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Health Economic Evaluation in Japan: A Case Study of One Aspect of Health Technology Assessment

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Abstract

There is a burgeoning literature in health economic evaluation, with this form of analysis becoming increasingly influential at the health policy making level in a number of countries. However, a search of the literature reveals that in Japan, the world's second largest health care market, very little health economic evaluation has been undertaken. The main reason for the lack of interest in economic evaluation is that the fee-for-service and strict price regulation that characterises the system of health care financing in Japan is not conducive to this form of analysis. Moreover, the government and many researchers are satisfied that the current organisation of health care has given long life and low infant mortality at low cost. Even if it is accepted that low health care costs and good health prevail in Japan, slower economic growth rates, an ageing population and the development of new medical technologies will place increasing pressure on health care resources and will necessitate a more rational use of these resources. Good economic evaluation, by weighing benefits against costs, has an important role to play.

Key Words

Economic Evaluation, Health Technology Assessment, Japan, Fee-For-Service, Provider Budgets

Introduction

One aspect of health technology assessment that is becoming increasingly influential at the health policy making level in a number of countries is health economic evaluation (e.g., Ministry of Health, 1994; Commonwealth of Australia, 1995; Norwegian Medicines Control Agency, 1999; Sickness Funds Council, 1999; NICE, 2001). Health economic evaluation, by weighing benefits against costs, can help decision makers to allocate scarce health care resources more efficiently. By informing the decision maker of the most efficient ways to use health care resources, health economic evaluation is potentially more useful than aspects of health technology assessment that merely assess the effectiveness of health care interventions, which only offers information on whether an intervention is clinically beneficial without any reference to cost.

The purpose of this paper is to review the state of health economic evaluation in Japan, the world's second largest health care market, with a view to uncovering whether Japan can offer any lessons with respect to this highly important aspect of health technology assessment.

Review of Japanese economic evaluation

From a search of the literature, we can obtain some idea of the state of health economic evaluation in Japan. A search of the Health Economics Evaluations Database (HEED) was undertaken. This search included cost, cost-consequences and cost of illness analyses, in addition to the more accepted forms of economic evaluation (i.e. cost-minimisation, cost-effectiveness, cost-utility and cost-benefit analyses). Before going further, two caveats concerning the use of this database should be noted.

First, the database provides comprehensive coverage of only the post-1992 published literature. However, other studies, some with a particular emphasis on pharmacoeconomic analyses, have undertaken searches that extend to the pre-1992 literature, and have found very few studies directly applicable to Japan (Moriga *et al.*, 1995; Ikeda *et al.*, 1996a; Hisashige, 1997; Hamashima *et al.*, 1998; Kishimoto, 1999).

Second, HEED does not adequately cover the Japanese language literature. The articles detected as relevant from the search of HEED were all written in English. However, the few Japanese researchers active in economic evaluation aspire to publish their work in English language journals, and there are currently no established Japanese journals to which economic evaluations can be submitted (Ikegami, 1999). Whilst the search criteria used in this article does not provide an exhaustive search of post-1992 Japanese economic evaluation, it is assumed that the search detected a sufficient sample of published economic evaluations to enable some conclusions to be made concerning the state of economic evaluation in Japan.

The search was narrowed to Japanese authors undertaking original applied economic evaluation in Japan. Twenty-five articles were detected. By international comparison, this number is low. For example, using identical search criteria applicable to each

country, the number of applied economic evaluations included on HEED for the remaining G7 countries of Canada, France, Germany, Italy, the UK and the USA measured 319, 106, 83, 109, 630 and 2,610, respectively. Moreover, with respect to the number of published economic evaluations, many countries with relatively small health care sectors appear to be more active in the field of economic evaluation than Japan. For example, 150, 117 and 45 applied studies were detected for Sweden, the Netherlands and Finland, respectively. If it is assumed that the number of published applied studies gives some indication of the development of this discipline, it is perhaps notable that Japan appears to be grouped with countries such as Belgium (24 studies) and Thailand (16 studies) rather than with the larger industrialised nations.

A technical appendix of the studies detected from the search of HEED is available from the author on request. To summarise the results of the search, there has been a small, steady number of economic evaluations published by Japanese researchers over recent years, but there is no sign of an increasing trend in the number of studies published over time. Most of the studies tend to adopt a cost-consequence design. No author(s) dominates the applied economic evaluation literature, and most received their formal training in the clinical sciences. In terms of medical intervention, screening and diagnostics are the main foci of interest, and cancer is the most frequently analysed disease. The biggest single source of funding for these economic evaluations was the Japanese government. With reference to these results, I shall now attempt to offer some explanation for the current state of economic evaluation in Japan.

The disincentives for undertaking economic evaluation

The main disincentives for undertaking economic evaluation in Japan arise from the way in which the health care financing system is organised. The financing structure is described in more detail elsewhere (e.g., Ikegami, 1988; 1992; Ikegami *et al.*, 1994; Ikegami and Campbell, 1995; 1996; Oliver *et al.*, 1997), but its salient features are that it is a fee-for-service system based on a tightly controlled fee schedule, where across the board reductions in fees - irrespective of an intervention's effectiveness or value for money - are regularly imposed by the government. The ways in which the system of health care financing, together with other factors, serve to restrict the incentives for the government, purchasers, providers, manufacturers and universities to commission and/or undertake economic evaluation, will now be detailed.

Government and purchasers

Several research groups have been organised by the government and academia over recent years for the partial purpose of considering economic evaluation (Hisashige, 1997). Moreover, there have been calls from the government about the need to establish economic evaluation in the field of health care, particularly for pharmaceuticals (Hisashige *et al.*, 1998). However, the extent to which these calls will be heeded, and the degree of commitment that the government has in developing an environment that gives the appropriate incentives for high quality economic evaluation, is not clear.

Through the tight control of the fee schedule, the financial strain of reimbursing new medical procedures is suppressed. Universal insurance coverage entitles everybody to the same health care treatments, theoretically facilitating access to the latest, and, assumed, highest quality interventions. The low cost and perceived equity of access has removed the urgency within the government and insurers to actively pursue evidence of cost-effectiveness for the purpose of prioritising health care. Also, since insurance enrolment is based on employment or residence and not choice, there is no competition between insurance plans, and an extensive system of insurer subsidisation and cross-subsidisation by the government has weakened the incentives for the insurers to weigh the outcomes of medical interventions against costs. Unfortunately, it is likely that the strict control of prices without reference to incremental clinical efficacy, effectiveness and/or value for money has a distorting and detrimental influence on provider services and manufacturer production.

Providers

The fee-for-service nature of the system allows the health care providers to be reimbursed for their activity without direct reference to a budget, and removes the incentive for them to balance outcomes against costs. In some areas of health care the fee-for-service system and the suppression of reimbursement prices motivates the providers to increase their volume of service, possibly to a level where the marginal benefit falls below zero. This is particularly evident in pharmaceuticals and diagnostic procedures (Hisashige, 1994; Oliver *et al.*, 1999).

The decision to introduce high-tech health care is often based on the perception that the latest or seemingly more sophisticated developments in medical technology are necessarily highly effective. This perception is particularly pertinent in the larger hospitals, the administrators of which invest in high-tech health care in order to maintain prestige, which is then used to attract both physicians and patients (Ikegami, 1992). The view that ‘new is best’ may be culturally ingrained. Therefore, the removal of the perverse financial incentives offered by the current system may not immediately or entirely discourage the hospital administrators from investing in and administering the latest interventions before incremental clinical efficacy, let alone cost-effectiveness, is established. Nevertheless, separating revenue generation from health care provision may well introduce the incentives for the providers to assess health care interventions with more care.

Manufacturers

The lack of consideration of an intervention’s quality (in terms of its degree of efficacy, effectiveness and/or cost-effectiveness) in the fee schedule weakens the incentives for the manufacturers of health care interventions to demonstrate the usefulness of their products. This is particularly evident in the pharmaceutical industry. Pharmaceutical reimbursement prices are regularly reduced irrespective of quality. This gives the incentive for the manufacturers to continually introduce new drugs, which are generally priced slightly higher than existing comparable therapies (Ikegami *et al.*, 1994). Also, physicians are eager to prescribe new drugs for reasons of profit (due to relatively high margins between the reimbursement and market

prices) and prestige. In 1992, the MHW issued guidelines stating that innovative drugs would be priced at a premium level, though between May 1992 and November 1995, only 1 of the 183 new drugs introduced onto the market was priced as 'innovative' (Ikeda *et al.*, 1996b). Furthermore, the pricing decisions made during negotiations between the Ministry of Health and Welfare (MHW) and the Japan Medical Association (JMA) are closed, which makes it difficult for the manufacturers to determine exactly what is required for their products to be classified as innovative.

Most Japanese pharmaceutical manufacturers generally forgo the risk and expense of attempting to develop innovative products and restrict themselves to producing 'me-too' drugs. These products differ very little in their chemical compound from existing drugs and offer only limited improvements in therapeutic benefit. However, they are relatively inexpensive to develop, can be marketed as 'major innovations' and, as noted above, are priced above existing medicines in the same therapeutic category. Japanese pharmaceutical companies are sure that their me-too products will enter the market at a relatively high price, but are unsure of what they have to prove to attain a premium price. They are certain that whatever they produce, the reimbursement price will be subjected to regular reductions. In this environment there is little incentive for the manufacturers to undertake economic evaluation in order to prove a product's worth.

Universities

Of the 25 articles detected from the search of HEED, 21 gave author contact details. Sixteen corresponding authors were based in university medical departments, 2 in cancer institutes, 1 in a national hospital, 1 in a clinic and 1 in an American hospital. The large majority of the authors of these studies are physicians. It appears that those in Japan who undertake studies of health care interventions that contain some consideration of costs are predominantly university hospital-based physicians.

A possible reason why those with medical backgrounds tend to dominate health economic evaluation is because the medical profession in Japan is highly paternalistic, and medical doctors are resistant to what they may consider to be outside influences over their decisions (Feldman *et al.*, 1994). That physicians undertake the few economic evaluations that are published has important implications. First, the extent to which many physicians fully understand the principles of good economic evaluation is unclear. Very often, studies tend to include cost data almost as an afterthought rather than as an integral part of the analysis. This is associated with the physicians' main concern with demonstrating the clinical consequences of medical interventions. Where physicians do venture to focus upon more formal economic analysis, it is often the case that they lack the training to incorporate the appropriate requirements necessary for good quality evaluations.

Another implication of university-based physicians predominantly undertaking economic evaluation is that existing analyses may reflect their own medical research interests rather than any fundamental drive to estimate the most rational use of resources across the whole health care system. These research interests are likely to be partly determined by the forms of health care that are readily available. For example, mass screening for stomach, cervix, endometrium, lung, breast and colon/rectum

cancers is available in Japan at government subsidised rates or at no charge for the employees of most companies (Oshima, 1994). Screening for a host of other conditions, such as paediatric renal and heart diseases, are also widely available (Hisashige, 1997). Screening practices and the installation of diagnostic equipment may be relatively common because of the revenue that can be derived from voluminous diagnostic testing, and/or because the hospital administrators feel that investing in the latest diagnostic equipment is effective in attracting both patients and doctors. Alternatively, the popularity of screening and diagnostics could be based on a cultural preference for non-invasive techniques (Ikegami, 1988; Hisashige, 1997). The above factors may explain why screening, diagnostic procedures and cancer appear to be the foci of interest with respect to economic evaluation.

Overall, the incentives for the government, purchasers, providers, manufacturers and universities to involve themselves in economic evaluation are currently weak. But is more economic evaluation really warranted?

The case for more economic evaluation

It is well documented that the Japanese spend a relatively low proportion of their gross domestic product (GDP) on health care (e.g., Ikegami and Campbell, 1995; Ikegami, 1997). It is also well documented that despite this seemingly well controlled health care expenditure, the macro health indicators of life expectancy and infant mortality are among the best in the world (e.g., Ikegami and Campbell, 1995; Oliver *et al.*, 1997). Many researchers have drawn attention to these facts, which has somewhat deflated the pressure for reform that would introduce incentives for the various parties to focus on economic evaluation.

Health care spending as a percentage of GDP

Though health care expenditure as a percentage of GDP is low by international comparison, Japan's economic performance over recent years has been poor. Hence, the growth in GDP has been slow and the percentage of GDP spent on health care might be expected to rise. Whether Japan's economy will ever fully recover to the position the country had become accustomed to before the 1990s is an open question, but a relatively low proportion of GDP spent on health care should not be taken for granted, and the lower levels of economic growth necessitate a more careful utilisation of health care resources.

Poor economic performance is not the only factor that is contributing to the increasing pressure for a more rational use of health care resources. Japan has a population that is ageing more rapidly than those of most other countries. This will possibly place an increasing strain on the health care budget due to the possible higher prevalence of age-related diseases (Hisashige, 1993; Oliver *et al.*, 1997; Hisashige *et al.*, 1998). Also, the higher ratio of retired to people of working age within the population diminishes the insurance premium and tax base.

Finally, the development of new medical technology continues at an ever increasing rate (Hisashige, 1997). This will place more financial strain on certain providers,

specifically those where the investment in the latest technology is deemed necessary due to the pervading attitude that ‘new is best’.

Current macro indicators

Many researchers frequently mention that Japan has very good life expectancy and infant mortality indicators and that, therefore, the Japanese are a relatively healthy population. The first point to note regarding this, as acknowledged by many of the researchers themselves, is that the health care system is not the sole, or even the main, contributor to these good macro indicators. It is probable that many other factors influence life expectancy and infant mortality rates, including income growth, income distribution, diet, housing etc. (Hisashige, 1992; Oliver *et al.*, 1997). Thus, the good macro indicators are not an adequate reason to be complacent with respect to the benefits accruing from the current organisation of the health care system. There is also the question regarding the extent to which the macro indicators accurately reflect the health status of the population. It may well be that the members of a society, on average, live a long time, but their quality of life is at least as important. Moreover, it is worth noting that favourable international comparisons should not give grounds for complacency, as there is always likely to be room for improvements within any country.

Introducing incentives for economic evaluation

The Japanese government has been successful in containing health care costs (Oliver *et al.*, 1999). However, cost-containment alone is not a measure of a successful health care system, and an environment ought to be created where there are incentives to measure the value for money of new and existing health care interventions. The decision maker will then be in a better position to prioritise health care interventions. How might this environment be created?

Introducing provider budgets

The most important reforms necessary to encourage economic evaluation are to change the fee-for-service nature of reimbursement and remove the regular across-the-board reductions in the fee schedule. A system needs to be introduced that takes away the revenue-based incentives for the providers to undertake and administer unnecessary procedures and services. The widespread introduction of health care provider budgets could provide incentives for economic evaluation to be undertaken, and would also continue to facilitate health care cost control. Concurrently, the price reduction policy should be replaced with a price recommendation system that accords with each health care intervention’s value for money.

In a budget-based system, the insurance funds would negotiate contracts with clinics and hospitals to provide appropriate care for their insured populations over a fixed period. Currently in Japan, there are hundreds of insurance funds, and therefore this initiative may require many of the funds to merge. Also, contracting with specific providers may initially prove unpopular with many insurance fund enrolees since

people currently enjoy the freedom to attend any hospital they wish. However, a budget-based system with purchaser-provider contracting may give the government and the insurers the incentive to commission economic evaluation on new and existing interventions and disseminate the results to the health care providers in an attempt to encourage the use of the most beneficial care for each unit of health care cost. The providers would also have an incentive to commission economic evaluation in order to help provide the best possible care inside their budget constraint. This may place them in a strong negotiating position regarding future health care contracts by, for example, helping them to maximise population health status gains, subject to equity considerations.

The manufacturers of health care interventions would be faced with more appropriate incentives to commission and undertake economic evaluation precisely because they would want to demonstrate that their products represent the best value for money. This could be reinforced if the government demanded the submission of good economic evaluation to help them in their pricing recommendations. Moreover, the method by which the government considers the results of economic evaluation ought to be overt. This may pose a particular problem as the confidential aspect of decision making is embedded in Japanese tradition. However, attempts to persuade the MHW and the JMA to publicly disclose the information that they draw upon during their negotiations are necessary in order to enable the manufacturers to scrutinise and, if necessary, appeal against the government's decisions. If the government employs assessors with expertise in economic evaluation the health care manufacturers may have more confidence that their products are being subjected to price recommendations that reflect value for money, and would thus be given the incentive to produce high quality, internationally competitive products.

Establishing the necessary expertise in economic evaluation

Although changes to the structure of health care financing are necessary to remove the disincentives to commission and undertake economic evaluation, there are currently an insufficient number of experts able to undertake good economic evaluation in Japan. The government should invest in the training of a large number of experts who would remain independent of government and/or industry influence. Maintaining the independence of the experts will help ensure that the influence of those with a vested interest in the results of the analyses is kept to a minimum, and that each interested party is as confident as possible in the validity of the results. Although the government, insurers, providers and manufacturers may require experts to undertake and assess economic evaluation, the majority of the research should be commissioned from and undertaken within an independent academic environment. It is advisable that specific centres of excellence be established within the universities.

Lessons from Japan?

As the countries of the European Union form closer economic and political ties, it is becoming increasingly important to assess which health care systems 'work' (and why they work). However, we ought to guard against constructing an isolationist European Union point of view. Assessing the health care systems of non-European Union

countries is also important, not just with the view of ascertaining what we can learn from them, but also with a view to offering advice on what they can learn from us. Recent world events have served to underline the importance of maintaining a global perspective with respect to many aspects of policy development.

In terms of developing health care systems that facilitate both investment in health economic evaluation and the incentives to act upon their consequent recommendations, the countries of the European Union, or indeed anywhere else, have very little to learn from Japan. In fact, I have argued that a budget-based system similar to those that exist in the UK countries ought to be introduced in Japan.

Conclusion

In many countries, economic evaluation is an increasingly influential aspect of health technology assessment, but in Japan relatively little health economic evaluation has been undertaken. The main reason is that the current system of health care financing does not provide the appropriate incentives to stimulate a powerful interest in this type of research. Many Japanese are nevertheless satisfied that good health care indicators are being achieved at low cost. However, due to slower economic growth, a rapidly ageing population and the increasing development of new medical technologies, health care resources are likely to be subjected to ever increasing pressures. A more rational use of health care resources to maintain and improve the health of the Japanese people is warranted. Concerning these considerations, economic evaluation, by weighing the benefits of medical interventions against their costs, has an important role to play.

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