

# HOW DO PRIMARY HEALTH CARE SYSTEMS COMPARE ACROSS WESTERN EUROPE?

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*In this article, the author looks at primary care as part of the overall health care systems in 10 Western European countries, namely Belgium, France, Germany, Ireland, Italy, the Netherlands, Norway, Portugal, Spain and the United Kingdom. In addition, he discusses the characteristics of primary care doctors as part of the primary health care team and makes comparisons with the United States where appropriate*

Health care systems vary widely across Western European countries, with both public and private facilities co-existing. Each country's health care system has developed as a result not only of medically related factors but also of the way each society is organised in terms of religion, politics and economics.<sup>1</sup> Other key influencing factors in their evolution include geography, climate, and their demographic characteristics.<sup>2</sup> However, the most significant influencing factors have been and continue to be national wealth (and the proportion of it given to health care) and the extent of social deprivation and inequality.<sup>3</sup>

Cross-national comparisons of health care system data may be subject to distorting factors but the data referred to in this section are obtained from a range of reference sources that appear to be fairly consistent.<sup>3-9</sup>

While changes in health care as a result of government interventions, for example, do occur from year to year between European countries,<sup>10</sup> their general position with respect to one another in terms of cost and pharmaceutical consumption has remained surprisingly stable over the past three decades.<sup>4</sup> One important explanation for this is that the differences between European countries' prescribing patterns are based on deep-rooted variations in medical culture and training rather than just the effects of contrasting price and profit controls for medicines.<sup>1,11</sup>

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## PRIMARY CARE

Primary care is only a part of the entire health care delivery system, which also includes secondary and tertiary care. Before primary health care services are used, self-care is widely practised, and it is important to recognise that in Europe, as in North America, between 80 and 90 per cent of all health-related activities, including diagnosis, treatment and rehabilitation, prevention and health promotion, are conducted by individuals without professional advice.<sup>12</sup> This is substantiated by data on the volume of use of non-prescription remedies that greatly exceeds that of prescribed medicines.<sup>13</sup>

At the World Health Organization (WHO) conference at Alma Ata in 1978,<sup>14</sup> primary health care was defined as: "Essential health care based on practical, scientifically sound and socially acceptable methods

TABLE 1: POPULATION, HEALTH CARE EXPENDITURE, HEALTH CARE ORGANISATION AND GENERAL PRACTICE REMUNERATION<sup>3-9</sup>

| Country        | Population (million) | Per capita spending on health (£) | Health care expenditure (% of GDP) | Percentage of GDP spent on drugs | GP acts as gatekeeper | Solo practices (%) | Method of payment |
|----------------|----------------------|-----------------------------------|------------------------------------|----------------------------------|-----------------------|--------------------|-------------------|
| Belgium        | 10                   | 1,003                             | *                                  | 0.71                             | No                    | 85                 | F                 |
| France         | 56.4                 | 1,178                             | 9.8                                | 0.94                             | No                    | 55                 | F                 |
| Germany        | 78.7                 | 1,286                             | 10.4                               | 0.87                             | No                    | 82                 | F                 |
| Ireland        | 3.5                  | 666                               | 6.4                                | 0.79                             | Yes                   | 59                 | C/F               |
| Italy          | 57.7                 | 908                               | 7.7                                | 0.95                             | Yes                   | 95                 | C                 |
| Netherlands    | 15                   | 1,041                             | *                                  | 0.46                             | Yes                   | 54                 | C                 |
| Norway         | 4.3                  | *                                 | *                                  | *                                | Yes                   | 12                 | S/A/F             |
| Portugal       | 10.5                 | 623                               | 8.2                                | 1.48                             | Yes                   | 5                  | S                 |
| Spain          | 39.4                 | 648                               | 7.2                                | 0.67                             | Yes                   | 40                 | F                 |
| United Kingdom | 57.2                 | 751                               | 6.9                                | 0.67                             | Yes                   | 6                  | C/A/F             |

\* Data unavailable; S = salary; C = capitation; A = allowance; F = fee for service

and technology, made universally available in the community through their full participation and at a cost that the community and country can afford to maintain at every stage of their development in the spirit of self reliance and determination. It forms an integral part both of the country's health system, of which it is the central function and main focus, and of the overall social and economic development of the community. It is the first level of contact of individuals, the family and the community with the national health care system bringing health care as close as possible to where people live and work, and constitutes the first element of a continuing health care process."

Primary care can also more simply be defined as the most basic and most accessible form of professional health care available to the population of a country.<sup>15</sup> However, this definition does not encompass all the aspects of primary health care in developed countries, such as those of Western Europe, where the organisation, equipment and staffing can be sophisticated and complex.

The primary care doctor, general practitioner (GP) or family doctor, although often at the centre of activities is only one of several health care professionals belonging to a multidisciplinary primary health care team network. Other primary health care professionals include dentists, health visitors, midwives, nurses, opticians, pharmacists, and physiotherapists. The concept of the primary health care team is most developed and established in the Netherlands, Scandinavia, Spain and the United Kingdom.<sup>15</sup>

Primary health care can be said to involve three elements of modern health care:<sup>15</sup>

- 1 Prevention of disease
- 1 Early diagnosis, subsequent treatment and/or referral
- 1 Treatment of all ailments not requiring admission to hospital or specialist treatment

Problems with this categorisation arise when it is applied to different health care systems. It can easily be applied to health services in, for example, Italy, Spain and the UK, where patients visit a GP or another member of the primary care team who responds to their symptoms and treats their presenting problem. If their condition merits specialist care, they will then be referred

to a specialist or hospital for the necessary treatment. In these countries, GPs are responsible for the patient, act on their behalf and provide co-ordination of care.

In other countries, for example, Belgium, France and Germany, the situation is different. The patient has a free choice of doctor or office-based specialist for their first point of contact with the system and as the patient is not registered with one particular doctor, there is less co-ordination of care. Instead of primary, secondary and tertiary levels of care, a more appropriate way to define the levels of care in these countries might be ambulatory and inpatient care. In this situation, ambulatory care encompasses all primary care-based services as well as services from office-based specialists and hospital visits on an outpatient basis.<sup>15</sup>

#### PRIMARY CARE-LED HEALTH SERVICES

Primary health care is emerging as the focus of future health care in many developed countries, whereas traditionally the major decisions about health care provision have been made at higher levels within the system, especially where no gatekeeper roles exist. In some European countries, such as the UK, this focus is evident with primary care groups managing their own budgets and having increased commissioning powers.<sup>16</sup>

Health care reforms in Italy and Spain over the past 20 years have had the effect of devolving decision and policy-making power more to regions. Changes in other European countries are more gradual and continue to be so. For example, in France primary care is still relatively fragmented and plays a small part. In Germany, the number of GPs per 10,000 population has risen since 1960, but the percentage of doctors who are GPs has fallen. The financial status of doctors who are GPs is poor: doctors are paid on a per treatment basis that rewards procedures on the basis of their complexity and specialisation.<sup>5</sup> Doctors in Germany thus have a financial incentive to develop a specialisation of some description in order to generate a higher income level.

The main problems currently facing all health care systems worldwide are the challenges of rising expectations, escalating costs, budget limitations and an increasing proportion of older people, resulting in uncontrolled demand.<sup>17</sup> Medical costs in 10 Western European countries rose by an

average of 4.1 per cent in real terms each year between 1970 and 1990, while real economic growth during the same period increased by only 2.7 per cent annually.<sup>2</sup> In Belgium, government spending for health care increased by a staggering 45 per cent during the 10 years since 1984.<sup>2</sup>

The key drivers for changes in primary health care are developments in diagnostic, pharmaceutical and surgical technology and the rising costs associated with a combination of these developments and limitless demand.<sup>2</sup> In the early 1990s, primary care services in the UK represented over 90 per cent of all health care activity and yet consumed less than 19 per cent (including drug costs) of total NHS expenditure.<sup>18</sup> In contrast, the provision of hospital and community health services consumed at least 70 per cent of NHS expenditure. With statistics such as these, governments are increasingly recognising that primary care is capable of being a more cost-effective sector for the provision of health care than secondary or tertiary care. Most population health needs can now be met in primary care and this is likely to continue to increase with major pharmaceutical innovations, such as treatment for gastrointestinal ulcers which previously required surgery but can now be treated and often cured with a prescription medicine. In addition, the potential role of primary care in disease prevention and early detection will possibly provide even greater opportunities to contain health care expenditure in many areas.

As the focus of health care provision shifts towards primary care, it is inevitable that there will be increased demands and expectations placed upon the GP in co-ordinating patient care. To compensate for this increased workload burden, the roles of other members of the primary health care team are developing and diversifying. For example, there is an increasing role for the community pharmacist in managing the treatment of minor illnesses, providing prescribing advice and support and reviewing patient prescribed medication.<sup>16</sup> Renewed recognition of the treating of minor ailments has been facilitated by the deregulation of the prescription-only status of selected medicines.<sup>19</sup> The availability of these medicines without prescription from pharmacies has helped to move the cost of treatment on to the patient.<sup>20</sup> Changes in the legal classification of selected medicines and promotion of self-medication by gov-

TABLE 2: CHARACTERISTICS OF GENERAL PRACTICE AND HEALTH OUTCOMES<sup>3-9</sup>

| Country        | List size | Average number of consultations per week | Duration of the encounter (minutes) | Prescription items dispensed per capita/annum | Referrals per 1,000 direct encounters | Infant mortality rate (per 1,000) | Perinatal mortality (per 1,000) |
|----------------|-----------|--|-------------------------------------|---|---------------------------------------|-----------------------------------|---------------------------------|
| Belgium        | 1,200     | 135                                      | 11                                  | 9.5   | 37.5                                  | 9.2                               | 10.4                            |
| France         | 1,500     | 82                                       | 14                                  | 52.2  | 37.5                                  | 7.5                               | 9.2                             |
| Germany        | 2,000     | 220                                      | 9                                   | 12  | 55.1                                  | 7.5                               | 6.5                             |
| Ireland        | 1,800     | 135                                      | *                                   | 11  | 42                                    | 9.7                               | 12.3                            |
| Italy          | 850       | 115                                      | 7.6                                 | 5.2   | 66.2                                  | 9.5                               | 12.3                            |
| Netherlands    | 2,350     | 142                                      | 9.1                                 | 11  | 44.2                                  | 7.6                               | 9.2                             |
| Norway         | 1,300     | 60                                       | *                                   | 6.9   | 80.5                                  | *                                 | *                               |
| Portugal       | 1,500     | 81                                       | 8.2                                 | 21  | 55.6                                  | 14.9                              | 15.3                            |
| Spain          | 2,500     | 134                                      | 4.7                                 | *   | 54.6                                  | 9                                 | 10.6                            |
| United Kingdom | 1,800     | 128                                      | 5.8                                 | 10  | 47.2                                  | 9.5                               | 9.1                             |

\* Data unavailable

ernment regulatory agencies have occurred, particularly in Northern European countries.<sup>13</sup>

#### COMPARISON OF DIFFERENT SYSTEMS

**Health care organisation** All the health care systems in Western European countries are planned centrally by one or more government ministries. The ministry provides planning and legislative support and controls the financing of the system. Below this level, the number of layers of management and how health care is controlled are particular to each country. In France and the UK, the system is controlled centrally; subsequent layers of management are directly responsible to the ministry of health and have little independence. In Germany, Spain and Italy, the system is decentralised and national plans are implemented by independent local bodies which have a degree of autonomy and are able to pass their own legislation. In all of the systems, the health care providers are organised into national bodies that negotiate pay levels and lobby the government over relevant current issues.<sup>5</sup>

**Health care funding** The major differences between health care systems in Western Europe depend upon their method of funding. Belgium, France, Germany and the Netherlands rely upon some form of social insurance, with both public and private providers. Italy, Scandinavia, Spain and the UK rely upon taxation, with providers controlled directly by the health service. Each national system differs in detail. In Italy social security and state funds provide health care funding, whereas in Spain and the UK most of the health care is paid for out of general taxation. In Scandinavian countries, where hospitals are owned and run almost exclusively by the state or local government, private nursing homes also exist.<sup>21</sup>

In Germany, social insurance for health was first introduced under Bismarck in the 19th century and in those countries that have a social insurance system it is carried out via a number of independent companies called Sick Funds under the regulation of the national government.<sup>21</sup> Enrolment in an insurance scheme is usually obligatory for all low-paid workers and funds are collected from salaried workers and the self-employed by means of national social security contributions. Insurance-based health care is not,

however, an example of a free market in health. In all these countries, as well as exerting some control over running the schemes, the government plays a major part in determining the premiums paid by workers and the fees paid by the schemes to doctors and hospitals.<sup>15</sup> Typically, there is a system of annual negotiation among all the parties involved, in particular government, sickness funds, private insurers, hospitals and medical associations at which the premiums and benefits for the next year are agreed.

In the UK and Spain, the government has direct control over the level of spending and allocates a budget to the system. This leads to greater control over spending and appears to produce a more efficient system.<sup>15</sup> One major difference between the member states of the EU and the United States of America is that all countries in the EU have accepted for many years the principle of health care provision as a right for the whole population.

**Health care expenditure** For most countries in Europe, per capita health spending averages approximately £900 (Table 1).<sup>8,9</sup> Germany and France have the highest expenditure on health in Europe. In 1995, Germany spent 10.4 per cent of its gross domestic product (GDP) and France 9.8 per cent, which equates to £1,286 and £1,178 per capita, respectively. They were second only to the US, which spent 14.2 per cent of GDP in 1995, equating to £2,229 per capita. From the countries considered in this review, Spain, Ireland and the UK were the lowest spenders, each spending under 7 per cent of GDP in 1995, amounting to £648, £666 and £751, respectively, per capita.<sup>8,9</sup>

There are many factors influencing expenditure on health. These include the expectations and demands of patients, demography, morbidity, health care professionals' salaries compared with the rest of the population and the overall efficiency of the system, including administrative costs.<sup>22</sup> In the French and German systems of social insurance, both public and private providers have some degree of flexibility in the prices charged which is in contrast with the more highly regulated system and standard pricing for services in Ireland, Italy, Spain and the UK.<sup>15</sup>

It has been suggested that the higher the percentage of GDP a country is prepared to spend on health, the richer and more devel-

oped that society becomes.<sup>2</sup> Despite this, the wide variation between 6 per cent and 11 per cent in the percentage of GDP spent on health care does not entirely correlate with national wealth or even with the state of a nation's health.<sup>23</sup> There is an observable slight trend for richer countries to spend more of their GDP on health than poorer ones and in cash terms they will usually spend more on medicines.<sup>8</sup> Yet less affluent countries like Portugal spend more on pharmaceuticals relative to their total health budgets than do richer members of the European Union.<sup>8</sup> In general, the EU nations with the highest medicine prices at home also have the most successful foreign trade records (the Netherlands is an exception) and the lowest volumes of domestic prescribing (Germany is an exception).<sup>4</sup> On a country-by-country basis, the Netherlands is an unusual example of a nation that combines lower-than-average domestic pharmaceutical consumption and spending with relatively high medicine prices. France by contrast has relatively low pharmaceutical prices but high domestic usage with over five times more prescriptions per capita per annum than in the UK (Table 2) and proportionately high medicine costs per head. These differences are reflected in the proportion of the Netherlands gross national product and percentage of GDP spent on medicines (0.46 per cent) which is half that of France (0.94 per cent) (Table 1).

In northern EU states, such as Germany, the Netherlands and the UK, over-the-counter (OTC) medicines sales accounted for nearly a fifth of the total value of the medicines market at the end of the 1980s.<sup>4</sup> At the same time in France, Italy, Portugal and Spain, OTC sales represented only 5 to 10 per cent of sales. By 1993, as a result of expansion of the OTC market, OTC sales in the northern EU states represented nearly a third of the total value of the medicines market and sales in France and southern European countries had risen to between 10 and 20 per cent and continue to rise.<sup>19</sup>

The UK combines relatively modest domestic drug consumption and spending on medicines with a strong balance of trade and unusually high research spending. Largely because of Department of Health controls introduced in the 1970s, it has unusually low levels of domestic spending on pharmaceutical promotion compared with other countries. Overall, about 10 per cent of all National Health Service (NHS) pharma-

ceutical revenue goes on promotion; equivalent European figures are about 15 to 20 per cent.<sup>4</sup>

### PRIMARY CARE DOCTORS

**Remuneration** Member countries within the EU have different systems for remunerating GPs. Doctors in general practice may be paid on a capitation basis (the level of which often depends on the age and morbidity characteristics of the practice population), on a fee-for-service basis (in which the procedure or item of service is the unit of payment) or they may be salaried. They may be paid by a combination of these methods sometimes involving allowances (fixed payments) for certain overhead costs, such as personnel and office expenses, additional services and continuing professional development (CPD) (Table 1).<sup>3,22</sup> Cultural, political, professional and social factors influence the method of payment for GPs and, where payment modes are mixed, physicians are paid differently depending on the type of service rendered.

Different types of remuneration systems have been known to influence the working behaviour of practitioners.<sup>23</sup> For example, GPs who were paid on a fee-for-service basis increased their provision of services, resulting in reduced referral rates compared with those GPs who were paid on a capitation basis.<sup>24</sup>

**Gatekeeping and co-ordination of care** A GP acts as a gatekeeper when he or she has the authority to restrict the patient's use of other parts of the health care system. In Ireland, Italy, the Netherlands, Norway, Portugal, Spain and the UK, a gatekeeping system exists where GPs control access to most other levels of health care. In Belgium, France and Germany, an open access system exists where the patient has a free choice of doctor and specialist. The level of control the GP has over the patient's use of other health care services thus varies from country to country. In EU countries, the gatekeeping role ranges from being non-existent (France) to major (UK and Netherlands).<sup>15</sup> There is an inverse relationship between the importance of the gatekeeping function and the emphasis that is placed on the role of primary care in the health care system of each country. Where the influence of primary care providers is considerable, as in the UK, gatekeeping is important but where primary care is not emphasised as in France, neither is a gatekeeping function at any level of health care provision.<sup>15</sup>

Gatekeeping systems represent the single most important mechanism for containing the largest costs in any health care system, namely those for hospital services<sup>18</sup> because a GP's prescription or referral is required for diagnostic services, visits to specialists and hospital visits. Also, when GPs screen patients before referring them to specialists, the incidence of true disease among patients seen by specialists is increased and the role of the specialist is more heavily focused on more differentiated and more severe diseases.<sup>25</sup> This may be seen as

contributing further to their specialist expertise and efficiency.

In order to receive any medical service from the health care system, patients are required to register with a GP in countries where they act as gatekeepers. Patients do have a free choice of GP within a geographical area as long as there is a choice available. In certain countries, for example, Italy and the UK, patients can change their GP, whereas in others, for example, Spain, special circumstances are required. Gatekeeper GPs also have the responsibility of providing co-ordinated care for the patient; they also keep records of their patients and are required to pass them on when the patient changes doctor.

As well as the GP being part of the primary care team, in countries where they act as gatekeepers, teamwork also takes place between GPs and specialists across the primary-secondary care interface. A recent qualitative study by an academic GP in the south west of England has found a high level of respect between the two branches of the medical profession with both expressing a desire and enthusiasm to work together.<sup>26</sup> Such teamwork is much more limited in open access systems where relationships are likely to be much more transient and distant. Formal co-ordination of primary and secondary care in Italy requires a specialist's prescription to be endorsed by the GP, a system that is stricter than elsewhere.<sup>15</sup>

In Belgium, France and Germany, the situation is entirely different and patients have the choice of "shopping around" for a GP or an office-based specialist as required. This system leads to problems in the co-ordination of care, as there is no organised system of transferring patient medical records between physicians. In Germany, enlargement of GP practices is being encouraged with the intention of providing a greater range of services and there is also an increased focus on improving training for GPs.<sup>27</sup> In France, patients often visit their doctor with a fixed outcome in mind and there is anecdotal evidence of patients visiting a succession of doctors until they receive their required diagnosis or prescription.<sup>15</sup> This uncontrolled system may be a contributing factor to the high number of prescription items per capita per annum dispensed in France (Table 2).<sup>8</sup> In Belgium, France and Germany, patients need a physician's referral for hospital stays, except in an emergency. In Germany, patients will be frequently supervised in hospital by the same office-based physician whom they first visited.<sup>15</sup>

**Practice organisation and workload** There is a gradual trend across Europe of GPs joining together in group practices to share facilities or work in health centres owned by a health insurance agency or their government. Group organisation is favoured as it offers practitioners greater flexibility and stability, enhances the likelihood of multidisciplinary teamwork and increases the range of facilities available under one roof for the needs of patients.

Health centres are more common in

public vertically integrated systems; solo practice is the modal form in countries where GPs are paid a fee for service (Table 1), with the exception of Italy (capitation but 90 per cent of GPs work in solo practices).<sup>3</sup> In countries with mixed group practice and solo practice, the relative proportion of each varies. This also varies with time and even some of the most up-to-date published figures rapidly become outdated with changes in health policies. For example, in Spain, where almost half of GP practices were solo practices, this has been steadily decreasing since the mid 1990s with changes in health care reforms that have seen a move towards multidisciplinary primary care health centres.<sup>15</sup>

There is a considerable variation in the numbers of GPs and the proportion of GPs among all doctors both between and within countries, with Belgium and France at one extreme and Spain and the Netherlands at the other.<sup>17</sup> In Belgium, France and Germany, where there are no defined practice populations, GPs tend to be located in and around the cities. Countries with defined practice populations are more likely to have community involvement of practitioners which could be because they are more likely to know about community health problems and to become involved with addressing these problems. Historically GPs in the Scandinavian countries, Portugal and Spain combine work as a family physician and a public health officer.<sup>3</sup>

Many other characteristics of general practice have been found to vary widely between countries including consultation time, number of consultations per week, patient list sizes, population per GP, physician contacts per patient per year, prescribing of generic drugs, prescription items dispensed per patient per year, roles of health care professionals, and education, qualifications and training.<sup>3-9</sup> However, considerable variation has also been found within nations, especially when comparing characteristics of GPs and/or their practices between urban and rural locations.<sup>3,28</sup>

### CONCLUSION

Health service provision in isolation cannot compensate for the result of social inequality but health services can positively influence health and can reduce the impact of social inequality on health.<sup>3</sup> On the other hand, access to primary care services may have little impact on health when other social services are underdeveloped and where resources for public health education are relatively inadequate.<sup>29</sup>

Primary health care has been found to be most developed and successful in Scandinavia, the Netherlands and the UK, whose systems involve patient registration and control of access to health care by GPs.<sup>28</sup> There is some evidence that countries with gatekeeping systems have better health levels, increased patient satisfaction and lower costs.<sup>30</sup> A study in 1991 by Starfield, a medically qualified academic in the department of health policy management, John Hopkins University School of Medicine, Baltimore,

compared data of 12 reputable indicators of health (mortality figures, death rates, life expectancies and birth weights) in seven Northern European countries, Australia, Canada and the US and found the best results were in the Netherlands and Sweden.<sup>29</sup> Disappointingly, the UK, which also operates a gatekeeping system, was found to have the second worst results overall.

The past two decades have seen substantial growth in health expenditure in all EU countries with the exception of those in Scandinavia, which has applied some restraints towards the EU average. Health expenditure per capita has grown in the UK but the rate of growth has been slow compared with most countries.<sup>22</sup> However, from the aforementioned health indicators study,<sup>29</sup> per-capita spending does not guarantee high performance with respect to health indicators since the US has the highest level of spending per capita in the world<sup>8</sup> and yet was ranked only joint seventh out of the 10 countries compared by Starfield.<sup>29</sup>

There are many underlying reasons for the considerable diversity in primary care between European countries, which involve human resources, the organisation of health systems, the status of general practice in individual countries and systems and levels of payments that have evolved over the years.<sup>17</sup> Countries with essentially market-oriented systems are depending more on regulation and cost containment and countries with health systems based on careful planning and control are adopting more market-based structures.<sup>17</sup> In an attempt to curtail the extremes in diversity, to limit health care costs and to promote the free movement of doctors,<sup>31</sup> a number of charters,<sup>32</sup> directives and policies<sup>4</sup> have been proposed and implemented in order to reform the different health care systems. In the most extreme circumstances, the French implemented independently developed mandatory prescribing guidelines for GPs in 1994, and doctors who did not comply were fined £2,000.<sup>33</sup>

Over the past few years, the US has succeeded in preventing health care costs from rising for the first time in two decades. This seems to be associated with the wide distribution of managed care plans in which much of the population has been encouraged to invest.<sup>21</sup>

Managed care is about managing individual episodes of care in order to reduce costs and possibly raise quality, and it has similarities with general practitioner fund-holding in the UK which has now been phased out. However, others would consider managed care to be a form of negative rationing with reduced costs stemming from restrictions imposed on patients with little choice.

Nevertheless, the World Bank considers that managed care holds the biggest hope for developing health services in the developing world and only time will reveal if this delivery of health care is exported and emerges in the form of European-style health maintenance organisations.<sup>34</sup>

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