Paying hospital specialists: Experiences and lessons from eight high-income countries

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\section{ABSTRACT}

Payment systems for specialists in hospitals can have far reaching consequences for the efficiency and quality of care. This article presents a comparative analysis of payment systems for specialists in hospitals of high-income countries (Canada, England, France, Germany, Sweden, Switzerland, the Netherlands, and the USA/Medicare system). A theoretical framework highlighting the incentives of different payment systems is used to identify potentially interesting reform approaches. In five countries, most specialists work as employees – but in Canada, the Netherlands and the USA, a majority of specialists are self-employed. The main findings of our review include: (1) many countries are increasingly shifting towards blended payment systems; (2) bundled payments introduced in the Netherlands and Switzerland as well as systematic bonus schemes for salaried employees (most countries) contribute to broadening the scope of payment; (3) payment adequacy is being improved through regular revisions of fee levels on the basis of more objective data sources (e.g., in the USA) and through individual payment negotiations (e.g., in Sweden and the USA); and (4) specialist payment has so far been adjusted for quality of care only in hospital specific bonus programs. Policy-makers across countries struggle with similar challenges, when aiming to reform payment systems for specialists in hospitals. Examples from our reviewed countries may provide lessons and inspiration for the improvement of payment systems internationally.

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1. Introduction

The decisions, efforts and skills of specialists in hospitals lead the clinical care processes and determine to a large extent both the success of treatment and the resources used [1]. In most high-income countries, hospitals account for the largest part of health expenditures, usually between 30 and 40% of total spending [2]. Specialists control with their decisions the vast majority of these resources, e.g., by ordering diagnostic tests, prescribing drugs, and ordering and performing procedures [1,3]. In addition, hospital specialists are responsible for the training of junior doctors; and specialists often exert significant influence on the organization of hospitals, including in areas that extend beyond their clinical work [4].

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Because of this unique role of specialists in hospitals, (financial and non-financial) incentives influencing and motivating specialists can have far reaching consequences. The perfect payment system would achieve various — at least sometimes — conflicting aims [5,6]: It would motivate specialists to be productive, to take patients' needs, the appropriateness of services, and the outcome of care into account — all while being administratively simple and contributing to an overall efficient health system through expenditure control.

While stakeholders in most countries would agree with these aims, specialist payment systems differ greatly across and usually also within countries. In addition, the income of an individual specialist is often composed of revenue from different sources and is based on different payment mechanisms. The multitude of possible combinations and the interdependence with a variety of country health system specific factors complicate analyses.

Currently, physician payment reform is high up on the political agenda of several high-income countries [7–12], and one group of physicians that has received particular attention is specialists working in hospitals. However, apart from information about income levels in different countries [2,13,70], very little comparative information is available about payment systems for hospital specialists.

The purpose of this paper is to review and compare specialist payment systems in Canada, England, France, Germany, Sweden, Switzerland, the Netherlands, and the USA (Medicare) in order to provide inspiration for future reforms of payment systems internationally.

2. Methods

2.1. Country selection

Following an initial scoping review, countries included in this study were selected purposely as they feature particularly sophisticated payment systems or recent reform initiatives. The selection aimed to include countries with different health system characteristics (e.g. centralized versus decentralized; tax funded versus social health insurance-based) and different payment systems (mainly FFS, mainly salary, and combinations of both). For the USA, we focused on the Medicare payment system because its physician fee schedule has been adopted also by most other payers in the country.

2.2. Conceptual framework

In order to enable systematic comparisons of specialist payment systems across countries, we developed a conceptual framework (see Figure A1 in the online Appendix). According to our framework, the income of an individual specialist may consist of fee-for-service (FFS) payments and/or salary and/or other financial benefits. The relative share of each component of total income depends on different factors, which can be grouped into four dimensions: the specialist, the payer, the service, and the hospital. For example, it is possible that FFS payments exist only for certain types of specialists (e.g. those at higher levels in a hierarchy), or only for specialists treating certain patients (e.g. private patients), or for specialists providing certain services (e.g. outpatient services), or for specialists working in certain hospitals (e.g. private hospitals). The same might be true for salaries and also for other financial benefits. Of course, individual specialists might fall into several of these categories and receive their overall income from different components. However, the relative importance of each component depends on the characteristics of each country's health system (see Box 1).

Box 1: The interaction between health system characteristics and payment systems for specialists in hospitals

Countries' health systems differ in relation to all four dimensions shown in Fig. A1 (i.e. specialists, payers, services and hospitals), and these are reflected in national specialist payment systems.

1 Specialists: Important differences exist across countries with regard to hierarchies and the distribution of responsibilities among specialists in hospitals. In England and the USA, fully qualified specialists in hospitals almost always work as consultants (England) or attending physicians (USA), and they carry ultimate clinical responsibility for their patients. In Germany, France, Sweden and Switzerland, there are several hierarchical levels of specialists working in hospitals. Higher levels carry responsibility for medical decisions of other (subordinate) physicians and may have additional managerial tasks on different levels, such as units, departments or hospitals.

2 Payers: The availability of various public and private payers has an important influence on the design of payment systems. Private insurers often use specialist payment mechanisms, which tend to be financially more attractive than those of public payers. In the USA, a multitude of private insurance companies with different payment mechanisms exists beside the two main public payer systems – Medicare and Medicaid, which together cover about 34% of the population [54]. In Germany, 11% of the population are insured by private substitution insurance [55], and in Switzerland, more than a third of the population has private supplementary insurance [56]. By contrast, in Sweden, the role of private supplementary insurance in paying specialists is rather negligible.

3 Services: Countries differ considerably with regard to the types of services provided by hospitals, in particular concerning the provision of outpatient care. In England, the Netherlands, and Sweden, specialized ambulatory services are provided almost exclusively in hospitals. By contrast, in Canada, France, Germany, Switzerland, and the USA ambulatory services are predominantly provided by specialists outside hospitals, i.e. in private practices or clinics [57]. The provision of ambulatory care outside hospitals has often led to the emergence of different payment systems for inpatient care and ambulatory care, although less so in countries, such as Canada and the USA, where office-based specialists have an important role in treating inpatients.

4 Hospitals: Ownership of hospitals varies greatly across countries. In Canada, England and Sweden, more than 90% of hospitals are owned by public (governmental) entities [57]. In the Netherlands, about 90% of hospitals are private non-profit institutions but university hospitals are publicly owned [58]. In the USA, about 60% of hospitals are private non-profit institutions, while 20% are public (government) entities and another 20% investor owned, private institutions [59]. In France, Germany, and Switzerland, a sizeable share of hospitals are private-for-profit but they treat mostly (or almost exclusively) publicly insured patients. Depending on the relative share of public and private hospitals, different payment systems for specialists working in hospitals may or may not be important in a given country.

In addition, non-financial benefits, such as income security, low administrative burden, acceptable workload, fewer night shifts, or the availability of on-site childcare are important factors that influence and motivate physicians [13,14] — but they are not explored in this paper.
2.3. Data collection

Information on national payment systems for medical specialists is often fragmented and current mechanisms are rarely described in the available literature. Therefore, a questionnaire was developed by WQ, AG, and RB on the basis of the conceptual framework. The questionnaire was structured in four sections (see supplementary online material); (1) general background information on the hospital sector and specialists working in hospitals; (2) main national payment methods and contractual relationships between hospitals and specialists; (3) different income components of specialists; and (4) non-financial incentives and other relevant factors that may incentivize specialists to deliver high quality care in an efficient way.

National researchers from the eight countries taking part in this study responded to the questionnaire. In order to do so, they reviewed relevant national statistics, policy documents, and available literature and provided answers by mid-2014. Completed questionnaires were assessed for consistency and provided sources were crosschecked as far as possible. Subsequently, national researchers answered additional questions about points that had remained unclear in their original responses. Finally, all co-authors reviewed the manuscript in 2016 and updated the provided information if necessary during the review process in 2017/2018. (The full list of contacted experts per country is included in the Supplementary online material.)

3. Results

3.1. Payment systems across eight countries

Table 1 provides background information on hospital expenditures, health system characteristics, hospital payment systems, and contractual relations of specialists with hospitals in the eight included countries. Hospital expenditures are highest in the USA and lowest in Canada; and also Germany has relatively low hospital expenditures. Hospitals in most countries except for Canada and Sweden are predominantly paid on the basis of Diagnosis Related Groups (DRGs).

Contractual relations vary greatly across countries. In England and Sweden, almost all specialists are employed by hospitals. Also in France and Germany, the majority of specialists are employed by hospitals. In the Netherlands, about half of specialists, i.e. those working in university hospitals and in certain specialties, are employed by hospitals, while the other half, working in general hospitals, is self-employed. In Canada and the USA, a majority of specialists is self-employed. Yet, the number of employed specialists has increased considerably in the US, mostly because hospitals purchase physician practices outside hospitals.

In most countries, payments for physician services are included in DRG-based payments to hospitals. In fact, this is the case not only in countries, where (most) specialists are salaried employees but also in the Netherlands, where about half of specialists are self-employed, and in Switzerland, where a considerable part of specialists are attending office-based physicians. In the USA, where physician services are typically paid FFS, money is either paid directly to physicians or increasingly — because of a rapid growth in the number of employed specialists — payments are collected by hospitals.

3.2. Characteristics and development of FFS systems

Table 2 summarizes information on FFS systems in six countries. England and Sweden are not included in the table as FFS payments are not important for the remuneration of specialists in hospitals of these countries. The relevance of FFS payments for hospital specialists varies greatly across countries. They are the most important payment mechanism in Canada and the USA. However, they play an important role also in the Netherlands, Switzerland, France and Germany — at least for certain specialists, certain services, in certain hospitals or for certain payers (see Table 2).

FFS payments often cover both the medical work of specialists and practice expenses. The cost of medical work is usually quantified on the basis of information about the time that it takes to perform a certain service, but some countries also take into account the necessary qualifications of specialists (e.g. France and Switzerland) and the intensity of work (e.g. France and the USA). Practice expenses are almost always calculated in a way that takes into account the costs of space, equipment, supplies and support staff.

The Dutch FFS system is different from systems in other countries because specialist fees have been defined by the DRG-like hospital payment system, known as the DBC system. Each DBC defines a care bundle comprising all services delivered by both the hospital and all specialists involved in the treatment of a patient during a period of time, which can be as long as three months. When the DBC system was introduced in 2005, the self-employed specialists of a hospital (collectively) received a fixed fee per DBC — the honorarium component, covering only their medical work [14]. This fee was originally determined for each DBC by the Dutch Healthcare Authority. However, since 2015, specialists collectively negotiate with hospitals about their payment. This is done by so-called cooperatives of specialists, which subsequently distribute the money they receive to their members using a range of productivity metrics that are often based on DBCs but sometimes rely on more simple measures, such as the number of inpatient days or outpatient consultations [15].

Except for Canada and the Netherlands (since 2015), FFS systems always consist of a fee catalogue expressed in terms of a relative value scale and a conversion factor for transforming relative values into monetary values. The relative value scale defines fee levels in terms of a certain number of points, whereas the monetary value of each point is determined by the conversion factor. The fee catalogue is usually developed in close collaboration between specialist medical associations and payers. In fact, payers usually follow the recommendations of specialists for determining relative values of the fee schedule because they lack reliable information on the costs of service provision and because relative values determine only the distribution of resources amongst specialists. Payers are more important for negotiating or setting the conversion factor, which determines the overall expenditures on FFS payments.

In most countries, relative values of the FFS systems are updated only at irregular intervals and only for specific services that are no longer considered to be adequately reflected in the FFS catalogues. The USA is the only country where relative values are updated annually since 2012. By contrast, conversion factors are updated more regularly in most countries (see Table 2).

Except for Switzerland, all countries have some kind of mechanism to limit overall expenditures on FFS payments. In Canada, France, and until 2015 also in the USA (Medicare) system, a national or regional budget plays an important role when determining the conversion factors but there is no limit on the volume of services. However, in France and the USA, the focus of expenditure control is increasingly shifting to the level of the individual provider. In the USA, where the old budget system — the so-called Sustainable Growth Rate (SGR) — was ineffective at limiting expenditure growth [7], a new merit-based incentive payment program will progressively come into effect, which will reward providers (including solo practitioners or groups) with below average costs and above average quality with upward payment adjustments [16]. In France, expenditure control measures are relying increasingly on more complex and objective metrics.
Table 1
Background on hospital specialist payment systems and contractual relations across eight high-income countries.

<table>
<thead>
<tr>
<th>Country</th>
<th>Hospital expenditures</th>
<th>Health system characteristics</th>
<th>Hospital payment</th>
<th>Specialist payment</th>
<th>Self-employed specialists</th>
<th>Main payment mechanisms</th>
<th>Employed specialists</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>3.1</td>
<td>1 367</td>
<td>decentralized, National Health Insurance</td>
<td>mostly separate from hospital payment</td>
<td>80–90% most specialists</td>
<td>FFS, increasingly alternative payment programs</td>
<td>10–20% specialists in supportive specialties, e.g. pathology, microbiology</td>
</tr>
<tr>
<td>England</td>
<td>4.1</td>
<td>1 724</td>
<td>centralized, National Health Service</td>
<td>DRG-based case payment</td>
<td>n/a</td>
<td>FFS</td>
<td>≈100 almost all specialists</td>
</tr>
<tr>
<td>France</td>
<td>4.5</td>
<td>1 822</td>
<td>centralized, Etatist SHI</td>
<td>DRG-based case payment</td>
<td>26% most specialists in private hospitals</td>
<td>FFS</td>
<td>74% almost all specialists in public, most specialists in private non-profit hospitals</td>
</tr>
<tr>
<td>Germany</td>
<td>3.3</td>
<td>1 563</td>
<td>centralized¹, SHI</td>
<td>DRG-based case payment</td>
<td>3% attending specialists</td>
<td>FFS hourly rate</td>
<td>95%</td>
</tr>
<tr>
<td>Sweden</td>
<td>4.2</td>
<td>2 021</td>
<td>decentralized, National Health Service</td>
<td>DRG-based case payment</td>
<td>n/a</td>
<td>fee per DRG (for attending specialists)</td>
<td>≈100% almost all specialists</td>
</tr>
<tr>
<td>Switzerland</td>
<td>4.2</td>
<td>2 629</td>
<td>decentralized, SHI</td>
<td>DRG-based case payment</td>
<td>≈29% attending specialists, some freelance specialists</td>
<td>fee per DRG or base payment plus activity/quality bonus (hospital specific)</td>
<td>49% specialists in university hospitals, certain specialists (e.g. pediatricians)</td>
</tr>
<tr>
<td>The Netherlands</td>
<td>4.0</td>
<td>1 994</td>
<td>centralized, SHI</td>
<td>DRG-based case payment</td>
<td>51% most specialists in general hospitals</td>
<td>FFS</td>
<td>33% mostly procedural specialists, e.g. neurosurgery, cardiology</td>
</tr>
<tr>
<td>USA</td>
<td>5.7</td>
<td>3 229</td>
<td>centralized, National Health Insurance</td>
<td>DRG-based case payment</td>
<td>67% most specialists</td>
<td>FFS</td>
<td></td>
</tr>
</tbody>
</table>

Notes: Sources for each country (year) for the share of self-employed and employed specialists: Canada (2013) [60], estimated based on the proportion of physician expenditures that is channeled through hospital budgets; France (2015) [61], numbers refer to physical persons; Germany (2016) [62], numbers refer to full-time equivalents for employed physicians and physical persons for attending specialists; Switzerland (2012) [63], numbers refer to full-time equivalents for employed physicians and physical persons for attending specialists; the Netherlands (2014) [64], numbers refer to physical persons, the number of self-employed specialists includes 12% of specialists who work as self-employed but also have an employment contract; USA (2016) [65], numbers refer to physical persons; in England and Sweden almost all specialists are employees [66,67] and there are no statistics on the small number of self-employed specialists.¹ based on OECD health statistics [68], numbers shown for England are for the UK; ² health system typology following Bohm et al. [69]; an Etatist Social Health Insurance country is one where regulation is carried out by the state, financing is managed by societal organizations, and services are provided by private providers; ³ at least regarding SHI; ⁴ attending specialists are paid directly by insurers; FFS = fee for service; DRG = Diagnosis Related Groups; SHI = Social Health Insurance; ⁵ specialists in private hospitals are paid directly by insurers.
Table 2  
Characteristics and development of FFS systems for specialists in hospitals of 6 countries.

<table>
<thead>
<tr>
<th>Country</th>
<th>Relevance of FFS payments</th>
<th>Included costs (information basis for payment)</th>
<th>Expenditure limits for FFS payments</th>
<th>Development and updates of FFS system</th>
<th>Responsible institutions</th>
<th>Regularity of updates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>services provided by specialists in most specialties and most hospitals</td>
<td>medical work (not specified) and practice expenses (not specified)</td>
<td>overall physician remuneration is budgeted at the level of the province (not specifically FFS payments)</td>
<td>FFS catalogue + relative values negotiations between 13 provincial and territorial medical associations and ministries of health not applicable</td>
<td>FFS catalogue + relative values negotiations between 13 provincial and territorial medical associations and ministries of health not applicable</td>
<td>usually every 4 years, in some cases agreements last for up to 12 years</td>
</tr>
<tr>
<td>France</td>
<td>services of specialists in private-for-profit hospitals (private)</td>
<td>medical work (time, stress, required technical skills, mental effort) and practice expenses (space, equipment,</td>
<td>yes, but national target budget is regularly exceeded, more important: best-practice protocols and pre-authorization for certain expensive procedures</td>
<td>Conversion factor FFS catalogue + relative values French National Health Insurance Fund (NHIF) in collaboration with specialist societies – each responsible for fees applicable to its specialty.</td>
<td>Conversion factor FFS catalogue + relative values French National Health Insurance Fund (NHIF) in collaboration with specialist societies – each responsible for fees applicable to its specialty.</td>
<td>not applicable irregular, 10 amendments between 2011 and the beginning of 2014</td>
</tr>
<tr>
<td>Germany</td>
<td>services provided by attending physicians for self-paying patients</td>
<td>medical work (time) and practice expenses (space, equipment, supplies, support staff)</td>
<td>no (for physician services) but DRG-based payments for hospitals are limited by a target budget</td>
<td>FFS catalogue + relative values EBM (for SHI services): Valuation Committee of the Federal Joint Committee (representatives of SHI funds and SHI physicians)</td>
<td>FFS catalogue + relative values EBM (for SHI services): Valuation Committee of the Federal Joint Committee (representatives of SHI funds and SHI physicians)</td>
<td>EBM: irregular, last major revision in 2009, minor adjustments since then</td>
</tr>
<tr>
<td>Switzerland</td>
<td>outpatient services</td>
<td>medical work (time, qualification of specialist, specialist assistance) and practice expenses (space, equipment, supplies, support staff)</td>
<td>No</td>
<td>FFS catalogue + relative values TARMED Suisse (a company representing payers and providers), if payers and providers cannot reach an agreement, Federal government can intervene Negotiated between SHI companies and providers (cantonal associations of physicians and hospitals)</td>
<td>FFS catalogue + relative values TARMED Suisse (a company representing payers and providers), if payers and providers cannot reach an agreement, Federal government can intervene Negotiated between SHI companies and providers (cantonal associations of physicians and hospitals)</td>
<td>GOA: last complete revision in 1982, last major update 1996 EBM: Annually GOA: last update 1996 but physicians can bill multiples of the conversion factor annually</td>
</tr>
<tr>
<td>The Netherlands</td>
<td>services provided by most specialists in general hospitals and independent treatment centers</td>
<td>until 2015: medical work (time) until 2015: medical work (time) until 2015: medical work (time)</td>
<td>2012–2015: national and hospital level budgets</td>
<td>FFS/DRG catalogue + relative values Netherlands Healthcare Authority (NZA) responsible for DRG catalogue since 2015: specialist fees per DRG are determined by negotiations between specialists and hospitals since 2015: not applicable Centers for Medicare &amp; Medicaid Services (CMS) on the basis of advice from the specialty societies Congress</td>
<td>FFS/DRG catalogue + relative values Netherlands Healthcare Authority (NZA) responsible for DRG catalogue since 2015: specialist fees per DRG are determined by negotiations between specialists and hospitals since 2015: not applicable Centers for Medicare &amp; Medicaid Services (CMS) on the basis of advice from the specialty societies Congress</td>
<td>irregular</td>
</tr>
</tbody>
</table>
| USA (Medicare) | almost all services provided by specialists in hospitals                                | medical work (time, intensity of work), practice expenses (space, equipment, supplies, support staff), malpractice costs | until 2015, national expenditure growth was – in theory – contained by a target budget; in future payment will be modified based on quality and costs | FFS catalogue + relative values FFS catalogue + relative values FFS catalogue + relative values FFS catalogue + relative values | FFS catalogue + relative values FFS catalogue + relative values FFS catalogue + relative values FFS catalogue + relative values | annually (since 2012) annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually 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annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annually annual
on best-practice protocols and a system of pre-authorization for certain expensive procedures. In the Netherlands (and Germany), budgets play an important role by limiting the total expenditure volume for inpatient care.

3.3. Characteristics of salary systems

Table 3 provides an overview of salary systems in the eight included countries. The table shows that most specialists in hospitals of most countries receive salaries and that at least some specialists in all countries are paid by salaries. In the USA and Sweden, salaries are usually negotiated individually between specialists and hospitals. In Canada, France, Germany, Switzerland, and the Netherlands, associations of physicians and associations of hospitals collectively negotiate about salary scales and salary increases. In England, the salary scale is fixed by the Department of Health. The frequency of salary revisions varies from annual reviews in England to irregular negotiations in France.

In countries with official salary scales, the most important factor influencing salary levels is the experience of specialists, which is usually defined in terms of years worked as a specialist. In countries with a strong hierarchical organization of specialists in hospitals, such as France, Germany, and Switzerland, the position in the hierarchy is another important factor determining salary levels. For example, in Germany there are four hierarchical levels of specialists, i.e. specialists, senior specialists, coordinating senior specialists, and chief physicians, each with associated higher salaries (see Table A1 in online Supplementary material). By contrast, hierarchy is not formally taken into account in England and the Netherlands.

Also the specialty is not formally taken into account in countries with official salary scales. However, individuals may be able to negotiate about their classification within the salary scale (e.g. in Switzerland) or about bonuses (e.g. Germany, Switzerland, the Netherlands), and the negotiation position might be influenced by the specialty. In the USA and Sweden, where salaries are based on individual negotiations, the specialty can have an important influence on specialist income, and other factors such as hospital location, popularity of a particular specialist and the income earning potential if self-employed will also play a role.

In all countries, the salary level of an individual specialist depends strongly on the number of hours worked per week (not shown in Table 3), and specialists may have a certain degree of freedom in determining the number of working hours. For example, in England, specialists can agree to work more than 40 h per week (the standard contract) and they will be paid extra for every additional four hour session. In the Netherlands, specialists can make an agreement to work on average up to 45 h per week (instead of 40 h) excluding nights/weekends and/or up to 52 h including nights/weekends. In Germany, many specialists sign agreements with their hospitals, where they accept to work up to 58 h per week.

3.4. Other financial benefits

Other financial benefits vary widely across and usually also within countries as they often depend on the specific hospital and individual negotiations. The most systematic national approach for bonuses exists in England, the clinical excellence awards (CEA): specialists have to apply to either local or national committees, demonstrating their achievements in relation to a range of criteria, such as patient care, professional leadership, improvement in service organization, evidence-based practice, research, teaching — and almost 50% receive an award (see Box A1 in the online Supplementary material [17]).

In other countries, bonuses are usually based on individual negotiations and often related to productivity measures, e.g. in terms of DRG-based casemix points or facility fees generated by specialists. This is the case in Germany (only for chief physicians), Switzerland, and — most importantly — in the USA. In fact, in the USA, payment in relation to productivity is usually more important for employed specialists than their base salary.

Furthermore, access to FFS income is an important benefit that is explicitly offered by hospitals to certain categories of employed specialists in France, Germany, and Switzerland, although these are increasingly converted into bonuses for the achievement of specified activity and/or quality goals [18]. In England, full-time NHS consultants may engage in private practice activity in their own time but only after having worked 44 h for the NHS [19].

4. Discussion

This is the first study to systematically compare payment systems for specialists in hospitals across countries. The results show that all countries (except England and Sweden) use both FFS and salary for the payment of specialists, often combined with other financial benefits. However, there is an impressive degree of variation across (and also within) countries. In five countries, most specialists work as employees of hospitals — but in Canada, the Netherlands and the USA, most specialists are self-employed. In addition, specialists in Canada and the USA as well as specialists working in private hospitals in France, and attending office-based physicians in Germany are paid directly by the statutory payer — and not by the hospital, as is the case in the other countries.

The exact mix of different payment streams, of FFS, salary and other financial benefits as well as the specificities of these systems are the result of historical country specific developments, and they rarely follow theoretical considerations about the optimal design of payment incentives for specialists in hospitals [5]. Policy-makers in many countries struggle with reforming these systems in order to optimize the incentives, and they may benefit from taking a look at the experiences of other countries.

However, when looking at innovations and reform experiences abroad, a theoretical framework is needed that helps to clarify the incentives of different payment systems as these determine the advantages and disadvantages of alternative approaches. Fig. 1 shows such a framework that was originally developed by Ellis and Miller [20], and that we have adjusted for our purposes. The framework draws attention to four generic dimensions of payment
Table 3
Characteristics of salary systems for specialists in hospitals of eight countries.

<table>
<thead>
<tr>
<th>Relevance of salaries</th>
<th>Setting and updating salary levels</th>
<th>Frequency of revision</th>
<th>Criteria for defining salary levels</th>
<th>Additional income for specialists</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>collective negotiations at provincial level: specialists’ associations with MoH</td>
<td>every four years</td>
<td>depends on province, specialty, hospital type</td>
<td>allowances for continuing medical education, pension contributions, etc.</td>
</tr>
<tr>
<td>England</td>
<td>contract renegotiated at irregular intervals (last time 2003, currently under renegotiation)</td>
<td>annual salary review</td>
<td>experience (years)</td>
<td>Clinical Excellence Awards (50% of consultants); FFS for private practice (39% of consultants)</td>
</tr>
<tr>
<td>France</td>
<td>collective negotiations at national level: specialists’ unions with hospital federation under tight supervision of MoH</td>
<td>negotiations at irregular intervals (last time July 2016)</td>
<td>contract type¹; hierarchy, experience (years), place of work (university vs. other hospitals)</td>
<td>add-ons, e.g., work at several hospitals, no private practice; FFS for private practice (11% of specialists), teaching salary at university hospitals FFS (for private patients, depends on hierarchy) and/or FFS/casemix-based bonuses (chief physicians only)</td>
</tr>
<tr>
<td>Germany</td>
<td>collective negotiations: physicians’ union with employers’ associations (e.g. all municipal hospitals) or individual hospitals, individual negotiations for salaries above official pay scale</td>
<td>depending on agreement</td>
<td>hierarchy, experience (years)</td>
<td></td>
</tr>
<tr>
<td>Sweden</td>
<td>contract and pay increase: collective negotiations: employers’ and Swedish Academics’ trade union salary: individual negotiations: specialists with hospitals</td>
<td>contract renegotiated at irregular intervals (ongoing contract 2017–2020)</td>
<td>experience (years), hierarchy (responsibility), medical skills, specialty, location (rural vs. urban)</td>
<td>FFS for private practice</td>
</tr>
<tr>
<td>Switzerland</td>
<td>physician association with groups of hospitals (e.g. municipal or cantonal hospitals) or medical commission with hospital individual negotiations about place in salary scale, share of FFS income</td>
<td>annual salary review</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Netherlands</td>
<td>collective negotiations: Association of Specialists with either the Hospital Federation (NVZ) or the Federation of University Medical Centers (NFI)</td>
<td>every two years</td>
<td>experience (years), responsibility (department or division manager), teaching</td>
<td>hospital specific bonuses (information unavailable)</td>
</tr>
<tr>
<td>USA</td>
<td>mostly procedural specialties, e.g. neurosurgery, cardiology</td>
<td>n/a</td>
<td>productivity (measured in FFS points), specialty, popularity, location (rural-urban)</td>
<td>FFS-based bonus</td>
</tr>
</tbody>
</table>

Notes: DDRB = Review Body on Doctors’ and Dentists’ Remuneration, MoH = Ministry of health, n/a = not applicable; ¹ Specialists in France can have various types of employment contracts and salaries vary accordingly: in university hospitals, they are quasi-civil servants; in other public and non-profit hospitals, there are full- or part-time specialists with permanent or short-term contracts besides “attachés”, who are salaried external practitioners working in hospitals for between one and ten half-days a week.
systems — and these guide the following discussion of options for the improvement of payment systems internationally:

- The information on which payment is based (“What do we pay for?”),
- The scope of payment (“What is included?”),
- The adequacy of payment (“How much?”) and
- Adjustments for the quality of care.

### 4.1. Diversifying the information basis of payment: moving towards blended payment systems

Salary payments in most countries depend primarily on information about provider characteristics (the lower left angel “A” in Fig. 1), such as experience or hierarchy, for determining the level of payment (see Table 3). Consequently, salaries reward specialists for who they are but they do not provide financial incentives for activity. By contrast, traditional FFS payments only consider information about the number and type of services provided (B). Therefore, they carry incentives to provide a high number of services — but they may also lead to inappropriate or unnecessary levels of service provision. Case payments or capitations rely on information about patient or population characteristics, such as diagnoses and age (C), and they carry an incentive to treat a high number of patients (or to register a large share of the population) but to limit the services per case [5,20]. The available empirical literature broadly confirms these theoretical considerations about the effects of payment systems [21–24].

In order to reduce the unintended consequences of payment mechanisms, countries are increasingly shifting towards blended payment systems. For example, in the Netherlands and Switzerland fees of self-employed specialists are often based on DRGs, which combine information on patient and service characteristics in order to define payments \(BC = e\). This means that for some patients, payment can be determined simply on the basis of the diagnosis (patient characteristics = C), e.g. a patient admitted for syncope and collapse, which avoids any incentives for the provision of specific diagnostic or treatment services (service characteristics = B). For other patients, there are incentives for the provision of particular services, e.g. different DRGs would apply for patients with acute myocardial infarction receiving percutaneous coronary interventions and those that do not receive these interventions. As a result, the incentive for overprovision of individual services inherent in payments defined by service characteristics (B) is counterbalanced by the incentive to reduce the services per case inherent in payments defined on the basis of patient characteristics (C). In addition, in the Netherlands, fees per DRG are combined with negotiated hospital level budgets \(AB\) to further limit the incentive of treating a high number of cases inherent in case payments. Of course, the incentive to reduce services per case also depends on the second dimension of the framework, i.e. the scope of payment (see next section).

A trend towards blended payment systems exists also for salary systems in many countries, where base salaries are increasingly combined with explicit bonus systems. In Switzerland, information about the services performed by individual specialists, e.g. in terms of registered FFS points \(AB = d\), determines as much as 30% to 40% of specialists' income [25]. In the USA, where the major share of employed specialists' income is usually awarded on the basis of volume metrics, i.e. based on generated FFS points, salaries may, in fact, mimic the incentives of FFS systems (B) — including their unintended incentives for overprovision of services. In Germany, chief physicians often receive bonuses related to the DRG-based casemix volume \(ABC\) but also this carries the danger of incentivizing unwarranted activity. In fact, the German Social Code Book (§135c SGB V) was recently amended by Parliament to specify that physician salary agreements with hospitals should not include explicit bonuses for the achievement of volume targets [26]. Instead targets related to the organization of care, e.g. managing length of stay or improving discharge arrangements, are encouraged [27].

Similarly, CEA in England (Box A1 [17]) explicitly reward the multidimensional contribution of specialists to hospital performance instead of using simple volume metrics. Also the inclusion of hierarchy in a salary scale (see Table A1 for an example from Germany [17]) can contribute to ensuring a high level of commitment of specialists to various dimensions of clinical work. In fact, it has been argued that countries without hierarchies in hospitals, such as England, could benefit from the introduction of a “senior consultant” position with an associated higher salary [28].

### 4.2. Broadening the scope of payment: bundled payments and systematic bonus schemes

The second dimension in the framework of Ellis and Miller [20], i.e. the scope of the payment, can range from narrow, where each provider and each service is paid for separately, to very broad, where there is only one “bundled payment”, including all services provided by all providers during a care episode or a specified period of time (Fig. 1). The scope of payment is independent from the information basis of payment. For example, FFS payments can be narrow, i.e. defined for individual services, or broad, i.e. defined for a bundle of services; and also salaries can be narrow, i.e. covering only services provided to public patients treated as inpatients, or broad, covering all patients treated by hospitals. DRGs are generally broader in scope than FFS payments, and consequently they provide fewer incentives for the provision of individual services. However, also DRGs can be narrow, e.g. including only non-physician services provided in one hospital department, and broad, e.g. including all services provided during an initial inpatient stay and potential readmissions [29,30].

A narrow scope of FFS payments incentivizes the provision of all necessary services (ward rounds, physical exams, lab tests, surgical procedures) — but providers can also gain income by billing additional unnecessary ones. In addition, if hospitals and specialists are paid separately, this may provide conflicting incentives for specialists and hospitals. In the USA, where Medicare continues to pay separately for services provided by hospitals (DRG-based payment) and those provided by specialists (FFS), policy-makers have tried for years to replace these separate payment streams with one bundled payment [31,32], and numerous studies suggest that this could lower costs and improve quality of care [33–35]. Nevertheless, Medicare has recently moved away from introducing mandatory bundled payments for certain episodes of care [36]. Also in France, specialists in private hospitals bill separately for the services provided, and a similar arrangement exists for attending specialists in German hospitals. Therefore, the experience of the Netherlands and Switzerland, where separate payment streams for hospitals and specialists were merged relatively recently, may provide inspiration for reform.

In the Netherlands, the bundling of specialist fees with hospital payment was achieved over a ten year period and involved two steps. In a first step, when DBCs were introduced for hospital payment in 2005, an honorarium component was calculated as an explicit part of the national price of almost all DBCs. For specialists, this meant that several FFS payments were bundled within the honorarium component of one DBC. However, because the honorarium component remained a separate identifiable part of the DBC — although it was billed by the hospital together with the hospital component — the change did not appear to be overly radical. The second step took place in 2015, when the distinction between the honorarium component and the hospital component of the DBC-based payment was abolished. As a result, hospitals now negotiate
with specialists about their payment, either per DBC or — increasingly — about an annual budget for all self-employed specialists at the hospital.

In Switzerland, a similar model of negotiated bundled fees per DRG has been implemented for self-employed specialists. Prior to the introduction of DRG-based hospital payment in 2012, attending office-based specialists used to be paid separately by insurers on the basis of a FFS system. Since then, hospitals always receive only one DRG-based payment, covering all costs of the inpatient stay including physician services, and readmissions until 18 days after discharge [37]. Attending physicians continue to treat inpatients but they now have to negotiate with hospitals about the payment that they receive for their services. The Swiss Association of Attending Physicians (SBV/ASMI) has developed a fee catalogue, specifying for each DRG an amount of money that corresponds to the physician services included in the DRG and this is used as the basis for negotiations between hospitals and attending specialists [38].

A narrow scope of payment can be problematic also for salaries. Traditionally, certain categories of employed specialists have been allowed to earn additional FFS income for the provision of certain services (e.g. outpatient services in France and Switzerland) or the treatment of certain patients (e.g. private patients in Germany). For hospitals, this has the advantage that the base salaries can be set at levels that are below the income expectations of specialists. However, the disadvantage is that specialists have an incentive to focus their work efforts on those areas, where they can expect to receive additional FFS payments. Therefore, in order to rationalize the incentives of salary systems, FFS payments, e.g. for chief physicians in Germany or higher categories of specialists in Switzerland, are increasingly replaced by formal bonus systems, which provide a clearer set of incentives for activity or quality in the care of all patients.

4.3. Improving payment adequacy through regular revisions of FFS systems and individual salary negotiations

Ensuring that specialists are adequately paid for the services they provide is essential, and this is the third dimension of the framework shown in Fig. 1. If payments are too low, i.e. below income expectations of physicians, they do not provide incentives to work hard, and physicians are likely to reduce quality. If payments are too high, this unnecessarily drives up costs and reduces efficiency. Furthermore, relative fee levels are important as fees with varying profitability may inadvertently distort the incentives of the payment system [39,40]. Again, the dimension is independent of whether specialists are paid FFS or by salary [20].

Payment adequacy is a problem in many countries, where FFS incomes in procedural specialties are often about twice as high as in non-procedural specialties [25,41–43]. This is mostly because profitability of different services varies considerably within and across specialties, providing strong (unintended) incentives for the provision of more profitable services — and underprovision of unprofitable ones. The reason for the variation in profitability is that the development of FFS catalogues and the updating of relative values is always heavily reliant on input from specialist societies (see Table 2). Representatives of specialists are unlikely to demand that fees of their most profitable services are lowered, when changes in productivity lead to lower costs [44]. Therefore, in order to improve payment adequacy, FFS catalogues and relative values would need to be regularly updated on the basis of objective data sources.

In the USA, Centers for Medicare & Medicaid Services (CMS) have recently moved in this direction by testing the feasibility of introducing a system of annual revisions of the FFS catalogue and its relative values, using more objective data sources (in addition to input from specialist societies) for updates, including operating room logs, analyses of physician work time available from databases, and direct observation. Furthermore, the Medicare Payment Advisory Commission (MedPAC) has recommended the establishment of a routine data collection system based on a sample of efficient practices [42]. Even if the impact of these initiatives has so far been rather small, this is an interesting development that deserves further exploration.

In fact, the co-existence of employed specialists and self-employed specialists in hospitals of all countries (see Table 1) provides an opportunity to use hospital data for the calculation of relative values for physician services provided in hospitals. For employed specialists, hospitals have data about the number of hours worked, which can be reconciled with the number of fees billed by these specialists in order to obtain more realistic estimates about the time needs for the provision of these services. Furthermore, if physician payment is aligned with DRG-based hospital payment, hospital cost accounting systems can be adjusted to include a cost category for physicians in the calculation of costs per DRG. This information can then be used to calculate relative values for physician reimbursement per DRG — as has been done by the Swiss Association of Attending Physicians as the basis for negotiations about physician payment [38].

However, payment adequacy is a problem also in countries with strict salary scales, where certain hospitals can have problems acquiring sufficiently qualified and motivated specialists. In this case, individual negotiations may help to align income expectations of employed specialists with hospitals’ ability to pay. Higher salaries can, for example, be negotiated in geographical areas that are less attractive for specialists or for specialists with particular skills as is currently done in Sweden, Switzerland, or the USA.

4.4. Linking payment to quality of care

The final dimension of the framework shown in Fig. 1 concerns the question of whether payment depends on the quality of care. All traditional payment mechanisms, i.e. FFS, salary, and capitation, have in common that payment is not explicitly related to the quality of care — even if the incentives of these payment mechanisms certainly have an influence on quality [45]. However, all payment mechanisms can be explicitly adjusted for quality of care, measured in terms of structure (Aq), process (Bq) or outcome (Cq) indicators of quality [46].

In the USA, a new merit-based incentive payment system (MIPS) will progressively come into effect, rewarding providers (including solo practitioners and groups) with below average costs and above average quality with upward payment adjustments starting in 2019 [47]. By international standards, the MIPS is certainly ambitious, measuring quality on the basis of more than 270 quality indicators (mostly process indicators), and awarding MIPS bonuses of up to 9% by the year 2022. However, the number of quality indicators per discipline is relatively small (e.g. 14 indicators for general surgery) and considerable debate remains about whether the program will be implemented as planned [48], and whether its focus on external incentives is indeed desirable [49]. In other countries, national pay-for-quality (P4Q) programs for specialists in hospitals do not exist, although individual hospitals may have various bonus agreements with specialist physicians, e.g. with chief physicians in Germany [27].

4.5. Limitations

Before drawing conclusions from the results and discussion, it is important to consider two important limitations of our study. First, our results are based on an exploratory analysis of payment systems in eight countries. Our discussion used the findings of this analysis in combination with theoretical considerations about the advantages and disadvantages of alternative payment approaches to
highlight interesting features of payment systems and reform experiences in different countries. While these can provide inspiration for policy-makers, our study does not allow to draw conclusions about the superiority of a particular payment approach in one country when compared to another. In fact, the empirical evidence on the effect of payment mechanisms on changing physician behavior is surprisingly weak [50–52], and even fewer studies are available that specifically look at specialists. Nevertheless, the available literature is in agreement about the broad direction of the effects of different payment mechanisms [5,6,21,50,53], and this allows us to draw conclusions about potentially interesting approaches.

Second, researchers participating in this study reviewed a wide range of documents and attempted to provide an accurate and comprehensive description of national specialist payment systems. Yet, given the complexity of payment systems, a certain degree of simplification is necessary in order to enable comparisons across countries. Certain particular aspects of national payment systems may have been lost as part of this simplification process, and individual preferences and perceptions of researchers inevitably influence the choice of elements that are selected for presentation. However, we attempted to assure accuracy by standardizing as far as possible the description of national payment systems using a questionnaire for data collection, and by cross-checking the information provided by national researchers.

5. Conclusion: lessons for improving payment of specialists in hospitals

Table 4 summarizes the main lessons of reform experiences from the reviewed countries along the dimensions of the framework presented in Fig. 1. The country examples hold lessons for policy-makers aiming to optimize the incentives of payment systems for both self-employed specialists and employed specialists.

First, in all countries, payment of self-employed specialists can be optimized by moving from a pure FFS system to a payment system that defines broad bundled fees on the basis of patient and service characteristics in order to provide a more balanced set of incentives. The experiences of the Netherlands and Switzerland show that self-employed specialists can be paid per DRG instead of per service. In addition, the Netherlands and Switzerland also show that it is possible to merge the two separate payment streams for physicians and hospitals into one broad DRG-based payment. Together, this can contribute to better aligning the incentives of hospitals and specialists and to reducing incentives for overprovision of individual services.

Second, payment adequacy of FFS payments is a problem in many countries, leading to unintended incentives for overprovision of more profitable services and unjustified income differences across specialties. The Medicare example of annual revisions of the FFS catalogue and the incorporation of more objective data sources to improve the accuracy of calculated fee levels is interesting for other countries and could be further strengthened in the USA. In addition, the example of self-employed (attending) specialists in Switzerland shows that it is possible to calculate physician fees per DRG on the basis of hospital cost data.

Third, also payment of employed specialists can be optimized by diversifying the information basis and broadening the scope of payment. Instead of determining salaries only on the basis of provider characteristics (qualification, experience), countries are increasingly combining a base salary with bonuses. These are based either on activity measures, such as FFS points or casemix (Germany, Switzerland, USA), or multidimensional criteria of performance (England). Alternatively (or at the same time), the inclusion of hierarchy as a modifier in a salary scale, e.g. in terms of a senior specialist position, can function as an incentive for sustained high levels of commitment. Furthermore, replacing access to additional FFS income with official bonus systems contributes to assuring work effort in relation to care for all patients – not only those bringing in FFS income.

Fourth, it is worth noting that specialist payment has so far been adjusted in relation to the quality of care only in hospital specific bonus programs. In this context, the introduction of the merit-based incentive payment system (MIPS) in the USA is certainly an interesting development – but it remains to be seen whether rewarding physicians for performance in relation to a limited set of (mostly process) indicators will really contribute to improved patient care.

Finally, as policy-makers in different countries struggle with optimizing the incentives inherent in payments for specialists in hospitals, international experiences may provide inspiration for future reforms. However, when looking at other countries, it is important to keep in mind not only the contextual differences in the design of national health systems and the relevance of non-financial factors but also the conclusion of Robinson [5]: “In physician pay-
ment, as in most other aspects of life, matters are never as good as we might hope but never as bad as we might fear.”

Declaration of conflicting interests

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Appendix A. Supplementary data

Supplementary data associated with this article can be found in the online version, at https://doi.org/10.1016/j.healthpol.2018.03.005.

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[17] To access the Appendix, click on the Appendix link in the box to the right of the article online.
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