

Who shall live and who shall die, who shall fulfil his days and who shall die before his time ...

Yom Kippur (Day of Atonement) prayer book

Health Care Services and Health ♦ Market Failures, Equity and the Role of Government ♦ Optimal Provision of Health Care Services ♦ Financing Health Care Services ♦ Delivery of Health Care Services ♦ Health Care in Australia

Our enjoyment of all goods depends on our health. Without good health our enjoyment of all other goods is diminished. In extremity, life itself is lost. Not surprisingly, there is intense popular concern about the supply of health care services. On the other hand, there is concern about the rising expense of health care services driven by rising demand, increasing longevity and technological advances that can deliver ever more services. This raises such fundamental policy questions as: What is the optimal provision of health care services? How can these services be provided efficiently and fairly? And, what is the role of government in the provision of health care services?

Governments have long been involved in the provision of public health. Ancient Rome was famous for the clean water and sanitation systems provided by the government. Health care is today, more than ever, one of the main functions of government. This can be justified partly by market failures. But, for most people, equity considerations provide the most compelling reasons for government involvement in financing and regulating health care services. Many governments also deliver many health care services, but private delivery of health services has an important complementary role in many countries.

In this chapter we discuss the nature of health care services, the role of government in provision of health services, the optimal provision, financing and delivery of health care services, and the provision of health care services in Australia.

Health Care Services and Health

Health and health care services are not the same. Good health is the outcome that people want. Health care services along with genetic endowments and lifestyle are inputs into the production of health outcomes (see Figure 24.1).¹

¹ In public administration terminology, health care services are often described as outputs, which draw on factors of production as inputs, to provide health outcomes (see Chapter 16).

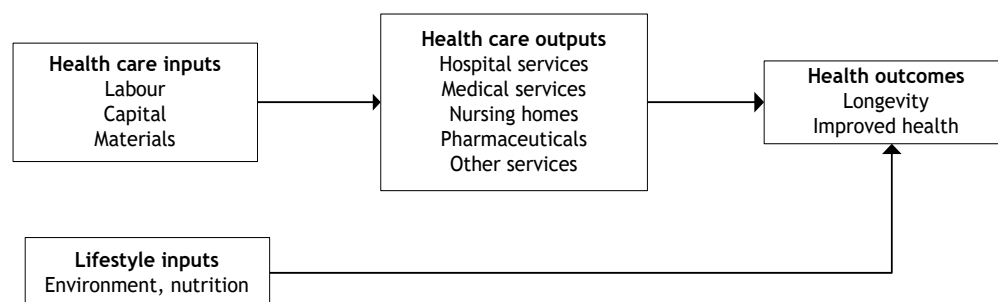


Figure 24.1 Health resources, services and outcomes

The distinction between health inputs and outcomes is critical. It means that valuing health outcomes is a crucial issue in allocating resources to health care services. But here we start by describing the quantum of resources allocated to health care services and the nature and funding of these services.

Health care expenditure and funding in OECD countries

Table 24.1 shows expenditure and funding for health care services in 12 OECD countries in 1998 and 2008 and data for Japan for 1998 and 2004. The United States and France had the highest health expenditure in relation to GDP. The UK, Australia, Norway and Japan had below-average expenditures. For the 29 OECD economies in 2008, the median health care expenditure was 9.1 per cent of GDP.

In most OECD countries expenditure on health care rose by over one percentage point of GDP in the 10 years to 2008. This continued a long-run trend of rising health expenditures as a proportion of GDP.

Table 24.1 Health care expenditure and funding for selected OECD countries

Country	----- 1998 -----		----- 2008 -----		
	Health care to GDP (%)	Per person (\$A)	Health care to GDP (%)	Per person (\$A)	Government expenditure as % of total
United States	13.4	5549	16.0	11156	46.5
France	10.1	3030	11.2	5470	77.8
Switzerland	10.1	3905	10.7	6848	59.1
Germany	10.2	3249	10.5	5351	76.8
Canada	9.0	3026	10.4	6037	70.0
Netherlands	8.1	2691	9.9	6013	75.3
New Zealand	7.8	1901	9.9	4136	80.4
Sweden	8.2	2596	9.4	5136	81.9
Italy	7.7	2401	9.1	4248	77.2
United Kingdom	6.7	2042	8.7	4631	82.6
Australia	7.8	2535	8.7	5021	68.5
Norway	9.3	3323	8.5	7404	84.2
Japan	7.3	2289	8.7 ^a	5021 ^a	81.5 ^a
OECD median	7.8	2345	9.1	4801	74.2

(a) 2004 data.

Source: Australian Institute of Health and Welfare (2010).

The two major factors driving this growth in expenditure are the increasing proportion of aged persons and technological developments. Older persons have greater demands for health care services. Also, expensive interventions can increasingly keep people alive for a few extra years, sometimes in a highly weakened state. Cancer treatment for the not-old is also often very expensive. This raises in acute form the value of an additional life year and the optimal allocation of scarce resources.

In 2008, government expenditure accounted for 74 per cent of total health care expenditure in the median OECD country. Government expenditure accounted for over 80 per cent of health care expenditure in Norway, the UK, Sweden and New Zealand. The proportion fell to 59 per cent in Switzerland and to 47 per cent in the United States (pre-Obamacare). As can be observed casually from Table 24.1, health care expenditure as a percentage of GDP tends to fall as the proportion of health care expenditure funded by government rises. There are two competing explanations of this phenomenon. One is that government provision of health care services is more efficient, reduces the costs of health care services and makes health care affordable. The other is that public provision of health care services crowds out private provision and results in under-allocation of resources to health care.

Health care expenditure and funding in Australia

In 2008, Australian expenditure on health care was 8.7 per cent of GDP. As in other OECD countries, expenditure on health has risen substantially in real terms. In 2008 dollars, expenditure per person rose threefold from about \$1700 in the mid-1980s to \$5021 in 2008. Currently health care services account for about a fifth of all government spending in Australia.

Table 24.2 shows health care expenditures in Australia by major areas and funding sources in 2008–09. Expenditures on hospitals, medical services and medications accounted for 39

Table 24.2 Health expenditure in Australia by area and by source of funds in 2008–09

Area of expenditure	Expenditure		Government funding			Private funding			Total (%) ^b
	(\$bn)	(%) ^a	Central (%) ^b	Other (%) ^b	Total (%) ^b	Insurance (%) ^b	Individual s (%) ^b	Other (%)	
Recurrent spending									
Public hospitals	33.4	31.1	38.2	54.0	92.2	1.8	2.9	3.1	7.8
Private hospitals	8.4	7.8	34.6	4.1	38.7	51.3	4.6	5.4	61.3
Patient transport	2.4	2.2	11.2	65.1	76.3	6.2	13.9	3.7	23.7
Medical services	19.8	18.5	78.1	0.0	78.1	4.6	12.1	5.2	21.9
Dental services	6.7	6.2	13.5	9.3	22.8	15.4	61.5	0.3	77.2
Other health practitioners	3.4	3.2	34.6	0.0	34.6	14.6	41.8	9.1	65.4
Community health	5.6	5.2	13.1	83.0	96.1	0.0	2.8	1.2	4.0
Public health	2.3	2.1	51.5	42.8	94.3	0.0	0.9	4.9	5.8
Medications	15.2	14.2	51.5	0.0	51.5	0.3	47.7	0.5	48.5
Aids and appliances	3.3	3.1	15.6	0.0	15.6	11.1	71.5	1.5	84.4
Administration	3.0	2.8	54.8	13.1	77.9	31.0	0.0	1.1	42.1
Research	3.7	3.5	75.0	16.9	91.9	0.0	0.5	7.7	8.2
Total recurrent	107.1	100.0	45.0	25.4	70.3	8.2	18.1	3.3	29.7
Capital expenditure	5.7								
Total health care expenditure	112.8								

(a) Percentage of total recurrent expenditure.

(b) Percentage of category of expenditure.

Source: Australian Institute of Health and Welfare (2010).

per cent, 19 per cent and 13 per cent respectively of recurrent health care expenditures (71 per cent in total). Several other areas of expenses make up the rest of the expenditures. Hospitals also account for most of the capital expenditure.

Government funded 70 per cent of total health care expenditure including capital expenditure. The Commonwealth government funded 43 per cent and the state and territory governments funded 26 per cent. Government collectively funded a high proportion of the expenditures in public hospitals, medical services, pharmaceuticals, community health and public health. The Commonwealth is also responsible (through the Therapeutic Goods Administration) for determining what medicines can be used in Australia. Governments collectively deal with national health issues such as HIV/AIDS, drug abuse and obesity.

Private funding sources paid for the balance of 30 per cent of all health care expenses. Private sources paid for over half the expenses in private hospitals, other health practitioners, aids and appliances, and dental services. They also paid for over 40 per cent of the costs of medications. Households paid for over one-fifth of all health care expenses. Although over 40 per cent of households hold private health insurance, private insurance funds contributed only 7 per cent of all payments for health care expenses.

Market Failures, Equity and the Role of Government

Various forms of market failure occur in the health sector. Some health care services provide substantial positive (non-excludable) externalities which effectively make them a public good; some consumer products such as alcohol and tobacco have negative personal health and social (externality) impacts; and the health care market is characterised generally by asymmetric information and by limited competition in low density population areas.

A prime example of the public good nature of health services is public health immunisation programs. It provides non-excludable benefits. Where disease is contagious, health care services supplied to one person reduce the risk of illness to others. In private markets individuals would underspend on such services. Medical research and knowledge is also a non-rival public good. Use of the research by one agent does not reduce its value to anyone else. Thus, support for basic medical research is a public good.

Consumption activities such as smoking, drinking and fast driving may cause health risks or traumatic injuries to others. Pregnant women who consume a large amount of alcohol are liable to bear babies with brain damage. In addition, heavy drug takers, smokers and drinkers may do self-harm and require substantial public health services with the costs borne by other taxpayers. Government has an interest in mitigating all such behaviours on externality (social and financial) and merit good grounds.

Turning to asymmetric information, medical practitioners are generally better informed about the service needs of patients than are the patients themselves and patients rely heavily on their advice. This may create supplier-induced demand (SID). SID occurs when a health care supplier induces a patient to choose a service that he or she would not choose if they were better informed. Thus, suppliers of health care service can to some extent create a demand for their services, especially when patients do not pay the full cost of the service. Unlike in an informed market, an increase in the number of health care suppliers may increase the supply of services without reducing their price. Cromwell and Mitchell (1986) found that a 10 per cent increase in the ratio of doctors to population in the United States resulted in a 9 per cent increase in doctors' fees (though possibly this reflected high income areas).

Of course, information asymmetry is not unique to health care or necessarily a warrant for government action. When we take our car to a garage for repairs we may have little idea of the repairs required. However, we do have an incentive to find a cost-effective garage. In a non-subsidised health care market, consumers would have more incentive to find the best and

most cost-effective service. However, the gap in knowledge between suppliers and consumers appears greater and more critical in health care than in most other markets.

Information asymmetry also affects the market for health insurance. In this case, consumers are often better informed about their own health than are insurers. If an insurance company cannot distinguish between individual risks and offers each person the same (average) price for insurance, high-risk individuals will accept insurance and low-risk individuals will not. This raises the price of insurance and leads to more low-risk individuals forgoing health insurance. This phenomenon, known as adverse selection, causes the market to under-supply health insurance to low-risk clients.²

Fourth, there is limited competition in the supply of private health care services in low density areas. This reflects the role of fixed costs and economies of scale or scope in the supply of hospital services. In many regions, only one hospital is economically viable. In many towns, only a few doctors could earn a professional income and they may believe, not unreasonably, that the community is served better by cooperation than by competition between them. There may be scale economies and limited competition in the provision of specialist services like radiology and pathology. Limited competition reduces the incentive to produce services at minimum cost and may reduce the range of services available.

Social welfare in health care. Access to health care is widely perceived to be an individual right. In the words of the constitution of the World Health Organization (1948):

The enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition.

Such a belief may translate into the view that government should provide universal basic health care services to all in need. At the very least, it implies that government should provide such services to those who cannot afford to pay for them. Social welfare lies at the heart of the case for public funding of health care services.

The idea that all individuals should be assured of a basic service in a specific area, such as health or housing, is sometimes called specific or commodity egalitarianism (Tobin, 1970). The objective that each member of society should be assured of a minimum level of health care extends beyond the idea that each member should receive a minimum level of income.

Role of government. The welfare objective that everyone should have access to basic health care services implies, as a minimum, significant public funding of these services for low-income households. As Cutler (2002a) observed, ‘the central question facing governments is how to design a medical care system for the poor’. However, given the high cost of many medical treatments and the uneven distribution of health, many communities would extend the welfare objective to assisting most, if not all, people in serious ill health. Of course, this does not necessarily imply that government should be involved in the physical delivery of health care services.

Analysis of market failures also suggests that government has major roles in funding health care services and in regulating certain goods and services. Markets are likely to undersupply services that provide public health benefits and health insurance. On the other hand, markets may oversupply services where there is supply-induced demand. Also, some markets may not supply health care services efficiently due to a lack of competition. In such cases government may be able to use its monopsony (buying) power to drive down prices for the benefit of

² Alternatively, health insurance firms may develop strategies for excluding high-risk individuals. In so far as these ‘cream skimming’ policies are successful, the firms will not offer insurance to high-risk consumers.

consumers of health goods and services. However, the complexity of the market failures is such that policy responses need to be thought through quite carefully.

Optimal Provision of Health Care Services

In most OECD countries it is accepted that basic health care services should be supplied to all those in need of them physically and financially. However, terms like basic health services, need and supply can be interpreted in many ways. Basic health services and need are relative concepts that change with income, technology and costs. Supply of a service is a function of price as well as the availability at a convenient time and place. Inevitably, views on appropriate service levels vary.

However, resources are limited in health as elsewhere and hard choices must be made regarding the allocation of scarce resources.³ Should funds be moved from schools to health services? How should a public health authority allocate resources between heart bypass operations, hip replacements, nursing services for patients disabled by strokes and so on? Should health care providers give priority to services for young, basically healthy, people with a long life ahead over services for elderly people in pain but with limited life expectancy?

Estimates of the costs and benefits of health care services provide important, if not decisive, inputs to answers to these questions.⁴ Like other services, health care services should be provided when the marginal benefit of a service exceeds the marginal cost. Conversely, services should generally not be provided when the marginal cost exceeds the marginal benefit, unless equity considerations are deemed to override any such net cost. However, as will be seen, equity is often built in to estimates of the benefits of health care services.

Generally, the average and marginal costs of health care services can be estimated with reasonable accuracy, for example with activity-based costing as discussed in Chapter 16. The major benefits of health care services are the sum of the personal benefits of improved health outcomes, including work and lifestyle benefits, and reductions in future health care costs. Of course, to put values on health care services, we must first have reasonable estimates of the relationship between health care services and health outcomes. These data would normally be provided by clinicians or epidemiologists. Here we focus on the valuation of health outcomes.

Valuing health states

Following standard economic principles, we seek to estimate what individuals are willing to pay for improved health states. However, we face a major problem in trying to estimate willingness-to-pay (WTP) values for improved health because of the lack of prices and other market data.

Traditionally analysts often employed the human capital approach. Under this approach, health improvements were valued by increased earnings. However, this is wrong for several reasons. Fundamentally it is not a measure of what individuals are willing to pay for improved health. It ignores any benefits to people outside the workforce. It also ignores any relief of pain and suffering and gains from improved lifestyle of people within the workforce.

To-day, health states are valued in two main ways. We can estimate directly what people are willing to pay for health or we can adopt an indirect two-step process. Using direct

³ A feature of health spending is that it is highly variable across persons. As Cutler (2002a) points out, in the United States one per cent of the population consumes 30 per cent of all medical care resources and the top 10 per cent consumes about 70 per cent of resources.

⁴ Because benefits are hard to measure, many health care services are justified on cost-effectiveness grounds – that a given outcome can be achieved at lower cost by one program than by another. However, cost-effectiveness analysis provides limited guidance to resource allocation decisions.

methods, we can draw on revealed or stated preference methods of valuation described in Chapter 11, where we also described how these methods could be applied to estimate the value of life. Adopting indirect methods, we first establish the relative disutility of health states (such as a broken leg or angina) in terms of a quality of life index and then apply a monetary metric to this index to produce monetary equivalents for each health state. We describe the direct methods first as they reflect more closely economic valuation principles. However, the indirect two-step process provides a practical alternative approach.

Direct methods of valuing health states. Revealed preference (RP) studies infer values from observations of individual behaviour. A common form of RP study in the health sector is hedonic wage–risk analysis that infers the value of life from the relationship between wages and risks of fatal injuries in different occupations (see Box 11.2, page 193). There are fewer studies of the relationship between wages and risks of non-fatal injuries. However, all wage–risk studies are constrained by weak perceptions of risk by economic agents (Jones-Lee and Loomes, 2004). There have also been hedonic studies of product prices which infer the value of life or other health outcomes from trade-offs of price and risk implicit in, for example, motor vehicle prices, the purchase of home smoke detectors, the use of bicycle helmets and house price responses to hazardous site risks. For example, Andersson (2005) analysed the price premiums that Swedish consumers were willing to pay for safer motor vehicles and estimated that the value of a statistical life (VSL) was between US\$1.0 million and US\$1.5 million in 1998 prices, which was significantly lower than the value that had been inferred from several other American and Swedish studies.⁵

Stated preference (SP) methods derive estimates of WTP values from individual responses to survey questions. SP studies can address the relevant context directly, are flexible and can present rich information sets. Using the contingent valuation approach, following various contextual questions, individuals are asked simply to state their values for hypothetical goods. For example, Ho *et al.* (2005) asked individuals what they were willing to pay for pain relief from permanently disabling occupational injuries. However, individuals find it hard to provide direct WTP responses to unfamiliar or complex options. On the other hand, the provision of monetary cues, such as a set of dollar amounts to choose between, tends to bias the results. And sometimes respondents object to saying how much they would pay for services that they consider should be free.

Consequently, many researchers have turned to choice modelling, especially discrete choice experiments (see Chapter 11). In these studies, respondents are asked to choose between alternatives including health outcomes that are characterised by various attributes, including a monetary attribute. The analyst models the probability of respondents choosing one option compared with another, or compared with all other options, in terms of the attributes of the options, including the dollar cost associated with the option. Valuations of outcomes are inferred from the monetary trade-offs implicit in the choices. Johnson *et al.* (1999) and Tsuge *et al.* (2005) are examples of discrete choice experiment studies. Johnson *et al.* (*ibid.*) estimated what individuals are willing to pay for improved respiratory and cardiovascular health, including small changes in conditions. The study aimed to obtain estimates of the dollar amounts that individuals would be willing to pay to avoid various specified injuries. Tsuge *et al.* (2005) used a choice model to value reductions in mortality risks due to accident, cancer and heart disease and estimated a VSL of US\$2.9 million. Carson and Louviere (2010) and Louviere and Fiebig (2010) describe various other discrete choice studies.

⁵ The estimated value of life is generally termed “the value of statistical life” because the studies estimate the willingness-to-pay values that will result in the saving of one life but no particular life.

Indirect quality of life index methods. Health states are often measured by a quality of life (QoL) index where 1 equates to perfect health and 0 to a state equivalent to death. Thus a migraine headache may have a QoL score of say 0.85, severe angina a score of 0.60, inoperable lung cancer a score of 0.35 and so on.⁶ These scores may be obtained from surveys of medical experts or from the general public. There are three main elicitation methods. One is simply to ask respondents to rate each health status on a scale of say 100 to 0 (or 1 to 0), where the top figure represents perfect health. Another method involves a time trade-off. For example, individuals may be asked how many extra years of life would compensate them for loss of an arm. Suppose that someone considers that life without one arm for 10 years is equivalent to a perfectly healthy life for 8 years. Then, if perfect health is 1.0, the valuation of a health state without one arm is 0.8 (the product of the life years and the health state index are the same in both cases—8 years). The third approach is to ask people to choose between a certain poor health state and a prospect of perfect health with a probability of p and immediate death with a probability of $1 - p$. If a person is indifferent between the poor health state and the risky prospect when p is say 0.7, the poor health state would have an index value of 0.7. Such methods have been widely used to develop indices of health states (see Mathers *et al.*, 1999).⁷ The normal presumption is that the index is arithmetic. Each one-point change in the index has equal value.

To estimate the value of a health state economists then draw on the concept of the value of a healthy life year (VLY). VLY is usually derived indirectly from the estimated value of life (VSL) rather than from a separate revealed or stated preference study. Most often VLY is taken to be the constant annual sum which, taken over a remaining life span, has a discounted value equal to the estimated VSL. For example, if the VSL for healthy persons with a life expectancy of 40 years is \$4.0 million, then applying a private time preference discount rate of 3 per cent, the value of a healthy life year would be about \$173 000.

The values of various health states can then be derived as the simple product of the estimated QoL index value and VLY. If VLY equals \$173 000, the value of a year with a QoL equal to 0.8 is \$138 400. Conversely, avoiding the impairment for a year would be worth \$34 600 ($0.2 \times \$173\ 000$). This approach can be used to value acute (short-term) as well as chronic health conditions. If someone has an illness for seven days with a QoL measure of 0.8, the cost of the illness would be \$663 ($0.2 \times \$173\ 000 \times 7/365$). Abelson (2003) provides a summary of estimated costs of various acute and chronic morbidities for Australia.

Summary. The use of WTP values from stated preference methods or quality of life indices informs the debate about the allocation of resources for health care services. Of course, willingness to pay is a function of income, which means that low-income households may not be willing to pay average WTP values. To ensure that health care services are provided equitably and not biased towards more affluent households or areas, health economic evaluations commonly adopt average WTP values. These can be compared with costs to aim for efficient and equitable service outcomes.

Financing Health Care Services

Most OECD countries fund a wide range of health care services for all citizens. In most cases the services are provided universally without a means test, subject to rationing and queuing, at low or no cost to the user. The United States is a major exception, where public insurance has been traditionally means or age tested and is far from universal.

⁶ See Abelson (2003) for a summary of QoLs for morbidities and values attached to them.

⁷ In Mathers *et al.* (1999), perfect health is 0 and a health state equivalent to death is 1.

Most publicly funded services are financed by general taxation or social insurance. Despite the difference in funding source, both are often described as public insurance. Australia, Canada, Sweden and the UK finance health services mainly from taxation. France, Germany and the Netherlands have national social insurance schemes. Where applicable, social insurance is generally compulsory. Unlike income tax, social insurance is usually levied on labour earnings rather than on total income. Unlike private insurance, social insurance is not based on risk factors and the services provided are usually independent of contributions. However, social insurance is sometimes combined with private insurance, as in Japan and the Netherlands where some form of health insurance is compulsory but private insurance is an option. In such cases the private health funds are substitutes for public funds.

Most private payments for health care services are payments by users made directly to service suppliers or payments by private insurance funds. In most countries, including Australia as we have seen, direct private payments are much greater than private insurance payments (Wagstaff and Doorslaer, 2000). Direct payments for health services include payments that the government or private health funds require users to contribute towards the service. These payments are usually co-payments—fixed amounts that a patient pays for a service before receiving reimbursement. Under co-insurance a patient pays for a percentage of the cost. It is also possible to combine co-payment with a share of the cost in excess of the co-payment. Co-payments are low in Canada and the United Kingdom. They are higher in New Zealand and some are high in Australia. Co-payments also vary with health care service. They tend to be a small proportion of the cost of hospital services, a slightly higher proportion for medical services and a still higher proportion for medications, dental care and nursing homes. For medications, co-payments are typically 30–40 per cent of costs in OECD countries.

Health care financing and equity. To determine whether the method of funding achieves equity objectives, we need to define equity criteria and to consider specific health systems in practice. In terms of equity criteria, the ability-to-pay (and the related vertical equity) principle suggests that higher-income individuals should pay more for health services than low-income individuals. But the implications for service delivery are not clear. For example, it could be further argued that low-income households should receive service priority from publicly funded health services because higher-income households can obtain private services. In practice, service delivery is rarely means tested. Most health agencies determine service priorities on a health-needs basis. Those with greater need have greater service priority in terms of timing and resources. This meets the horizontal equity principle of equal service for equal health need.

In a comprehensive review of equity in the provision of health services, Wagstaff and Doorslaer (*ibid.*) found, as might be expected, that the most progressive way to finance health care services is from consolidated revenue. Social insurance is progressive when it is universally compulsory, but regressive when high-income households can opt out. Private insurance is regressive when most of the population relies on it; that is, the cost of health services rises less than proportionately with income. It does not mean that a high-income person pays less for a service than does a low-income person.⁸ However, in the United States the financing system has been not only relatively, but also absolutely, unfair. Before the ‘Obamacare’ changes, employed persons, mainly upper and middle-income persons in large companies, received an annual \$200 billion private insurance subsidy via corporate tax deductions, whereas 47 million mainly lower-income Americans had no private or public health insurance (Gruber, 2011, 3rd ed., Chapter 15). Even post-Obamacare, 43 million in the US were uninsured (Gruber, 2016, 5th ed. page 447)

⁸ Chapter 25 defines the terms progressive, proportional and regressive. A financing system may be regressive even though high-income individuals pay more for services than do low-income individuals.

Wagstaff and Doorslaer (*ibid.*) also found that equity in service delivery is related to the financing system. Countries with a high level of public finance, such as in Canada, are more pro-poor in service delivery than are countries with a lower level of public funds, such as the United States. On the other hand, although government funds nearly 70 per cent of health care expenditure in Australia, the location of public as well as private health care facilities is biased towards high-income areas. Also, as we see below, many of the public subsidies for health care in Australia principally support middle- and upper-income households.

Health care financing and efficiency. The financing of health care can also affect the quantity, quality and costs of services provided. The principal effect is through user charges for services (or the lack of them). Without user charges there is no price restraint on demand. Nor is there any consumer monitoring of costs. Thus, when government or a private health insurer pays all or most of the cost of a health care service, there is likely to be both excess demand for the service and excess unit cost.

The lack of a price system is a major reason for the chronic inflation of expenditure of health care services. In particular, what matters is the marginal payment for service. Cost sharing has no impact on expenditure if it does not influence choice of service. Where someone pays a fixed cost co-payment for a medical service or medication that is below the price, she has little incentive to limit their marginal consumption or costs.

The lack of pricing often gives rise to the risk of moral hazard. Moral hazard occurs when insurance (public or private) causes someone to consume more health care services than they would if they were paying for the full cost of the service. This may occur because insurance reduces a person's care to avoid accidents or ill health or, more often, because he or she consumes more health services for a given level of health than he or she otherwise would. The more generous is the insurance, the greater is the moral hazard. In the mid-1980s the US Rand Corporation ran an experiment in which insured individuals were randomly assigned to different levels of co-payments. Higher co-payments led to significantly lower use of medical care with generally no adverse outcomes, though there were some reported exceptions. The estimated elasticity of use of medical care with respect to price was a modest -0.2 , but taken over the whole US market indicated a deadweight loss of between \$125 and \$400 billion a year (Gruber, 2008, 2nd ed.).

Without a price mechanism and incentives that lead individuals to choose an appropriate product mix and to contain costs, government and private insurers must find other ways to constrain the use and costs of health services. Governments often adopt a supply-side strategy. For example, Australian governments limit the funds available to hospitals and restrict the number of doctors. However, expenditure is a product of quantity of services and unit costs. Health care suppliers may respond to financial constraints by rationing the quantity of services or reducing their quality rather than by reducing unit costs. Hospitals may ration services by increasing waiting times or by reducing the quality of their services, for example by restricting time in hospital. Doctors may increase waiting times or reduce service times or, in some systems, increase the prices of non-controlled services. These responses are inefficient because they result in a less preferred quantity and mix of services at higher prices than would occur in a funding system based on price for service.

In a competitive health insurance market, private health funds have incentives to constrain costs on behalf of their members or they would lose market share and profits. In the United States over 90 per cent of private insurers have adopted some form of 'managed care' strategies (Cutler, 2002a). These insurers provide their members with a comprehensive package of services available generally from a defined network of providers for a fixed payment. Preferred provider organisations selectively contract with a network of hospitals, doctors and others to provide services at a discounted price schedule. If members visit providers who have agreed to accept a lower price, they incur lower co-payments. Given the

transformation of unmanaged fee-for-service insurance organisations into managed care practices, it may be inferred that they have been quite successful at controlling costs. On the other hand, the level of health care expenditure in the United States is well above any other OECD country.

Where private health insurance is publicly protected, regulated and subsidised, as in Australia, insurance organisations have less incentives to control costs (see below). Moreover, subsidies for private insurance may lead to excess insurance and hence to excess use of medical services. Gruber (2016, 5th ed.) reported that the high level of tax subsidy for private insurance in the United States leads to a rise in health care spending with an elasticity of spending with respect to the fall in price of insurance (the tax subsidy) of -0.7 .

Delivery of Health Care Services

Given the quantity of health services to be supplied, however determined, what is the most cost-effective method of service delivery? As we have seen, government often attempts to contain costs by capping expenditures. However, this may reduce the quantity of service and have little impact on unit costs or productivity. Certainly, when there is supplier-induced demand, some controls on suppliers may be necessary. However, it is generally more efficient to control the variable of concern (in this case, outputs) than to control the number of suppliers of these outputs, which reduces competition and variety to service. Here we focus on four complementary strategies for containing unit costs.

The first strategy is separation of service funding and delivery (or equivalently, development of a purchaser–provider framework). The aim is to separate the decision on the amount and type of services to be purchased from the way the services are supplied. In the UK, government provides funds to area health services and to general practitioners, who then purchase the services that they consider are needed most urgently from the most efficient possible source. Although the funds typically come from taxation, the fund holders can purchase services from private agencies. In Australia, purchasing and supply are separated in the general medical practice market, where government and households purchase services supplied by general practitioners. However, in the hospital sector, area health services are often purchaser and provider of health care services.

The second strategy for efficient production is competition in service supply. The purchaser should be able to buy services from the most cost-effective supplier meeting quality standards. Competition reduces costs in the health care sector as in others. Hospitals provide a wide variety of health care and accommodation services. In Chapter 16 we noted significant savings from contracting out hospital cleaning services. Savings may be achieved from contracting for other hospital functions, including hotel functions (food and laundry), nursing, radiology and pathology services and so on. Even when there are natural economies of scale or scope, competition for service provision may reduce supply costs. There is some evidence that competition has controlled costs of hospital services in the United Kingdom.

However, it is important that the health care services can be monitored, especially for quality. The quality of medical services is not readily observable. When quality is not observable, competitive markets may not produce high quality services. Indeed, a profit motive may be inimical to quality if a for-profit health care provider skimps on care because skimping cannot be detected. Of course, monitoring quality of service is also hard in public institutions. Nevertheless, the issue of monitoring means that outsourcing to private agencies is not always the best policy.

Third, suppliers of health care services should be paid as accurately as possible for services provided. Payments can be based on services for diagnosed medical conditions and standardised treatment costs for these services. In Australia payments for hospital services are based on treatments for over 500 kinds of services based on diagnostic-related groups. Such

case-mix payments encourage service providers to maximise the real value of services provided and to minimise the use of inputs. By contrast, block grant funding of institutions provides few incentives to reduce costs. Indeed, institutions are often penalised for not spending their full allocation. Also, crude service measures, such as hospital bed days, provide perverse incentives that encourage longer stays in hospital than necessary.

Fourth, governments need to establish sensible rules about the handling of medical risk. Fear of litigation has escalated the costs of professional indemnity insurance and the quantity of tests and other services provided to patients, especially when the tests are subsidised. Increasingly, medical practitioners are practising defensive medicine, for example doing or ordering tests that are likely to have little informational value. Unfortunately, it is always possible that some action or inaction will turn out to be the wrong one. Trying to eliminate all such error, often for legal reasons, is a highly expensive process.

Health Care in Australia

A major feature of the health system in Australia is universal access to public hospitals and medical services free of charge. There is no patient charge for medical services or accommodation for public patients in public hospitals and anyone can elect to be a public patient regardless of whether they hold private health insurance. In some states, individuals can also choose private accommodation and select doctors of their own choice in public hospitals.

People receiving medical services outside public hospitals can obtain reimbursement equal to 85 per cent of Medicare Schedule Fees (MSF) for the services. This is formally done through Medicare and described as a Commonwealth government health insurance system, but in effect it is funded from tax revenues. Actually, medical practitioners can charge any fee they wish. The patient pays the extra amounts that are not reimbursed by Medicare. However, the Commonwealth pays doctors an incentive fee to bulk bill directly to Medicare at the 100 per cent MSF rate in the case of general practitioners (GPs) and the 85 per cent rate for specialists. About three-quarters of GP services are bulk billed to the government, in which case the consumer pays nothing.

Medications are also subsidised. Ninety per cent of prescription drugs sold outside hospitals are approved for public subsidy under the Pharmaceutical Benefits Scheme (PBS). To obtain approval for listing a drug on the PBS, the manufacturer of the drug has to provide evidence that it provides a clinical benefit not otherwise available at a reasonable cost or that it provides a benefit more cost-effectively than other drugs (which is essentially a form of economic evaluation). The level of subsidy varies with the category of consumer, being greatest for concession cardholders. The Commonwealth reimburses pharmacies for the difference between their estimated costs of dispensing a drug (its price to pharmacy plus a dispensing fee and mark-up) and the patient contribution. Concessional beneficiaries and pensioners, who account for 80 per cent of total PBS payments, currently pay about \$5 per item up to a ceiling of about \$180 per annum after which prescriptions are free. These figures alter annually.

There are 35 private health insurance providers registered under the *National Health Act*. Registered insurance funds are required to write a Basic Table containing a standard set of benefits prescribed under the *National Health Act*. Depending on the fund's rules and the membership category to which a household signs up, these funds pay benefits on some of the costs of private hospital care, inpatient medical care, dental, optometry and physiotherapy expenses and even some ancillaries like gym membership. Government encourages membership of private health funds by providing a subsidy on health insurance premiums of up to 33 per cent depending on individual ages and individual or family income, levying a tax surcharge on high-income earners who do not have private health insurance, and allowing

insurance firms to charge a premium for people who commence insurance at older ages. These fiscal initiatives raised the proportion of households holding private health insurance from about 30 per cent in 2000 to about 40 per cent today. Nevertheless, payments by private insurance firms amount to only 7 per cent of total health payments.

As in other countries, real health expenditures have grown rapidly over the last 20 years. Admissions to hospitals have increased twice as fast as the population. Actually, bed days in hospitals have not increased because of falling lengths of stay in hospital, due to increased one-day surgery and technological advances. But the cost per bed day has risen because of the cost of new technology. Visits to doctors have increased from under five per person per annum in 1970 to about 12 per annum today. Consumption of medications that are listed on the PBS and whose cost is substantially subsidised by government has risen at an especially high rate. Since the mid-1980s, real pharmaceutical expenditure borne by government has increased by 7 per cent a year.

Some economic issues with Australian health care

Australians enjoy high longevity. Between 1970 and today average life expectancy at birth rose extraordinarily, from 67 years to 79 years for males and from 74 years to 84 years for females. Households receive high quality health care services in most urban areas, although there can be long waiting times for non-urgent elective surgery. Low income is generally not a barrier to access to public services. Private services are available to those who wish to pay for them.

However, low-income households have higher mortality rates, greater incidence of sickness and greater prevalence of disability (AIHW, 2006). Aboriginal people experience especially poor health, with life expectancies 15–20 years below those of other Australians. Inequity in outcomes is reflected in inequity in access, with health care services concentrated in higher-income areas. There are more medical services and hospital beds per capita in inner metropolitan areas than in outer areas and many more doctors and hospital facilities in urban areas than rural ones. In addition, higher-income earners are the major beneficiaries of the private health subsidies.

The geographical imbalance in the provision of health care services reflects a conflict between equity and efficiency. The imbalance within the cities reflects the historic creation of health care assets in the inner areas and the preference of clinicians for inner city locations. Efficiency requires that these assets be fully utilised. Also, economies of scale in the cities and the high costs of attracting medical resources to rural areas mean that health services can be supplied more cost-effectively in urban areas. However, the uneven supply of health services increases the distance to hospitals and specialist clinical services for low-income households in cities, and even more so for households in rural areas.

Four efficiency issues. Turning to efficiency, four sets of issues may be highlighted. These relate to the lack of user charges and the implications for allocation of resources, cost containment, private health insurance and Commonwealth–state responsibilities.

Any system that provides extensive services with very limited user charges (price signals) is likely to result in a misallocation of resources, including excessive consumption (with marginal cost exceeding marginal benefit), a misallocation of resources from high needs to low ones and lack of cost controls. Low or no charges for outpatient services at hospitals, GP services, mental health (clinical psychology) services, diagnostic testing and pharmaceuticals encourage excess consumption of these services and goods. Some people view GPs as free counselling services and GPs have no incentive to discourage use of their services. Services are rationed by queuing and available to those with lowest time costs rather than those with most urgent needs. When the Australian government introduced highly subsidised mental health counselling services in 2006 it allowed patients up to 18 sessions per year and

budgeted about \$150 million per annum. By 2011 the budget was over \$1.0 billion per annum (due to high demand at very low effective prices) and the government responded by limiting patients to a maximum of 10 sessions in a year. Public subsidies for pharmaceuticals more than tripled from \$2.7 billion in 1999 to \$8.4 billion in 2009–10, almost certainly indicating excessive prescriptions and consumption with prices to consumers far below real cost. Excessive hospital admissions are less likely as people do not lightly enter hospitals even when free. However, once in hospital there is no price mechanism for the control of service provision.

Turning to the costs of health care services, governments adopt various policies to contain costs. One particularly effective one is the Commonwealth's use of its monopsonistic purchasing power to control the price of pharmaceuticals that it chooses to subsidise under the PBS. Also, most of the states and territories have adopted case-mix funding strategies for hospitals, whereby hospitals are funded for services provided. This is more efficient than the traditional annual block funding which is less accountable and encourages hospitals to spend unused funds at the end of the year. Another Commonwealth policy, to control supplier-induced demand by restricting the training and supply of doctors, is more questionable. Many able young persons who would like to become GPs or medical specialists cannot do so despite the high demand for medical services (admittedly inflated by the Medicare arrangements) and a shortage of doctors in many areas of the country. On the other hand, Australian governments make limited use of the purchaser–provider principle. Area health services are often purchaser and provider of services. Related to this, governments usually fund services from public hospitals rather than from private hospitals and there is little price competition between hospitals. Also, public hospitals tend towards employing in-house services to supply the services that they fund.

With regard to the private health insurance market, there are two key issues. What are the objectives? And, how can these objectives be achieved alongside a free public insurance health system? Clearly a major objective of private insurance is to enable individuals to make their own choices about health care services. Another objective is to reduce the expenditure on public health services and so reduce taxes. The first of these objectives is compromised somewhat by the Australian government's requirement that private health premiums be community rated. This means that insurers must offer premiums at uniform prices to all clients of given ages regardless of health status. This restricts the supply of insurance options and makes private insurance costly and unattractive to more healthy individuals.

On the other hand, to achieve the second objective (cost minimisation to the public sector) the government needs to encourage or force as many people as possible into private insurance. It does this by the various fiscal instruments (subsidies and taxes) mentioned above. However, the subsidy for private health fund insurance is now about \$5 billion, which are resources lost to public health services and is a high cost to pay. The subsidy has no impact on the behaviour of most insured households who would hold private insurance even without the subsidy. Also, many holders of private insurance continue to use free public facilities (to which they remain entitled), especially for more severe illnesses. On the other hand, the subsidy has not contained the cost of private health insurance as the private health funds have increased premiums well over the consumer price index since the subsidy was introduced, which suggests that the subsidy may support inefficient production. And overall the subsidy is regressive.

Evidently it is hard to run an efficient private health insurance system alongside a free public health insurance system. This led the National Health and Hospitals Reform Commission (NHHRC, 2009) to propose that individuals be allowed to opt out of the Medicare public health insurance and receive a subsidy to enrol in a private health insurance plan of their choice (apparently without community rating). The subsidy would be risk adjusted to reflect the expected cost of services they would have received if they had

remained in the public health system. This policy (called Medicare Select) would aim to achieve the benefits of competition in both the insurance and the service market. Butler (2010) provides a useful summary of the potential benefits and costs. While this scheme has some attractions, such a radical change is rarely enacted as planned and it is not presently under consideration.

A final area of inefficiency is the overlap between Commonwealth and state responsibilities, which leads to costly duplication of services and cost-shifting inefficiencies. The Commonwealth pays subsidies for nursing homes whereas the states bear most of the marginal costs of running public hospitals. To economise, the Commonwealth restricts the supply of nursing homes. This increases length of stay in public hospitals where services are much more expensive. Within the GP sector, the Commonwealth pays for doctors' services delivered outside hospitals, whereas the states pay for similar services in emergency departments in hospitals and in community health centres. To increase standard GP services and shift costs to the Commonwealth, the states and territories have closed several hospital emergency departments and limited services in community health centres. While some of these moves may have been cost effective, others were not. But the key point is that the major incentive is to shift costs rather than necessarily to minimise them.

In order to better integrate all levels of care and to avoid these cost-shifting problems, the NHHRC (2009) proposed that the Commonwealth pay state governments 100 per cent of the efficient costs of hospital services derived from activity-based costing of case-mix classifications. Subsequent Commonwealth–state discussions fell down on two major issues. One was the source of the additional Commonwealth funding which the Commonwealth proposed would be obtained by withholding 30 per cent of GST revenues from the states. The second issue was hospital management which the Commonwealth proposed to take over via local area health services. Not surprisingly the states did not agree these proposals.

However, the August 2010 National Health Reform Agreement introduced major reforms to the organisation, funding and delivery of health and aged care. The main feature of the Agreement is an activity-based Commonwealth contribution using 'efficient' prices for hospital services determined by the newly formed Independent Hospital Pricing Authority. Under the Agreement, the Commonwealth will fund 50 per cent of the efficient costs including growth in costs, while the states and territories are responsible for the remaining costs including residual costs. This should increase transparency and accountability.

Concluding observations. Designing an equitable and efficient health care system is one of the greatest public policy challenges and it is certainly easier to criticise any given institutional framework than to design the perfect solution. Nevertheless, our discussion of both the general principles of health care and the Australian system suggest some general lessons. It seems likely that most health care systems would be more efficient, without loss of equity, if they distinguished more between the purchasers of services and the suppliers, made more use of prices and co-payments to allocate services and constrain costs, and incorporated more competition into the supply of services.

Summary

- In most societies, social welfare is the primary motivation for government funding of health care services.
- Market failures include the public good (positive externality) features of health care, limited competition in some forms of health care services and asymmetric information.
- Efficient health care requires that services should be supplied at least cost when the marginal benefit of a service exceeds the marginal cost.
- Average and marginal cost of health care services can usually be estimated accurately. Benefits are more difficult to measure. Economists have developed methods for estimating the value of life and of health states using revealed and stated preference methods.
- Health care systems with high public funding usually produce more equitable outcomes than systems with low public funding.
- But, health care systems without user charges or low co-payments lead to over-consumption of health care services. Subsidies for private health insurance also increase health care spending.
- Services are delivered most cost effectively when the roles of service funding and delivery are separated, there is some competition in service delivery and suppliers are paid for services rather than given block revenue grants.
- Australian health outcomes are generally relatively good but low-income households and Indigenous people have significantly worse outcomes and poorer access to services.
- There are four other significant unresolved issues in the Australian health care system: over-consumption of services associated with low or zero user charges, the role of private health insurance alongside a dominant public health system, containing costs in a largely uncompetitive system, and inefficiencies arising from mixed Commonwealth-state financing and management of the diverse services in the health care system.

Questions

1. Does health care expenditure fall in proportion to GDP as the share of public sector in funding health care rises? If so, what are the most likely explanations? How would you find evidence for your conclusions? What welfare conclusions would you draw from the analysis?
2. One possible market failure is the allegation that the suppliers of health care services may create demand. Therefore an increase in the supply of doctors may increase the quantity of services and have no effect on the price of services. It is then argued that, to control health care expenditures, it is necessary to control the quantity of doctors. Is this a valid argument?
3. Why is rationing excess demand for medical services by queuing an inefficient outcome?
4. What are the main strengths and weaknesses of the methods that economists have designed to estimate the benefits of health care services? What are likely to be the main areas in which these valuations can be used?
5. Suppose that the number of patient visits to a doctor per annum is related to price as follows:
 $Q^d = 10 - 0.15P$
 - i. If the price of a consultation is \$40, how many visits would be made per annum and how much would be the expenditure?
 - ii. Now suppose that government pays \$30 for each visit, so that the cost is \$10 per visit. How many visits would be made per annum and how much would be the expenditure?
 - iii. What is the deadweight loss of the subsidy?
6. Suppose that your utility function were $U = \ln(Y)$ and that your regular income is \$80 000 in a year. There is a 2 per cent chance that you will be sick and lose \$40 000 income.
 - i. What is your expected utility if you are healthy or sick?
 - ii. What would be the actuarially fair premium? What is your expected utility if you buy the insurance policy?
 - iii. What is the most you would be willing to pay for this insurance policy?
7. What kinds of inefficiencies arise with private health insurance in general?
8. The Australian government provides a subsidy (currently 30 per cent) for private health insurance. What are the efficiency and equity effects of this subsidy?

9. What are the key principles of efficient production and why are they difficult to achieve in the health care sector?
10. What is defensive medicine? Why does it have potential welfare costs? How could public policy deal with the problems that arise with defensive medicine?
11. What problems arise with the delivery of health care services in a federal government system? How might these problems be overcome, or at least minimised?

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