

# International comparison of health care systems using resource profiles

Anders Anell<sup>1</sup> & Michael Willis<sup>2</sup>

The most frequently used bases for comparing international health care resources are health care expenditures, measured either as a fraction of gross domestic product (GDP) or per capita. There are several possible reasons for this, including the widespread availability of historic expenditure figures; the attractiveness of collapsing resource data into a common unit of measurement; and the present focus among OECD member countries and other governments on containing health care costs. Despite important criticisms of this method, relatively few alternatives have been used in practice.

A simple framework for comparing data underlying health care systems is presented in this article. It distinguishes measures of real resources, for example human resources, medicines and medical equipment, from measures of financial resources such as expenditures. Measures of real resources are further subdivided according to whether their factor prices are determined primarily in national or global markets. The approach is illustrated using a simple analysis of health care resource profiles for Denmark, France, Germany, Sweden, the United Kingdom, and the USA. Comparisons based on measures of both real resources and expenditures can be more useful than conventional comparisons of expenditures alone and can lead to important insights for the future management of health care systems.

**Keywords:** Health expenditures; health resources; models, theoretical; Denmark; France; Germany; Sweden; United Kingdom, USA.

*Voir page 776 le résumé en français. En la página 777 figura un resumen en español.*

## Introduction

The cost of delivering health care imposes a large, and often growing, burden in nearly all countries. Increasingly, health care decision-makers are being asked to improve performance by containing expenditures while maintaining steady improvements in access and quality. International differences among health care systems may provide valuable lessons in meeting these difficult objectives, since structural differences in the provision of health care, such as the mix of different resources, can in principle be linked to differences in performance (1).

International comparisons of health care resources have accordingly become commonplace. Most have been based on the national health care expenditures of OECD member countries, measured either as a fraction of gross domestic product (GDP) or on a per capita basis (2–11). For example, the most recent data show that health care expenditures in 1997 in the OECD countries ranged from 4.0% of GDP in the Republic of Korea and Turkey to 13.5% in the USA (7). Even when limited to high-income countries, the range is still large: 6.7%

(the United Kingdom) to 13.5% (7). When health expenditures are measured per capita in US\$, the gap is even wider. In 1997, per capita health expenditures, adjusted for differences in purchasing power, were nearly three times greater in the USA (US\$ 3925) than in the United Kingdom (US\$ 1347) (7).

This type of comparison is often used to support arguments that either too few or too many resources are allocated to health care. For example, some observers of the US health care system argue that the high expenditures, combined with similar or worse population health measures than in many European countries, indicate poor performance (1). Similarly, it has been argued that the National Health Service in the United Kingdom is consistently underfunded. However, such simple comparisons can reveal only how much a country spent on health care relative to other countries; they are poorly suited for inferring the optimal level of resources to devote to health care.

On a practical level, the link between health care resources and population health is not even well understood. In fact, existing measures of population health, e.g. life expectancy and infant mortality, are often crude and depend on numerous other factors. Moreover, the link will vary from country to country depending on national income, disease burden, and the preferences of patients, physicians and health care decision-makers. Even if the relationship were well known, comparisons would still be limited by the lack of a universal definition of what should be classified

<sup>1</sup> Director, Swedish Institute for Health Economics, PO Box 2127, S-220 02 Lund, Sweden (email: aa@ihe.se). Correspondence should be addressed to this author.

<sup>2</sup> Senior Project Manager, Swedish Institute for Health Economics, Lund, Sweden.

as health care spending; and the definitions used by individual countries tend to change over time (2, 8). Moreover, most comparisons use only data for the formal sector. Owing to large cultural differences in care patterns, e.g. in the extent of family involvement in care for the elderly and chronically ill, excluding the informal sector can add substantial bias (2, 8).

The most widely used measures (health care expenditures relative to GDP and health care expenditures per capita) must be interpreted with care. Changes in expenditures as a fraction of GDP, for example, are explained as much by changes in GDP as by changes in expenditures. A steady health care share of GDP over time does not therefore imply stable health care expenditures, but rather that changes in health care expenditures were proportionate to changes in GDP (12). Using per capita health expenditures can potentially solve this problem, though accurately converting the different currencies to a common measure of value has proven difficult. Exchange rates, for example, are often criticized for overlooking international differences in purchasing power. Purchasing power parity (PPP) indices have been used to resolve this (5, 7), but applying them to non-tradable, often public sector, services presents its own problems (13). A further problem with both measures is that changes in real resource usage cannot be distinguished from changes in the price level.

An even more important criticism of comparisons based on spending data, however, is their inability to account for the true economic costs of health care services: they do not account for the value of goods and services that personnel and equipment would have produced in the best alternative capacities, had they not been producing health care (4). Resources should be allocated to health care so long as the marginal value of medical services is greater than that of the production foregone in alternative uses, and not until some arbitrary expenditure quota is reached. Substantial differences in international productivity, and the resulting costs of lost opportunity, imply that comparisons based only on expenditures can be misleading; although expenditures may be relatively higher in one country, the economic cost may not.

In the early 1990s, the OECD began to address these issues by including measures of real health care resources alongside expenditure data in its regular data updates (11). Initially, the data were quite limited: number of inpatient beds, physicians, and pharmacists per 1000 inhabitants. Over time, the data have been expanded to include magnetic resonance imaging (MRI) units, computed tomography (CT) scanners, and hospital employees per bed (7). While these measures are admittedly crude, they go a long way towards documenting international differences in the stock of real resources available to health care.

Unfortunately, working these additional data into international comparisons of health care resources has been taken up only slowly (ref. 1 and 3 are

notable exceptions). Four factors may be particularly important in explaining this shortage.

- Nationally aggregated expenditure data, at least for OECD member countries, have long been accessible, and even now there are still more measures of expenditures than real resources.
- Because they are collapsed into a single monetary unit of measurement, expenditure data are easy to work with.
- The present focus among OECD governments on containing health care spending puts expenditures at the centre of the policy debate.
- The generally low awareness of what alternative bases of comparison exist, and how they relate to each other, may also play a role.

Until better measures of health care activity and performance become available, the usefulness of international comparisons can be improved if expenditure data are combined with available measures of the real resources allocated to health care. To motivate this, we present a simple framework for comparing data underlying health care systems. It is based loosely on the dichotomy between the stock of real resources and the flow of monetary expenditure. While it is clear that substituting other types of data for expenditures can lead to different results (1, 3), few studies have made a real attempt to account for differences. To encourage effort in this direction, we put forth a simple approach for comparing international health care systems based on “spider-web” diagrams. Because they can summarize a considerable amount of information in an easily understood graphical format, such diagrams permit the user to include a wide array of real resource measures without creating undue confusion. We illustrate this approach using data from a sample of six wealthy countries taken from the OECD database.

## Alternative approach to the international comparison of health care systems

### Simple classification of health care resources

Uwe Reinhardt has highlighted the importance of distinguishing between the management of real resources (human resources and other inputs) and the money transfer that these real resources extract from the rest of society (14). We borrow his logic and divide the common health care variables according to whether they measure the stock of real resources employed by health care, or whether they measure the flow of monetary expenditures (i.e. purchasing power) paid for the use of these real resources. The two categories are linked: the quantity of real resources multiplied by the respective factor prices gives the total monetary expenditure allocated to health care. Because of international variations in factor prices, the same level of expenditures may

purchase vastly different quantities of real resources in different countries.

Our classification scheme further subdivides real resources according to whether their factor prices are determined predominantly in domestic (local) or global markets. This may be important because factor prices in national markets typically reflect the economic conditions of an individual nation, whereas resources priced for international markets usually do not. For example, the wages of doctors, nurses and other health care personnel are mostly established domestically, with national income level being an important determinant. Prices for items such as patented drugs and medical equipment, on the other hand, are negotiated in the global market. Although differences in income levels across countries will force manufacturers and distributors to differentiate prices somewhat, the payers in individual countries have less control over these prices than over others. Moreover, this will become increasingly distinct as economic globalization continues. Two important points about this classification should be kept in mind.

First, stock and flow measures are linked dynamically: the stock of real resources takes the flow of purchasing power (monetary expenditures) as compensation for its contribution to the output and performance of the health care system. Increasing the stock of real resources requires a commitment of monetary expenditures over both the short and long term. For example, investment in education and research can increase human capital (15).

Second, health care inputs are interdependent, so that the capacity of the real resources, that is the capacity of the health care system, depends on how the available purchasing power is distributed among the different real resources, in addition to how well individual inputs are managed. For example, the capacity of human resources, and the optimal mix between staff categories, depends heavily on supportive technologies: new drugs and diagnostic equipment often increase the

productivity of nurses and physicians. Inadequate facilities, in contrast, reduce the potential capacity of human capital. Moreover, inadequate salaries provide few inducements for real work effort. In short, if the available purchasing power is not allocated efficiently among the different real resources and managed effectively, the health care system will function below its optimal capacity and output level.

## Data

We compiled OECD health care resource data for Denmark, France, Germany, Sweden, the United Kingdom and the USA for the years 1986, 1991, and 1996. These countries were chosen because they are wealthy, have been relatively well studied, have relatively accurate and complete data, and as a group represent an interesting variety of different models of health care provision. Moreover, each of these countries can afford the latest available technologies, so the degree to which they have chosen to adopt them provides interesting contrast. It should be noted, however, that the OECD data have a number of well-known limitations. For example, data definitions tend to vary across countries, as does the thoroughness and accuracy of data collection. Nonetheless, as there is no clearly superior alternative and because our principal aim is to illustrate an approach rather than to make a definitive statement about international differences, we shall use the OECD data set.

We limit the analysis to 10 variables, broken down into the three categories outlined above: monetary expenditure measures, measures of real resources priced in international markets, and measures of real resources priced in domestic markets. To measure monetary payments to the health care sector, we consider the percentage of GDP spent on health care, health care spending per capita (US\$ PPP), and total expenditures on pharmaceuticals per capita (US\$ PPP). The data are summarized in Table 1.

Table 1. Selected measures of health care expenditure for 1986, 1991 and 1996 in six countries<sup>a</sup>

	Denmark	France	Germany	Sweden	United Kingdom	USA
<b>Expenditures (% of GDP)</b>						
1986	8.2	8.5	9.1	8.7	5.9	10.8
1991	8.2	9.1	9.4	8.7	6.5	13.4
1996	8.1	9.8	10.8	8.6	6.9	14.1
<b>Expenditures per capita (US\$ PPP)</b>						
1986	1165	1135	1286	1189	719	1917
1991	1486	1656	1600	1458	1006	3035
1996	1973	2005	2288	1701	1358	3926
<b>Drug expenditures per capita (US\$ PPP)</b>						
1986	85	185	178	86	101	170
1991	122	276	228	126	141	259
1996	168	337	281	222	225	370

<sup>a</sup> Source: OECD health data, 1999.

There is considerable variation in the sample, both between countries and over time. For example, for the three years studied, health care expenditures per capita were approximately three times higher in the USA than in the United Kingdom. Moreover, over the 10 year period 1986–96, expenditures approximately doubled in both these countries. In contrast, spending in the Scandinavian countries (Denmark and Sweden) increased only in proportion to GDP growth. The percentage of GDP spent on health care was actually modestly lower in 1996 than in 1986 in both countries. Pharmaceutical expenditures per capita have also grown rapidly in all of the countries, more than doubling in many of them.

Measures of real resources in the health care sector are summarized in Table 2. Data are presented for two resources that are sold in international markets: MRI units per capita and CT scanners per capita. Also, data are shown for five resources that

have primarily domestic markets: hospital beds per capita, total health care employment per capita, physicians per capita, nurses per capita, and the percentage of the labour force employed in the health care sector. Data were missing for some of these measures, particularly the number of MRI units and CT scanners, and in these instances we used data for adjacent years, if available.

As with the expenditure measures, there is considerable variation across countries and over time in the stock measures. France and Germany, for example, had roughly twice as many hospital beds per capita as the USA and over 50% more than Denmark and the United Kingdom. In contrast, the USA has considerably more MRI units and CT scanners than any of the other countries.

Employment in the health care sector, whether measured per capita or as a percentage of the labour force, was higher in Sweden than in the other

Table 2. Selected real health care resource measures for 1986, 1991, and 1996<sup>a</sup>

	Denmark	France	Germany	Sweden	United Kingdom	USA
<b>A. International markets</b>						
<b>MRI units per capita</b>						
1986	—	0.4	0.7	0.6	0.2	4.6
1991	2.5	1.1	2.0	2.1	1.1	10.1
1996	—	2.3	5.7	6.8	3.4	16.0
<b>CT scanners per capita</b>						
1986	—	3.3	8.0	5.7	2.6	12.5
1991	5.8	6.9	9.3	12.0	4.3	26.2
1996	—	9.4	16.4	—	—	—
<b>B. National markets</b>						
<b>Hospital beds per capita</b>						
1986	7.0	10.3	11.0	14.2	7.2	5.4
1991	5.4	9.6	10.1	11.8	5.6	4.8
1996	4.7	8.7	9.6	5.6	4.5	4.0
<b>Health care employment per capita</b>						
1986	21.1	26.0	23.2	52.7	21.9	26.4
1991	21.5	25.9	27.0	51.2	21.0	30.9
1996	18.9	—	28.5	39.0	20.3	—
<b>Physicians per capita</b>						
1986	2.6	2.3	2.7	2.8	1.4	2.3
1991	2.8	2.7	3.1	2.9	1.5	2.5
1996	2.9	2.9	3.4	3.1	1.7	2.6
<b>Nurses per capita</b>						
1986	6.0	5.3	7.8	8.8	4.2	6.6
1991	6.7	5.4	8.9	9.4	5.2	7.3
1996	7.0	5.9	9.5	10.2	4.5	8.1
<b>Health care (% of total employment)</b>						
1986	4.1	6.6	5.3	10.2	5.1	5.8
1991	4.2	6.6	5.8	9.9	4.6	6.6
1996	3.8	—	6.4	8.5	4.5	—

<sup>a</sup> Source: OECD health data, 1999.

countries, although total employment per capita declined substantially in Sweden during the 1990s. The stocks of both physicians and nurses have been growing in all of the countries over time, including Sweden. In fact, Sweden had among the highest numbers of physicians and nurses per capita for each of the three years studied. The percentage of the labour force allocated to health care is declining in Denmark, Sweden, and the United Kingdom.

### Health care resource profiles

As discussed above, a desirable feature of health care expenditures is that they condense resource usage into a single number, which can be compared easily across countries. Comparing a wide array of resource measures, for example those presented in Table 1 and Table 2, can be considerably more confusing. Spider-web diagrams can eliminate much of this confusion, however, by summarizing large amounts of information in an easily understood format, and making it convenient to include all ten resource measures in a single resource profile. It should be remembered, of course, that the quantities on each of the rays may not be independent of the others.

Based on the data in Table 1 and Table 2, we constructed a spider-web diagram for each of the six countries (Fig. 1a–f). Data for all three years were included. To facilitate comparison across countries, we normalized the data to the maximum value recorded for the group. For example, since the USA spent the most on health care relative to GDP (e.g. 14.1% in 1996), the value for the USA in this category would be 1.00, the “resource frontier”. The values for the other countries would be scaled accordingly. For example, the value for health care relative to GDP for the United Kingdom in 1996 would be  $6.9 \div 14.1$ , i.e. 0.49. Alternatively, one could scale the data relative to the group mean or median. However measured, it is important to note that the “resource frontier” does not reflect best performance or any other normative criterion. Rather, it represents only the relative importance of each resource type for each country. Starting from the top and moving clockwise, we arranged the diagrams so that measures of monetary expenditures are located at the upper right; measures of real resources with global prices are located at the lower right; and measures of real resources with national prices are located to the left.

### Resource profiles for six health care systems

The health care resource profiles for Denmark, France, Germany, Sweden, the United Kingdom and the USA are presented in Fig. 1a–f, respectively. A number of interesting features are immediately evident. For example, while the USA consistently defined the resource frontier for expenditure and technology measures, Sweden consistently had the

highest labour resources. In contrast, the United Kingdom, and to a large extent Denmark, allocated relatively few resources of any kind to their health care systems. Resource allocations in the United Kingdom were at most about 50% of the resource frontier for each of the 10 resource measures for all years.

The USA stands out for its use of technology as measured by drug expenditures per capita, MRI units per capita, and CT scanners per capita. Though France had higher drug expenditures per capita in 1986 and 1991 and Germany did in 1986, expenditure growth has been higher in the USA and a gap had emerged by 1996. Denmark, Sweden, and the United Kingdom have had considerably lower outlays on pharmaceuticals. However, the other countries, particularly Sweden, have begun to close the gap in MRI units and CT scanners in relative, if not in absolute, terms.

Sweden stands out as defining the resource frontier for the stock of human resources. With the exception of physicians per capita in 1991 and 1996, Sweden maintained the highest employment of health care professionals according to each of the various measures. Interestingly, the staff mix varies significantly across both countries and years. For example, in relative terms, there has been a shift from nurses to other health care staff in the United Kingdom. Hence, the proportion of qualified staff has fallen. This trend is echoed by the situation in Germany. In Sweden, however, the opposite has occurred. Though it cannot be seen because Sweden is frequently the resource frontier, there was a sharp decline in the number of unqualified staff during the 1990s (Table 2).

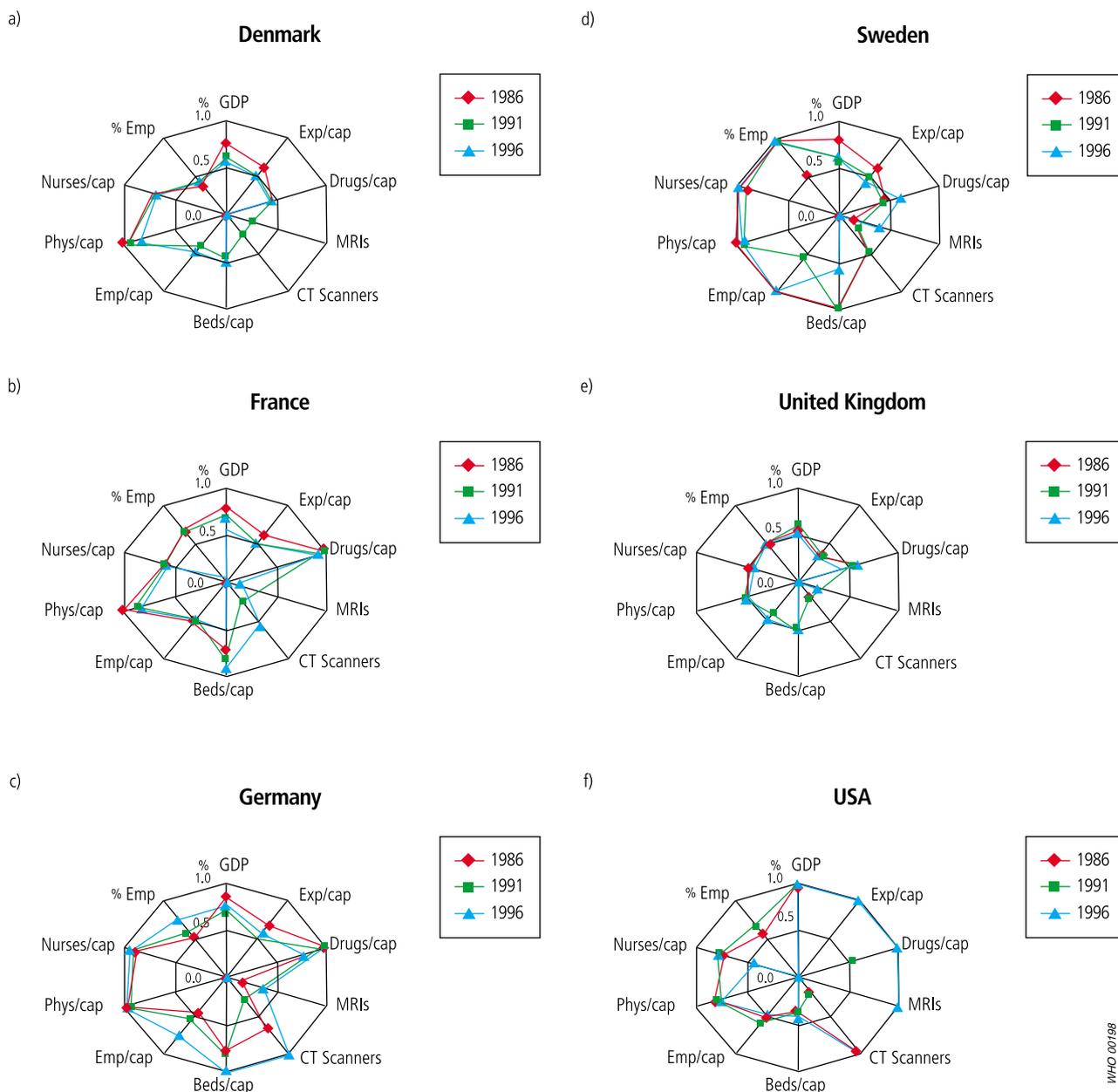
Sweden is also unique in that it is the only country to have relatively lower health care expenditures than the ratio of health care employment to total employment. If the ratio of health care employment to total employment is considered to be a crude measure of the opportunity cost of health care, Sweden appears to allocate a relatively modest share of its purchasing power to support a large employment base in the health care sector.

Finally, interesting observations are also apparent from the examination of changes over time for individual countries. In some of the countries, for instance the United Kingdom and the USA, there was a more or less stable pattern over the years. In contrast, substantial changes in many of the measures are apparent in France and Germany. For example, employment per capita, hospital beds per capita, and the ratio of health care employment to total employment have all increased sharply in relative terms in Germany, while total and drug expenditures have fallen. Some of the change in expenditures, however, is likely explained by changes in purchasing power.

### Discussion

Health care expenditures, whether measured as a fraction of GDP or on a per capita basis, are frequently used to support international comparisons of health

Fig. 1a–f. Spider-web diagrams for the six study countries showing selected health care expenditures and resource measures for 1986, 1991, and 1996, normalized by the group maximum (% GDP = % gross domestic product; Exp/cap = expenditures per capita; Drugs/cap = drug expenditures per capita; MRIs = MRI units per capita; CT Scanners = CT scanners per capita; Beds/cap = no. of hospital beds per capita; Emp/cap = health care employment per capita; Phys/cap = No. of physicians per capita; Nurses/cap = no. of nurses per capita; % Emp = health care employment as % of total employment)



care resources. For a number of the reasons mentioned in the introduction, however, such comparisons are often misguided. In fact, only for a specified output level (contribution of a health care system to health status) is it even clear whether low or high expenditures are preferable. Nevertheless, the annual purchasing power transferred into the health care sector is an important determinant of the output and performance of a health care system. We believe that comparisons that account for both purchasing power and the stock of real resources can thus support a broader understanding of international differences, as well as aid in the formulation of useful new strategies for the future management of health care systems.

In a simple illustration using data from Denmark, France, Germany, Sweden, the United Kingdom and the USA, we found little correlation between expenditures and the stocks of human resources. For example, despite much higher expenditures on health care resources, the stock of qualified staff in the USA was quite similar to the stocks in Denmark and Sweden. Moreover, total health employment, whether measured per capita or as the fraction of total employment, was higher in Sweden than in the USA. The USA also had relatively fewer hospital beds, ranking last in the sample. On the other hand, access to advanced medical technology was far greater in the USA than

WHO 00198

in the other countries, and this gap appears to be increasing in absolute terms. It would appear that relative differences in staff wages and access to medical technology may explain a substantial part of the difference between US and European expenditures.

The study sample was chosen to include wealthy countries because they could, in principle, afford most aspects of modern health care. The degree to which they have chosen to employ the different resources thus reflects free choice more than strict capital constraints. With some forethought, however, this approach can also be applied to countries with more limited means. In fact, because the health care systems in poorer nations have gone relatively unresearched, such applications may be even more interesting.

The focus of our approach on capacity as well as current expenditures has highlighted several interesting questions about how health care resources are (and should be) managed. For example, only differences in supply and demand factors, such as differences in productivity and in the value attached to health outputs, can in principle justify the large US health care expenditures. An important question, then, is whether the increase in US physicians' income in the 1970s and 1980s (16) corresponded with increased productivity and/or value, or whether it reflected poor management in the pre-managed care era. The data presented for Sweden raise the opposite question. Given that the value attached to health care surely did not decrease over this period, was it possible to reduce the relative incomes of Swedish physicians (6) without pushing down productivity? Moreover, is the relatively low fraction of GDP allocated to Swedish health care combined

with a relatively large stock of human resources sustainable in the long run?

While we cannot answer these questions in the present analysis, we believe that framing the issues in the context of purchasing power, the stock of real resources, output and value helps to identify the right questions for future analyses. The clear suggestion from our analysis is that it may be misguided to use only health care expenditures to manage health care resources. Managing expenditures cannot replace management of the dynamic link between expenditures, real resources and, ultimately, performance.

## Conclusion

Comparisons based on measures of both real resources and expenditures can be more useful than conventional comparisons of expenditures alone, and can lead to important insights for the future management of health care. Such efforts may shift the present focus on expenditures towards more informative comparisons of the use and management of real resources given the available financial resources. The approach advocated here is simple and uses country profiles to summarize a wide variety of resource measures. It is hoped that it can be further developed and refined in the future. Potentially fruitful directions might include a focus on individual diseases; indeed, in management studies of individual diseases, it may even be feasible to include measures of output and performance.

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## Résumé

### Comparaison internationale des systèmes de soins de santé fondée sur les profils des ressources

Le coût de la prestation des soins de santé est souvent de plus en plus pesant pour la quasi-totalité des pays. Les décideurs dans le domaine des soins de santé sont de plus en plus fréquemment priés d'améliorer la performance en contenant les dépenses, tout en améliorant constamment l'accès et la qualité. Pour trouver les moyens de satisfaire à ces objectifs difficiles, les responsables de la fourniture et du financement des soins de santé procèdent couramment à des comparaisons des ressources consacrées aux soins de santé dans différents pays, en particulier dans les pays membres de l'OCDE.

La plupart des études effectuées se sont appuyées sur les dépenses de santé nationales. Si ces comparaisons sont souvent utilisées pour démontrer que trop, ou au contraire, trop peu de ressources sont allouées aux soins de santé, les données relatives aux dépenses ne permettent pas réellement d'étayer ces affirmations. Il est vrai que les chiffres des dépenses ne rendent pas bien compte des avantages que nous procurent les services de

soins de santé, les comparaisons entre pays étant en outre compliquées par les questions monétaires. De plus, et c'est peut-être là le plus important, les dépenses ne reflètent pas le véritable coût économique des dépenses de santé, c'est-à-dire la valeur des biens et des services que le personnel et les équipements auraient produits autrement, au mieux de leurs capacités, s'ils n'avaient pas produit des soins de santé.

Compte tenu de cela, nous avons encouragé l'utilisation d'autres mesures pour comparer les systèmes de soins de santé. En attendant la mise au point d'instruments améliorés pour mesurer l'activité et la performance des soins de santé, il nous semble préférable de comparer les ressources réelles allouées aux systèmes de soins de santé. Nous présentons à cet effet un cadre simple pour les données qui sous-tendent les comparaisons, fondé en gros sur la dichotomie entre la réserve de ressources réelles et le flux des dépenses monétaires. Les mesures des ressources réelles varient en outre selon que les prix

sont fixés dans le cadre d'un marché national, par exemple, la rémunération des médecins, ou qu'ils résultent de négociations internationales, par exemple les médicaments brevetés. Nous proposons ensuite de fonder les comparaisons sur un large éventail de mesures des ressources réelles et des dépenses monétaires, en utilisant des schémas concentriques regroupant une quantité formidable de données mais néanmoins facilement compréhensibles.

A titre d'illustration, nous présentons une application simple qui utilise des données recueillies par l'OCDE pour l'Allemagne, le Danemark, les Etats-Unis d'Amérique, la France, le Royaume-Uni et la Suède. Outre la comparaison inter-pays, nous avons également examiné les tendances qui se sont fait jour dans les pays à partir des données de 1986, 1991 et 1996. Les schémas concentriques présentent plus spécialement des données pour les variables suivantes : part des soins de santé dans le PIB, dépenses de soins de santé par habitant, dépenses pharmaceutiques totales par habitant, unités d'imagerie par résonance magnétique par habitant, appareils de tomographie par ordinateur par habitant, lits d'hôpitaux par habitant, emploi total dans le domaine des soins de santé par habitant, médecins par habitant, infirmières par habitant, et pourcentage de la main-d'œuvre employé dans le secteur des soins de santé. Pour simplifier l'interprétation, nous avons classé

les variables par rapport à la valeur maximale enregistrée dans le groupe de pays.

Selon les mesures, les comparaisons ont fait apparaître des écarts sensibles. Par exemple, tandis que les Etats-Unis d'Amérique avaient systématiquement les dépenses les plus élevées et les réserves technologiques les plus importantes, la Suède avait systématiquement les ressources en main-d'œuvre les plus nombreuses. Pour chacune des mesures, le Royaume-Uni était, de tous les pays, celui qui allouait systématiquement le moins de ressources. En fait, au Royaume-Uni les ressources allouées représentaient au plus environ 50 % du maximum du groupe pour chacune des 10 ressources mesurées pendant chacune des années examinées. Fait intéressant, contrairement à la stabilité relative des schémas observés au fil des années au Royaume-Uni et aux Etats-Unis d'Amérique, des changements relatifs sensibles apparaissent en Allemagne et en France.

Les comparaisons fondées sur des mesures des ressources réelles et des dépenses peuvent être plus utiles que les comparaisons classiques limitées aux dépenses et elles peuvent fournir des renseignements importants pour la gestion future des systèmes de santé. La démarche préconisée ici, qui s'appuie sur les profils de pays pour résumer un large éventail de mesures des ressources réelles, est simple et nous espérons qu'elle pourra être améliorée et affinée.

## Resumen

### Comparación internacional de los sistemas de salud mediante perfiles de recursos

El costo de la asistencia sanitaria impone una carga grande y a menudo creciente en casi todos los países. Se pide cada vez más a los responsables de adoptar decisiones en el sector de la asistencia sanitaria que mejoren la eficiencia reduciendo los gastos y mejorando continuamente el acceso y la calidad. Las comparaciones entre los recursos destinados a la atención sanitaria en diferentes países, en particular miembros de la OCDE, han pasado a ser corrientes a medida que los proveedores de atención sanitaria y quienes la financian buscan maneras de alcanzar esos difíciles objetivos.

La mayor parte de estos estudios se han basado en los gastos de atención sanitaria a nivel de país. Aunque este tipo de comparaciones se utilizan a menudo para llegar a la conclusión de que los recursos destinados a la atención sanitaria son muy insuficientes o bien excesivos, los datos relativos a los gastos no son realmente idóneos para fundamentar esas conclusiones. En efecto, esas cifras no pueden reflejar los beneficios que recibimos de los servicios de atención sanitaria, y las cuestiones monetarias complican las comparaciones transfronterizas. Por otra parte, y tal vez sea lo más importante, los gastos no representan fielmente el verdadero valor económico de los gastos de atención sanitaria, es decir el valor de los bienes y servicios que hubieran producido el personal y el equipo en las mejores actividades alternativas si no se hubieran destinado a la atención sanitaria.

Teniendo esto presente, hemos comenzado a fomentar la utilización de mediciones alternativas para

comparar los sistemas de salud. Mientras no se disponga de mejores mediciones de la actividad y del desempeño sanitarios, creemos que se debería hacer más hincapié en comparar los recursos reales asignados a los sistemas de salud. Con miras a promover este enfoque, presentamos un marco simple para los datos en que se basan las comparaciones, inspirado de forma flexible en la dicotomía existente entre las reservas de recursos reales y el flujo de gastos monetarios. Además, las mediciones de los recursos reales están subdivididas entre aquellos cuyos precios se fijan en un mercado nacional, por ejemplo la remuneración de los médicos, y aquellos cuyos precios se negocian a nivel internacional, por ejemplo los de los medicamentos patentados. Luego proponemos basar las comparaciones en una amplia variedad de mediciones, tanto de recursos reales como de gastos monetarios, utilizando diagramas de telaraña para combinar una cantidad considerable de información en gráficos fáciles de entender.

Para ilustrar este enfoque efectuamos una aplicación sencilla utilizando datos recogidos por la OCDE sobre Dinamarca, Francia, Alemania, Suecia, el Reino Unido y los Estados Unidos. Además de hacer comparaciones entre los países, también examinamos las tendencias a lo largo del tiempo en el interior de los países utilizando datos de 1986, 1991 y 1996. Específicamente, los diagramas de telaraña muestran datos relativos a las siguientes variables: participación de la atención sanitaria en el PIB, gastos en atención sanitaria per cápita, gastos farmacéuticos totales per

cápita, unidades de imaginología de resonancia magnética per cápita, escáneres para tomografía computarizada per cápita, camas de hospital per cápita, empleo sanitario total per cápita, médicos per cápita, enfermeras per cápita y porcentaje de la fuerza de trabajo empleada en el sector sanitario. Para simplificar la interpretación, adaptamos la escala de las variables según el valor máximo registrado en el grupo de países.

Encontramos diferencias sustanciales en las comparaciones basadas en las diferentes mediciones. Por ejemplo, mientras que los Estados Unidos presentaban siempre los mayores gastos y las mayores reservas de tecnología, Suecia tenía siempre el mayor número de recursos humanos. El Reino Unido asignaba menos recursos que los demás países en todas las mediciones. En efecto, la asignación de recursos en el Reino Unido no

superaba el 50% de la del grupo máximo en cada una de las 10 mediciones de recursos en cada uno de los años examinados. Es de señalar que, mientras que en el Reino Unido y los Estados Unidos de América las pautas se han mantenido relativamente estacionarias a lo largo del tiempo, en Francia y Alemania se observan cambios relativos sustanciales.

Las comparaciones basadas en mediciones de los recursos reales y de los gastos pueden ser más útiles que las comparaciones convencionales de gastos solamente, y pueden dar lugar a avances importantes para la gestión futura de los sistemas de salud. El enfoque aquí propuesto, que utiliza perfiles de países para resumir una amplia variedad de mediciones de los recursos reales, es sencillo, y confiamos en que en el futuro se podrá elaborar y perfeccionar más.

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