a higher PC density than specialist density have lower hospitalization rates for ambulatory care sensitive conditions, better population health, and lower costs
Geographic access	Do national norms exist on the (regional or national) supply of GPs? [Yes/No]	The capacity of PC workforce determines the accessibility of care, as it reflects the availability of PC services
Geographic access	Do (regional or national) shortages exist of GPs according to usual national norms? [No shortage/ Shortage in some regions/ Modest shortage nationwide/ Severe shortage nationwide	Same as above
Geographic access	Do problems exist in availability of medicines in rural areas due to lack of pharmacies?	Same as above
Timeliness	Are GP practices or PC centres obliged to have a minimum number of opening hours or days?	A minimum number of opening hours or days gives PC a certain predictability for patients as well as physicians
Timeliness	How many days do patients need to wait to see a GP? [1 day, 2 days, 3-5 days, more than 5 days]	Same as above
Timeliness	Waiting time in clinic or GP practice	
PC availability	Practice accepting new patients	
PC availability	Provider absence rate	Having health professionals present in facilities is a necessary condition for delivering health services.
Accessibility	Average no. of home visits per week per GP	
Accommodation of accessibility	To what extent do telephone or e-mail consultations commonly exist in GP practices or PC centres? [(almost) always present/ usually present/ occasionally present/ seldom or never present]	Timely access to care when it is needed is one of the hallmarks of a high-quality PC system. This can be assured through several organizational arrangements
Timeliness	To what extent do GP practices or PC centres commonly offer special sessions or clinics for certain patient groups (e.g. diabetics, pregnant women, hypertensive patients, etc.)?	Same as above
Accommodation of accessibility	To what extent do GP practices or PC centres commonly use appointment systems for the majority of patient contacts?	Same as above
Timeliness / Accommodation of accessibility	To what extent are the following models for the provision of after-hours PC commonly used? 1. Practice-based services: GPs within one (or group of) practice(s) look after their patients on out-of-hours schedule; 2. PC cooperatives: GPs in a region from several	When PC providers are not accessible for patients at irregular hours, this affects the quality of care appropriate for first-contact health problems. Out-of-hours health care arrangements should therefore be made

	groups, supported by additional personnel. 3. Deputizing services: companies employing doctors take over the provision of afterhours care; 4. Hospital emergency departments provide PC by taking care of health problems after office hours; 5. After-hours PC centres: (walk-in) centres for face-to-face contact with a GP or nurse; 6. Other out-of-hours GP/PC service schemes.	
National availability of PC services	Total number of directly accessible medical, paramedical and nursing disciplines available per 100 000 population: GP/Family physician; gynaecologist / obstetrician; Paediatrician; Specialist of Internal medicine; Ophthalmologist; ENT specialist; Cardiologist; Neurologist; Surgeon; GP/PC practice nurse; Specialized nurse (e.g. on diabetes); Home care nurse; Physiotherapists (ambulatory); Midwife (ambulatory); Occupational therapist; Speech therapist; Dentist.	Having a medical generalist such as a GP, rather than a specialist as a regular source of care has been associated with better health outcomes and lower health care costs.1; 17–19 Greater supply of PC providers as opposed to a greater supply of specialty physicians, is consistently associated with better health outcomes.1; 19 Nursing disciplines and allied health professionals perform services that address health risk behaviours more often than physicians.
Acceptability of PC services	% of patients who find it easy to reach and gain access to GPs	The acceptability of PC services determines the extent to which the PC service accommodates the patient and the community served, and influences the accessibility of care

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Table A2. Domain 2) "Integration"		
GPs carry out other activities	Extent to which GPs carry out preventive activities such as: Immunization for tetanus; Allergy vaccinations; Testing for sexually transmitted diseases; Screening for HIV/AIDS; Influenza vaccination for high-risk groups; Cervical cancer screening; Breast cancer screening; Cholesterol level checking.	
Multidisciplinary Collaboration	Has a governmental policy on cooperation or integration of PC services been laid down in a law or policy paper? [Yes/No/Not applicable, because no such policy exists]	PC supportive governmental policies are positively associated with adequate access, continuity and coordination of care, the delivery of a wide range of services (in particular preventive care), and better levels of health

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Table A3. Domain 3) "Person centredness"		
Trust and Involvement	% of patients who rate that they i) trusted the GP; ii) were involved in decisions; iii) were satisfied with PC visit	
Patient advocacy	Have any laws/regulations pertaining to the following patients' rights in PC been implemented? 1. Informed consent; 2. Patient access to own medical files; 3. Confidential use of medical records; 4. Availability of a procedure to process patient complaints in PC facilities [yes/ no] [3]	Health care legislation is important to protect individuals and communities from harm, and to provide incentives for health care professionals to maintain and/or improve a certain level of service quality
(De) centralization of PC service development	Do organizations of stakeholders contribute to PC policy development (e.g. health insurers, medical professionals, or representatives of patients or consumers)? [Yes/No]	To achieve a broad acceptance of PC reforms, it is important to involve stakeholders into the policy process and its implementation, including NGOs and representatives of patients.

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Table A4. Domain 4) "Comprehensiveness and community orientation"		
Medical equipment available	How common is it that PC facilities have the following equipment available at the premises: [(almost) always available/ usually/ occasionally/ seldom available] 1. infant scales; 2. Glucose tests; 3. dressings/ bandages; 4. otoscope; 5. ECG; 6. urine strips; 7. instruments for stitching wounds; 8. gynaecological speculum; 9. peak flow meter	Inadequate equipment and supplies are among the impediments to delivery of PC services
Treatment and follow-up of diseases	To what extent will patients with the following diseases receive treatment/ follow-up care from their GP? Chronic bronchitis; Peptic ulcer; Congestive heart failure; Pneumonia; Uncomplicated diabetes type II; Rheumatoid arthritis; Mild depression; Cancer (in need of palliative care); Patients admitted to a nursing home/ convalescent home.	The provision of a wide range of services provided by PC providers is associated with better health outcomes at lower costs
Treatment and follow-up of diseases	% of total patient contacts handled solely by GPs without referrals to other providers.	First-contact care by PC providers is essential to address the wide variety and often very basic needs existing in the community. Having a GP, rather than a specialist as a regular source of care can be associated with better health outcomes and lower health care costs
Medical technical procedures	To what extent do GPs or GP/PC practice nurses carry out the following activities if one of their patients would need so? Wedge resection of ingrown toenail; Removal of sebaceous cyst from hairy scalp; Wound suturing; Excision of warts; Insertion of IUD; Removal of rusty spot from the cornea; Fundoscopy; Joint injection; Strapping an ankle; Setting up an intravenous infusion.	The provision of a wide range of services by PC providers is associated with better health outcomes at lower costs
Disease prevention / Health promotion and primary prevention	Manoeuvres performed in adherence with recommended guidelines: High risk for influenza: influenza vaccine; 50 years of age or older: colorectal cancer screening by sigmoidoscopy or hemoccult stool test; females 50-69 years: breast cancer screening by mammography and clinical examination; females under 60 years of age: cervical screening; 65 years of age or older: clinical hearing examination; 65 years of age or older: screening for visual impairment	
Preventive care	To what extent do GPs carry out the following preventive activities? Immunization for tetanus; Allergy vaccinations; Testing for sexually transmitted diseases; Screening for HIV/AIDS; Influenza vaccination for high-risk groups; Cervical cancer screening; Breast cancer screening; Cholesterol level checking.	Preventive health care activities are cost-effective in the PC setting, and result in improved levels of population health. In general, the provision of a wide range of services by PC providers is associated with better health outcomes at lower costs
First contact for common health problems	To what extent will patients with the following health problems visit a GP for first-contact care?: Child with severe cough; Child aged 8 with hearing problem; Woman aged 18 asking for oral contraception; Woman aged 20 for confirmation of pregnancy; Woman aged 35 with irregular menstruation; Woman aged 35 with psychosocial problems; Woman aged 50 with a lump in her breast; Man aged 28 with a first convulsion; Man with suicidal inclinations; Man aged 52 with alcohol addiction problems.	First-contact care by PC providers is essential to address the wide variety and often very basic needs existing in the community
Mother and	To what extent do GPs provide the following	The antenatal period presents opportunities for

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child & Reproductive health care	health services to their patients who need them? Family planning/ contraceptive care; Routine antenatal care (in line with national scheme); Routine paediatric surveillance for children up to 4 years. If not the GP, which other specialty(ies) would provide this service?	reaching pregnant women with interventions that may be vital to their health and wellbeing and that of their infants.
Mother and child	To what extent are GPs (or practice nurses) involved in infant vaccination on: diphtheria; tetanus; pertussis; measles; hepatitis B; mumps; rubella	Immunization is an essential component for reducing under-five mortality.
Reproductive health care	Contraceptive prevalence rate (modern methods)	Use of modern contraception is a critical component of women's, maternal, and population health.

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Table A5. Domain 5) "Addressing personal health needs (high quality)"

Competence	Diagnostic accuracy	Having health professionals present in facilities is a necessary but not sufficient condition for delivering quality health services.
Antibiotic	Appropriate prescription of antibiotic in adherence with recommended guidelines: -sore throat; urinary tract infection	
NCDs and mental health / Care of chronic conditions	Manoeuvres performed in adherence with recommended guidelines: Coronary artery disease: aspirin, beta blocker, statins; diabetes: hba1c test frequency, angiotensin-converting enzyme inhibitor or anguitension reception blocker, seen by an aphthalmologist or optometrist, feet checked or patient referred to a chiropodist or podiatrist; -congesitive heart failure: angiotensin-converting enzyme inhibitor or anguitension receptor blocker, beta blocker	
Chronic conditions	Intermediate clinical outcomes: -hypertension: blood pressure results; -diabetes: hba1c result	
Non-communicable diseases	Probability (%) of dying between ages 30 and 70 from cardiovascular disease, cancer, diabetes, or chronic respiratory disease.	Measuring the risk of dying from target NCDs is important to assess the extent of burden from mortality due NCDs in a population.
Prescribing behaviour of PC providers	The average number of prescriptions annually provided by GPs per 1000 contacts and/or per 1000 registered patients.	
Prescribing behaviour of PC providers	The defined daily doses of antibiotics use in ambulatory care per 1000 inhabitants per day	
Quality of diagnosis and treatment in PC	The number of hospital admissions for people with the following conditions per 100 000 population per year: diagnosis of dehydration/gastroenteritis; diagnosis of kidney infection; diagnosis of perforated ulcer; diagnosis of pelvic inflammatory disease; a diagnosis of ear, nose and throat (ENT) infections	
Chronic diseases: *Diabetes care*	% of the diabetic population aged >25 with i) cholesterol 5>mmol/ll; with blood pressure above 140/90 mm Hg measured in the last 12 months ; iii) with HbA1C > 7.0%; iv) with overweight and obesity and BMI measured in the last 12 months; v) eye fundus inspection in the last 12 months	
Chronic diseases: *COPD care*	% of individuals with COPD who have had a lung function measurement during the last year. % of individuals with COPD that have had a follow-	

	up visit in primary care during the last year	
Chronic diseases *Asthma care*	% of individuals with wheeze in the last 12 months or diagnosed with asthma who have had a lung function measurement during the last year.	
Chronic diseases management	% of individuals having had wheeze in the last 12 months with a diagnosis of asthma who have had a follow-up visit in primary care during the last year.	
Chronic diseases management	The number of hospital admissions for people with a diagnosis of asthma per 100000 population per year.	
Maternal and child health care	% of infants vaccinated within PC against: diphtheria; tetanus; pertussis; measles; hepatitis B; mumps; rubella	
Preventive care	% population aged 60+ vaccinated against flu.	
Preventive care	% of women aged 52–69 years who had at least one mammogram in the past three years.	
Preventive care	% of women aged 21–64 years who had at least one Pap test in the past three years.	
Vaccines	Dropout rate between 1st and 3rd diphtheria-tetanus-pertussis vaccination	
Antenatal care	Dropout rate between 1st and 4th antenatal care visits	
Tubercolosis	Tuberculosis treatment success rate	It serves as a proxy for successful service delivery, including diagnostic and treatment accuracy.
Child Mortality	Under-five mortality rate (per 1,000 live births)	It also reflects the social, economic and environmental conditions in which children (and others in society) live, including their health care.
Mortality	Maternal mortality ratio (per 100,000 live births)	It reflects the capacity of the health systems to provide effective health care in preventing and addressing the complications occurring during pregnancy and childbirth.
Child Mortality	Under-five mortality equity: difference between 1st and 5th wealth quintiles	Large differences in under-five mortality between wealth quintiles may indicate disparities in access to child health care services.

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Table A6. Domain: 6) "Sustained partnership with patients and informal caregivers"		
Informal caregivers	% of informal caregivers who receive support from primary care	

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Table A7. Domain: 7) Coordination of care		
Gatekeeping System	Do patients need a referral to access the following medical, paramedical and nursing disciplines? [1. Yes, a referral is normally required; 2. No they have direct access; 3. Direct access is possible if costs of the visit are paid privately (out of pocket or refunded from a complementary insurance)]: Gynaecologist/obstetrician Paediatrician; Specialist of Internal medicine; Ophthalmologist; ENT specialist; Cardiologist; Neurologist; Surgeon; GP/PC practice nurse; Specialized nurse (e.g. on diabetes); Home care nurse; Physiotherapists (ambulatory); Midwife (ambulatory); Occupational therapist; Speech therapist; Dentist	Gatekeeping systems have multiple positive effects on health care systems. Most importantly gatekeeping has been associated with cost-containment, increased responsiveness to patients' needs and enhanced quality of care.
Skill-mix of PC Providers	% of PC practices that are: single-handed (solo); 2–3 GPs in the same building without medical	Group practices and teams with a greater occupational diversity are independently

	specialists; 4 or more GPs in the same building without medical specialists; mixed practice with GPs and medical specialists	associated with a higher quality of care.
Skill-mix of PC Providers	Is it common for GPs to have regular face-to-face meetings (at least once per month) with the following professionals? Other GP(s); Practice nurse(s); Nurse practitioner(s); Home care nurse(s); Midwife/birth assistant(s); PC physiotherapist(s); Community pharmacist(s); Social worker(s); Community mental health workers.	Close collaboration between different PC providers optimizes the treatment of patients, and therefore increases the strength of PC. Regardless of the mode of teamwork that is applied, there should be some form of structural communication among PC providers treating mutual patients
Collaboration of PC – secondary Care	How common are the following forms of cooperation between GP/PC and medical specialists? [very common/ usual/ rare/ uncommon] 1. Medical specialists visiting a PC practice to provide specialist care normally provided in hospital (replaced specialist care). 2. Medical specialists visiting a PC practice to provide joint care with a GP (joint consultations). 3. Clinical lessons by a medical specialist for GPs.	Shared care arrangements between primary and secondary care providers stimulate mutual education, promote cooperation across levels, improve guideline consistent care, reduce the use of inpatient services, and improve appropriate prescribing and medication adherence. They thereby improve health outcomes
Collaboration of PC–secondary Care	How common is it that GPs ask (telephone) advice from the following medical specialists? [very common/ usual/ rare/ uncommon]: 1. Paediatricians; 2. Internists; 3. Gynaecologists; 4. Surgeons; 5. Neurologists; 6. Dermatologists; 7. Geriatrists.	Shared care arrangements optimize patient care and improve health outcomes. Regardless of the mode of cooperation that is applied, there should be some form of structural communication among PC providers treating mutual patients
Integration of public health in PC	Are clinical patient records from GP/ PC used at regional or local level to identify health needs or priorities for health policy? [routinely (health statistics)/ incidentally/ seldom or never used]	The effect of PC on improving equity for health depends on the availability of information about patient needs in the various areas in which PC practices are located. Targeting services around locally defined needs is effective in improving the quality and responsiveness of PC
Integration of public health in PC	Are community health surveys conducted to improve the quality and responsiveness of PC? [regularly nationwide/ incidentally nationwide/ regularly at local or regional level/ incidentally at local or regional level]	Same as above
Skill-mix of PC Providers	How usual are nurse-led diabetes clinics in GP/PC? [very common/ usual/ rare/ uncommon]	Efficiency in general practice can be achieved by delegating more tasks to the practice support staff. Nursing disciplines perform services that address health risk behaviours more often than physicians
Skill-mix of PC Providers	How usual is nurse-led health education (e.g. for stopping smoking or pregnant women) in GP/PC? [very common/ usual/ rare/ uncommon] [3]	Same as above
Table A8. Domain 8) Continuity of care		
Longitudinal continuity	Do GPs have a patient list system? [Yes/No] Average population size per GP	Having a defined practice population by means of a patient list system gives incentives for PC providers as well as patients to provide and receive services on a continuous basis. This is beneficial for the provision of PC services in every aspect
Longitudinal continuity	% of patients reporting to visit their usual PC provider for their common health problems	The existence of an ongoing relationship of a patient with a particular provider, rather than with a particular place or no place at all, is beneficial for the quality of care
Informational continuity	% of GPs keeping (or reporting keeping) clinical records for all patient contacts routinely	Systematically keeping medical records is an important measure to achieve informational continuity of care and to facilitate personalized care provision.
Informational	To what extent do GPs have a computer at their	Computerization of practices is becoming

continuity	disposal in their office? For which of the following purposes are GPs usually using a computer in their practice? 1. Booking appointments with patients; 2. Writing bills/financial administration; 3. Prescription of medicines; 4. Keeping medical records of patients; 5. Searching expert information; 6. Communicating information to specialists; 7. Communicating prescriptions to pharmacists.	increasingly important in PC for the practice of evidence-based medicine, learning and knowledge management, and quality improvement processes. Effective use of computerization applications is beneficial for the efficiency and quality of care
Informational continuity	To what extent do GPs use referral letters (including information on diagnostics and treatment performed) when they refer to a medical specialist? [(almost) always/ usually/ occasionally/ seldom or never]	The delivery of cohesive health care depends on the accessibility and exchange of patient information among those involved in the care of a certain patient. The use of referral letters is a necessity to achieve this.
Informational continuity	Do PC practices receive information within 24 hours about contacts that patients have with out-of-hours services? To what extent do specialists communicate back to a referring GP after an episode of treatment?	To safeguard the quality of care it is important that the regular provider of care receives feedback on patient results of the visits to other care providers, during or after office hours. Besides the necessity for PC providers to stay up to date on the progress of their patients, patients find it easier to obtain information from their regular source of care compared to a specialist
Relational continuity	Are patients free to choose the PC centre and GP they want to register with?	A freely chosen PC provider provides better assurance of a good relationship than does assigning a practitioner. The evidence is strong regarding the benefits of an ongoing relationship with a particular provider rather than with a particular place or no place at all
Relational continuity	% of patients who are satisfied with (i) their relation with their GP/PC physician; (ii) the explanation their GP or PC physician gives of problems, procedures and treatments.	The delivery of high quality of care to a large degree depends on the quality of the personal relationship between patients and their PC provider, which ideally is characterized by a sense of responsibility for the delivery of coordinated and comprehensive care, and a mutual feeling of trust and loyalty

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Table A9. Domain 9) Organisation of Primary care		
Dimension	**Indicators**	**Rationale**
Payment systems	How are salaried GPs paid? 1. Flat salary; 2. Salary related to the number of their patients; 3. Salary related to both the number of their patients and indicators of performance.	Flexible blended payment methods based on the combination of a fixed component, through either capitation or salary, and a variable component, through FFS, can produce a desirable mix of incentives that can change professional behaviour.
Payment systems	How are self-employed GPs paid? 1. Fee-for-service payment; 2. Capitation payment; 3. Mix of capitation and fee-for service payment; 4. Mix of capitation and fee-for service and other specific components (e.g. P4P).	Same as above
Income of PC workforce	What is the (estimated) gross annual income (in euros) of a 'mid-career' GP (10 years' experience with an average size of practice)? Does this income include costs for running the practice (premises; equipment; care; employed staff)?	Poor financial investment and discouraging worker salaries are among the impediments to delivery of PC.
Spending on PHC	Per capita current primary health care expenditure (PPP); Total expenditure on PC as % of total expenditure on health	This indicator measures the overall investment in PHC in a country in relation to population
Organization	Duration of regular visit, hours of operation,	

of the practice	provider payment structure, revenues,operating costs; Quality control audits; Chart organization	
Drugs and supplies	Availability of basic equipment including a weighing scale, stethoscope, sphygmomanometer, and thermometer, sterilizing equipment and a refrigerator; essential drugs	To effectively provide essential health services, health facilities must have available minimum levels of equipment, supplies and vaccines
Availability	Hours of operation and on-call hours Practice accepting new patients	
Workload	Number of outpatient visits per clinician per day	
Home visits	Home visits as % of all GP–patient contacts	
Telephone Consultations	Telephone consultations as % of all GP–patient contacts	
Consultations	Average consultation length (in minutes) of GPs	
Consultations	Number of GP consultations per capita per year	
Referrals to specialists	Number of new referrals from GPs to medical specialists per 1000 listed patients per year	
PC management infrastructure	Have evidence-based clinical guidelines been produced for specific use by GPs? [Yes/No]	Developing standards and guidelines to match the needs of general practice is one of the crucial tools in achieving high-quality care.
(De) centralization of PC service development	Does PC have its own department or unit within the Ministry of Health? [Yes/No] Does PC have a budget that can be distinguished from other sectors, such as specialist care? [Yes/No] If yes, please explain at which level this budget is established (e.g. national, regional)	The creation of a separate PC department within the Ministry of Health improves the role of the government to lead and participate in an effective system of PC governance (e.g. provides more systematic, integrated and less fragmented working arrangements)

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Table A10. Domain 10) Human resources in primary care		
Profile of PC workforce	To which of the following medical, paramedical and nursing disciplines do people have direct access (without referral or intervention by another medical provider)? : GP/family physician; gynaecologist/ obstetrician; Paediatrician; Specialist of Internal medicine; Ophthalmologist; ENT specialist; Cardiologist; Neurologist; Surgeon; GP/PC practice nurse; Specialized nurse (e.g. on diabetes); Home care nurse; Physiotherapists (ambulatory); Midwife (ambulatory);Occupational therapist; Speech therapist; Dentist.	Having a medical generalist such as a GP, rather than a specialist as a regular source of care has been associated with better health outcomes and lower health care costs. Greater supply of PC providers as opposed to a greater supply of specialty physicians, is consistently associated with better health outcomes. Nursing disciplines and allied health professionals perform services that address health risk behaviours more often than physicians
Profile of PC workforce	Average age of practising GPs. What is the age distribution among practising GPs? % of GPs that are: < 35 years of age; 35–45 years of age; 45–55 years of age; 55+ years of age.	The key to maintaining a sufficient workforce, in the face of the impending retirement of the "baby boom" generation, is to educate, recruit and retain young practitioners while reinvesting in mature Workforce
Profile of PC workforce	Average number of working hours per week of GPs (including: hours for keeping up to date and for administration; excluding: hours on call during evenings, weekends, etc.).	When GPs' workload reaches too high a level, this causes a shortage of GP care
Status of PC disciplines	Have tasks/duties of GPs or family doctors been described in a law or policy document?	Legal reference to the tasks/duties of GPs gives formal recognition to the profession as a specific discipline
Status and Responsibilities of PC disciplines	How does the gross annual income (in euros) of a mid-career GP (about 10 years' experience with average size of practice) relate to the gross annual income of the following medical, paramedical and nursing disciplines of the same age?: Gynaecologist/obstetrician; Paediatrician; Specialist of Internal medicine; Ophthalmologist; ENT specialist; Cardiologist; Neurologist; Surgeon; GP/PC	Poor financial investment and discouraging worker salaries are among the impediments to delivery of PC. Comparable levels of remuneration within PC and between PC and secondary care are supportive of a shared care approach which is necessary for the achievement of coordinated care

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	practice nurse; Specialized nurse (e.g. on diabetes); Home care nurse; Physiotherapist (ambulatory); Midwife (ambulatory); Occupational therapist; Speech therapist; Dentist.	
Status of PC disciplines	% of all medical graduates choose to enrol in postgraduate training in family medicine?	Greater supply of PC providers, as opposed to a greater supply of specialty physicians, is consistently associated with better health outcomes
PC workforce supply	Total no. of active GPs as a ratio to total no. of active specialists	
Academic status of PC	% of medical universities with a postgraduate programme in family medicine.	Few opportunities for professional development is one of the impediments to delivery of PC.
Academic status of PC	Is family medicine a subject in the undergraduate medical curriculum? [Yes/No]	The development of a PC system starts with setting up a vocational training programme for PC.
Medical Associations	Do national associations or colleges of GPs and PC nurses exist in this country? [Yes/No]	The establishment of organized associations is important for the development of the profession
Medical Associations	Is a journal on family medicine/ general practice being published in this country? [Yes/No]	The existence of a peer-reviewed journal is a condition for the successful scientific progress of PC.
Availability	Hours of operation and on-call hours	
Management infrastructure	Do formal requirements exist for physicians (such as GPs/ family doctors) to work in PC?	(Re)accreditation schemes are a key measure for quality improvement of a health care system.
Management infrastructure	Have evidence-based clinical guidelines been produced for specific use by GPs? [Yes/No]	Developing standards and guidelines to match the needs of general practice is crucial in achieving quality
(De) centralization of PC development	Does PC have its own department or unit within the Ministry of Health?	A separate PC department within the Ministry of Health improves the role of the government to lead in an effective system of PC governance
Provider availability	Provider absence rate	Staff absenteeism is a reflection of the quality of organization and management within a health facility.

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