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Research Paper 13/04

Is the Link Between Health and Wealth Considered in Decision Making? Results from a Qualitative Study

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May 2013

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OHE Research Paper 04/13

May 2013

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Acknowledgements

This research was funded by Eli Lilly and Company.

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Abstract

Objectives

This research was intended to explore whether wealth effects of drug interventions, including productivity gains and savings in other sectors, are considered in resource allocations by health technology assessment (HTA) agencies and government departments. It also analyses reasons for including, or not including, wealth effects.

Methods

Semi-structured interviews with decision makers and academic experts in eight countries (Australia, France, Germany, Italy, Poland, South Korea, Sweden and the UK) were concluded.

Results

The principle that investment in health care, including drug interventions, can improve economic outputs does not influence decision making in any country included in our study, with the exception of Sweden. A combination of factors are responsible, including system fragmentation that does not allow spillovers across sectors to be considered, methodological issues in HTA, and a focus on short-term measures by national governments that are dealing the effects of the economic recession.

Conclusions

If the aim of HTA agencies is to inform efficient priority setting within the health care sector, they should take into account all relevant costs and benefits generated by individual interventions when making decisions. A clear signal from HTA bodies to consider wealth effects systematically will encourage biopharmaceutical companies to invest in generating the evidence that demonstrates the presence and size of those effects.

This also should apply to government decisions about resource allocation across sectors. Governments should consider all relevant effects from public investments, including health care, even when benefits can be captured only in the medium- and long-term. This will ensure that resources are allocated where they bring the best returns.

Introduction

Traditionally, the primary outcome of health interventions considered by health care decision makers is the impact on patients' health in terms of reduced morbidity or mortality. Additionally, interventions can generate wealth effects that go beyond health gains to patients. Wealth effects include improvements in the labour productivity of patients and their caregivers, cost savings in health care, social care and other sectors, and increases in national income.

In 2003, David Byrne, then European Commissioner for Health and Consumer Protection, delivered a speech that focused on the importance of health as a "driver of economic prosperity" for EU Member States (Byrne, 2003). The extent to which these wealth effects have had an impact on health technology assessment (HTA) agencies in their advice and on government departments in their budget setting decisions has not been explored in the literature. Many types of health care interventions may be expected to affect national income and wealth. In this study, we focus specifically on drug-based interventions.

Conceptual framework

We developed a categorisation of potential wealth effects based on published literature to generate case study interventions where wealth effects are particularly prominent. We explored the published literature by following up the references in recent reviews and comprehensive analyses (Claxton et al, 2010; Cutler, Llleras-Muney and Vogl, 2010; Jack, 2010; Johannesson et al., 2009; Krol et al., 2011). We also conducted a search with Google Scholar to identify additional publications on the impact of health on economic growth in high-income countries, labour productivity and other indirect costs in economic evaluations.

Figure 1 presents our conceptual framework. It illustrates that, in addition to health effects such as reducing morbidity or mortality (box A), health interventions also can produce a variety of wealth effects.

The economic costs of illness often fall on sectors other than the health care sector; the use of health interventions can lead to important cost savings to those sectors (box B). The resources freed up could be used to provide additional services within the sector. For example, it has been shown that one of the key drivers of the cost of Alzheimer's disease

(almost 40%) is the cost of social care provided in patients' homes or in other community settings (Jönsson and Berr, 2005).

Despite evidence showing that indirect costs can constitute a significant proportion of the total cost of illness to society, the inclusion of those costs in economic evaluations remains limited. Stone et al. (2000) found that productivity costs were considered in less than 10% of published cost-utility analyses. Recently, interest has grown in exploring the interdependencies between health and wealth (Figueras and McKee, 2012; Figueras et al., 2008; Suhrcke et al., 2005). Our study built on this and aimed at determining whether those interdependencies are taken into account in practice in HTA and other sorts of resource allocation decisions.

Figure 1. Conceptual framework of the link between health and economic outcomes

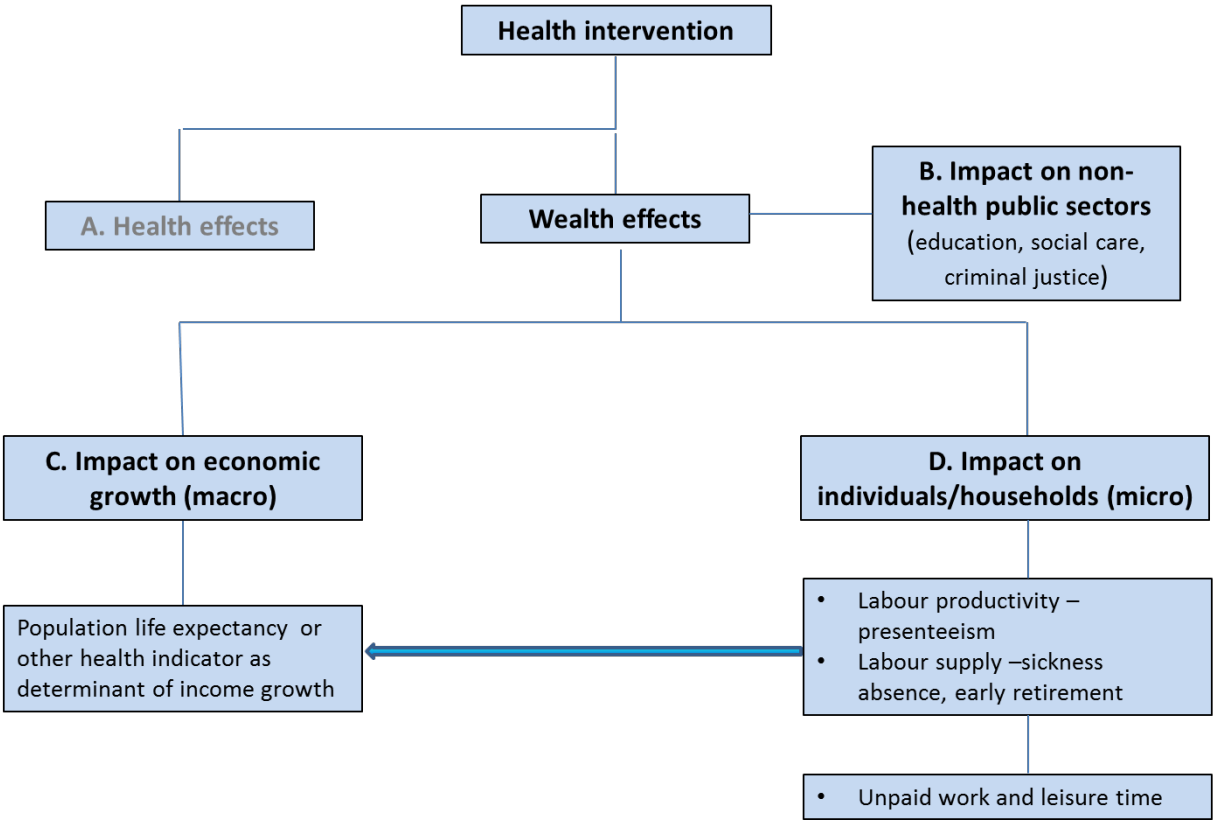

Figure 1 also shows that, at the macroeconomic level, a positive link may exist between the health of a population and national income (box C). At the microeconomic level, health care interventions can have an impact on individuals or households by improving patients' productivity at work (if they are of working age) and by reducing patients' and carers' absences from work due to ill health (box D). The arrow linking macro and micro

effects indicates that some micro effects are captured at the macro level—e.g. reducing sickness absence can improve individual firms' production and that can contribute to growth in national income. Alternatively, other effects, such as time spent doing unpaid work (e.g. housework), are captured only at the micro level.

Empirical evidence using a global sample of countries has shown that health, measured in terms of life expectancy, is a robust predictor of economic growth (Barro and Sala-I-Martin, 1995; Bloom, Canning and Sevilla, 2001; World Bank, 1993). However, the role of health seems to be stronger in the context of low- and medium-income countries compared to high-income countries where evidence is limited and shows mixed results. For example, Knowles and Owens (1997) found that life expectancy had a minor impact on the economic growth of a sample of high-income countries, while Bhargava et al. (2001) found that above a certain level of income per capita, in high-income countries, improvements in adult survival rates had a negative impact on growth rates.

The results for these types of studies should be interpreted with caution for three reasons. The first relates to the indicators used to measure population health, which in most studies is life expectancy or adult mortality. While there is wide variation in life expectancy between low- and middle-income countries, variation among high income countries is slight. As a result, more relevant indicators of health are needed to capture the different levels of health in different high income countries (Strauss and Thomas, 1998). An example of this is cardiovascular disease (CVD) mortality as used in a study by Suhrcke and Urban (2010). They show that a 10% increase in CVD mortality among OECD countries reduces the per capita income growth rate by one percentage point. CVD mortality was used as a proxy for health for two reasons. The first was the large disease burden of non-communicable diseases in OECD countries, CVD in particular. The second was the impact on labour productivity, as CVDs affect individuals of working age.

The second reason for being cautious in interpretation relates to institutional factors that prevent countries from realising the positive effects of health improvements. As life expectancy exceeds the retirement age by a growing margin, the old-age-dependency ratio increases, negatively affecting government fiscal stability and, indirectly, economic growth. One way to overcome this would be to increase the retirement age so that the improved health of older people can result in an increase in labour supply and productivity (Suhrcke et al., 2012). Those policies have already been implemented or are under discussion in a number of countries.

The third reason concerns the issue of causal effect between health and wealth, as higher income can increase consumption and provision of goods and services, thus promoting health (Bloom, Canning and Sevilla, 2001; Cutler, Llleras-Muney and Vogl, 2010). However, this effect will ultimately reinforce the importance of recognising the role of improving health outcomes on national income, which can create a "virtuous" cycle between health and wealth.

At the micro-economic level, ill health can affect individuals' participation in the labour force in the short term, long term or permanently. This affects individuals' ability to earn income for themselves and their family, consume market goods and engage in leisure activities. A body of literature estimates what are called 'indirect costs' to society due to ill health. They include loses due to:

- Reduced productivity at work ("presenteeism"). Some illnesses, such as back pain and depression (Andlin-Sobocki et al. 2005; Krol et al.,2011), do not necessarily prevent individuals from attending work but may affect on-the-job performance

- Sickness absence (absenteeism). Individuals who are suffering or recovering from illness or undergoing treatment may require absence from work. For example, it is estimated that a major component of the cost of breast cancer is due to patients' absence from work due to treatment-related symptoms (Lidgren et al., 2007)

- Non-employment/early retirement. Illnesses that are particularly debilitating may result in an individual being unable to return to work (and therefore unable to produce output) on a permanent basis. For example, Kobelt (2004) reported that 38% of the total cost of multiple sclerosis is due to lost productivity from early retirement.

The effects of health also apply to those providing informal (i.e. unpaid) care to patients (Goodrich, Kaambwa and Al-Janabi, 2012). For example, when children attend hospital appointments their parents often need to be absent from work to take them to their appointments.

Methods

We conducted semi-structured interviews with decision-makers and academic experts in eight countries. The aim of the interviews was to explore whether the wealth effects of drug interventions are considered by HTA agencies in their health technology evaluations and by government departments in their budget setting decisions. We also asked about the reasons for including, or not including, these wealth effects. Wealth effects were defined as non-health, economic effects generated by the use of interventions, including impacts on labour productivity and supply and savings to other sectors.

Three categories of decision makers that affect national health systems were targeted: finance ministries, which allocate resources across national government departments; health ministries, which run national health systems (NHS) and in some cases allocate resources across separate NHS components; and HTA agencies, which determine reimbursement decisions or make recommendations about health interventions. The list of potential interviewees included people currently employed by the relevant body or ministry and local academic experts directly involved in HTA processes and/or advising the ministry of health.

The initial geographical scope included countries with established or emerging HTA systems and near universal health coverage: Australia, Canada, France, Germany, Italy, Poland, South Korea, Sweden, Turkey and the UK. The final list of countries was chosen based on whether interviewees responded to our request for an interview. These were: Australia, France, Germany, Italy, Poland, South Korea, Sweden and the UK.

We developed two questionnaires using hypothetical interventions that illustrate wealth effects. One included HTA-specific questions to explore whether wealth effects matter in the HTA processes and, if so, which are included, what type of evidence is required to show impact and what are the key issues encountered. The other set of questions related to decisions on budget setting to investigate, e.g. whether resource transfers are possible when benefits from health spending are captured in other sectors. Materials for the hypothetical interventions were largely drawn from the cost of illness literature.

Both questionnaires included open-ended questions. This enabled the interviewer to structure the interview by asking pre-defined questions, but also to pursue additional topics in more depth or probe for information on themes emerging from the interviewee's answers. The questionnaires were sent to the interviewees in advance of the hour-long telephone interview. Two researchers were present at all interviews. Summary notes of the interviews were sent to the interviewees for confirmation and

correction (if necessary) to ensure that all points made in the discussion were captured appropriately. The finalised notes from the full set of interviews were reviewed by three researchers (MG, KS, and PS) who identified key themes working independently. These themes were agreed and validated in a group discussion involving all four researchers.

Interview results

We spoke to 13 interviewees across eight countries: seven academic experts and six people currently or formerly working for HTA agencies or the ministries of health.
In all countries, the health ministry and HTA perspectives were represented. In two countries (Italy, Poland) the view about the ministry of finance also was collected as the interviewees were able to answer the questions referring to the allocation of resources across different ministries.

Do decision makers consider wealth effects?

From interviewees' responses, we identified four approaches towards wealth effects: countries that consider wealth effects regularly; countries that consider wealth effects in principle, but rarely or never in practice; countries that do not consider wealth effects within HTA; and countries that apparently do not currently consider any economic or cost data when making reimbursement and health care budget-setting decisions.

As shown in Table 1, with the exception of Sweden, no country considers wealth effects on a regular basis. In Australia, Poland and the UK, although economic evaluations of individual drug interventions submitted to HTA agencies could include wealth effects as part of a secondary analysis, in practice this rarely happens. Germany, Italy and Poland have no scope for including anything other than the direct costs to the health care sector and benefits of a new drug. In France, the HTA agency does not currently consider economic or cost data in its evaluation of new drugs as the emphasis is on clinical outcomes.

Table 1. Categorisation of countries according to the extent of consideration of wealth effects in resource allocation decisions

	Aus	Fra	Ger	It	Kor	Pol	Swe	UK
Considers wealth effects regularly							✓	
Considers wealth effects in principle but rarely/never in practice	✓					✓		✓
Does not consider wealth effects within the HTA process or health care budget-setting decisions			✓	✓	✓			
Does not currently consider any economic/cost data		✓						

At the finance ministry, level our two interviewees (from Poland and Italy) emphasised that there is reluctance to consider wider effects of health interventions in their resource allocation decisions across sectors. Other two interviewees (from the UK and Australia) stated that there have been some national policy reports emphasising the importance of wealth effects (DH, 2011; Productivity Commission Australian Government, 2007), but these have not resulted in any specific policy changes to date.

Key barriers for the inclusion of wealth effects

Our interviews revealed several legislative and policy barriers to incorporating wealth effects into decision-making. We have grouped those into the following themes:

1. System fragmentation, including a persistent culture of silo budgets whereby links across governmental departments' expenditures are not considered regularly if at all and the view is that the health care system should concentrate on health
2. Methodological and data generation issues, such as difficulties in demonstrating the impact of a specific treatment on productivity with reliable data
3. Practical issues due to added complexity if those effects are included in decision-making
4. Equity issues as the inclusion of productivity effects can favour interventions for working-age individuals
5. Weakness of macro-economic evidence on the relationship between health and economic growth, which is limited for high income countries.

System fragmentation

The general view amongst decision makers is that the primary and often sole objective of health care is to improve citizens' health. (Not that evidence in the literature suggests that health care policy decisions in England often are based on factors other than improving health outcomes [Shah et al., 2012]). Thus, health care budgets tend to be

separate from budgets for other sectors even when they are closely related, such as social care. Any spillovers that occur across sectors are not captured, e.g. where spending on a health care intervention lead to lower social care costs paid out of a separate budget.

In Australia, Italy and Poland, we found silo budgets within the heath care sector. In Australia, e.g., hospital and primary care are financed separately with no scope for transferring any cost savings between the different parts of the health care system.

In South Korea, the government created a separate budget to cover the cost of care for dementia. However, this budget covers community care, but not drug costs, which are funded under the health budget. Any savings that may result from a new dementia drug that delays the need for community care, then, would not be considered in a drug benefit assessment as they would accrue outside the health care sector.

In Sweden, even though the HTA body adopts a societal perspective (i.e. all relevant costs and benefits associated with a treatment and illness could be considered) when making reimbursement recommendations on new medicines, individual County Councils can restrict use of HTA-approved medicines to meet their own budget targets (the key criterion for their decisions is budget impact) (Johannesson et al., 2009).

A few examples of integrated decision making, where non-health programmes recognise health benefits were identified (e.g. local-authority-funded cycle lanes in the UK). However, our interviewees could not identify any cases where non-health benefits of medicine-based interventions were taken into account when allocating resources to the health care sector or, more specifically, to the budget for pharmaceuticals.

Methodological and data generation issues

When incorporating wealth effects (indirect costs) in economic evaluation, methodological issues arise around measuring, and providing evidence of, productivity effects.

First, there is no methodology to disaggregate productivity gains and improvements in quality of life measured by the quality adjusted life years (QALY). Are changes in the individuals' ability to earn income reflected in the QALY? If they are, those effects potentially are double counted.

Second, even when productivity effects are included in the cost-effectiveness estimation of drug interventions, HTA bodies require evidence showing productivity effects that are directly attributable to the intervention, evidence that is rarely available. For example, what is the proportion of patients that return to work due to the treatment? In addition, it was noted that short-term absences from work do not necessarily lead to significant losses for the firm employing the patient as the returning employee might be more productive when he/she returns to work.

Those concerns were highlighted by interviewees from Australia and the UK where the HTA processes rely on cost-effectiveness evidence. In Sweden, where the HTA body considers wealth effects on a regular basis, an interviewee raised concerns about the poor quality of the studies showing productivity benefits underpinning recent submissions. The reason identified was that other HTA bodies such as NICE do not ask for this evidence, hence it is not a priority for companies to collect it.

Overall, it emerged that if HTA bodies were to consider productivity effects and other wealth effects of drug interventions, including savings falling to other public sectors, then robust data showing those effects would be demanded.

The interviewees from Poland and South Korea discussed the issue of transferability of the data on indirect effects across countries, as evidence collected in the UK or Sweden, e.g., may not be applicable to them. Therefore, the lack of country-specific data was identified as a barrier to the incorporation of indirect costs in their HTA decisions.

Practical issues

Some interviewees were sceptical of the impact that wealth effects, particularly productivity gains, can have on final decisions. As one interviewee stated, indirect costs are unlikely to be “the factor that tips the scale in favour of a treatment or not”. Furthermore, adopting a wider perspective in economic evaluations would result in more work for HTA agencies and for the manufacturers collecting the evidence. Many of our interviewees questioned whether the inclusion of these wealth effects was worth the additional cost and effort.

In some countries, legislative barriers inhibit taking wealth effects into consideration when evaluating health interventions. For example, the National Institute for Health and Care Excellence (NICE) in the UK adopts a narrow, health care sector perspective as specified in the legislation that defines its remit. Public health is an exception in this

case, partly because many of the actions recommended in public health guidance relate to actors outside the health sector. This is reflected in NICE's public health activities where the Institute is more open to reflecting costs and benefits to other sectors. Similarly, in Poland, the objective of the health care system is defined by law to be to improve the *health* of the Polish population with no mention of other, non-health gains. Finally, German decision makers are guided by the statutory Social Code Book regulations, according to which drug benefit assessments should be based on patient-relevant benefits identified using clinical endpoints.

Equity issues

Including indirect effects in the assessment of health interventions can have distributive effects across different sections of the population. For example, including productivity effects will favour treatments aimed at working-age individuals over those with permanent disabilities, those who are retired, and children (if effects accruing over a lifetime are more difficult to estimate). This could result in situations where treatments extending older patients lives' for a certain period of time will be found to be less cost-effective than treatments that extend the lives of working-age patients for the same amount of time. Interviewees from Australia and the UK had particularly strong concerns that including wider effects of health interventions conflicted with the principles of equity and non-discrimination that their health systems were founded upon.

Weakness of evidence on health impact on economic growth

We asked all interviewees whether the Suhrcke and Urban (2010) study, which provides evidence on the impact of improved health outcomes in CVD on macroeconomic growth, had had any resonance in their country. Almost all interviewees said that the study commissioned by the European Commission (Suhrcke et al., 2005) has not had any impact on their national policy.

There are reservations about applying the Suhrcke and Urban results to inform resource allocation decisions. One issue identified was that focus of the study is on one disease area, although the one with the largest burden in high income countries. Therefore, the results do not necessarily support investment in health care generally as a means to promote economic growth. In addition, the results cannot be used to inform priority setting within the health sector as evidence on the impact of other disease areas on macroeconomic indicators is not available.

A few interviewees questioned the validity of these studies, especially in light of documented methodological limitations (Jack, 2010). Only in the UK, according to one of the interviewees, was the Suhrcke and Urban (2010) study discussed by a decision-making committee; however, this was primarily for public health interventions rather than drug-based interventions.

Discussion

Evidence suggests that in certain diseases interventions can produce economic gains for patients and national economies. Benefits include improvements in productivity of patients and their carers at work and savings to other sectors such as education and social care.

In spite of this evidence, results from our interviews with decision makers and expert commentators in eight countries associated with different HTA systems suggest that considerations of the link between health and wealth have little to no impact on decision making, from budget setting across ministries to reimbursement decisions on individual drug treatments. This apparent disconnect is due to a number of barriers that are addressed below.

- Breaking down silo budgeting may be difficult, as this will require not only a change in the operation of government financial systems to allow for resource transfers across departments, but also potentially the need to develop more integrated health care systems focusing on outcomes that go beyond health gains.

- Methodological issues can be addressed in the short term by undertaking research comparing the available approaches (e.g. friction cost approach, human capital approach) to estimating productivity gains and assessing their validity in different economic contexts. In addition, empirical studies can be conducted to test the extent to which effects of changes in individuals' income are captured by the QALY, such as the study by Tilling et al. (2012). This will inject more confidence in HTA bodies to consider wealth effects more systematically.

- Equity concerns should be considered in light of indirect effects of health gains for patients of working and of non-working age. Taking into account productivity benefits could result in relatively more resources for treatments for diseases affecting individuals of working age. However, society can indirectly benefit from

keeping people at work if increased tax revenues are redistributed across different groups (e.g. better public services). Further, improving the health of non-working people (children and elderly people) can also have positive effects on the economy by allowing their (informal) carers to remain in work and not reduce their labour supply, particularly when the treatment increases quality of life in patients with chronic conditions.

- A clear signal from HTA bodies to a more open approach to the consideration of wealth effects will encourage biopharmaceutical companies to invest in generating the evidence needed to demonstrate the presence and the size of those effects for specific treatments. In particular, for each category of wealth effect, including productivity, there is a need to identify the type of studies that can be undertaken and approach to incorporate this evidence in HTA submissions. If HTA remains ambivalent regarding the importance of wealth effects, companies are unlikely to generate good quality evidence to prove them. The UK Department of Health has indicated its willingness to consider wider societal effects, in a new, value-based pricing system for pharmaceuticals (DH, 2010), based on the recognition that the value of a medicine should capture all benefits to society beyond health. This could provide evidence on the circumstances where those effects could make a difference in final HTA or pricing decision and on the feasibility of incorporating those effects in assessment processes. This is likely to set a precedent that could be followed by other countries.

- Uncertainty about the link between health and economic growth in high-income countries does not justify moving resources away from the health sector. From a methodological perspective, more research can be done entailing, e.g. using health indicators other than life expectancy to better reflect variation of health states in rich countries and perhaps applying the Suhrcke and Urban (2010) approach to different disease areas. From the perspective of national governments, an opportunity exists for expanding taxable income by funding interventions that increase patients' ability to work and earn income and, therefore, to set a virtuous cycle of "better health–more income for citizens–more taxable income for governments, which could increase total resources available and partly help in dealing with public deficits.

Study limitations and suggestions for further research

Our qualitative analysis was based on a limited number of interviews (one or two in each country) conducted by telephone. This was sufficient for us to identify common issues preventing countries from considering all relevant effects from health care spending, including positive economic spillovers, but ideally we would recruited a greater number of interviewees to collect more data and validate some of the claims being made. Further analyses can include more countries with emerging HTA systems and growing economies (such as Brazil) and new European Member States facing budgetary pressures to investigate whether and how health could be considered a long-term investment. In terms of method, additional qualitative approaches other than one-to-one interviews could be explored, including focus groups or workshops allowing participants to interact with one another and discuss possible solutions to overcome existing barriers.

Conclusions

If the aim of HTA agencies is to inform efficient priority setting within the health care sector, then wealth generated by new interventions should be taken into account, as in any investment decision. This does not necessarily mean increasing the health care budget, but ensuring that decisions are based on all relevant elements, including both health and wealth effects.

The need to consider all relevant benefits and costs also applies to government decisions on resource allocation across public sectors. Because of financial pressures, governments are focused on cost-cutting measures aimed at reducing fiscal deficits in the short term and are not considering as relevant benefits from public investments, including in health care, that can be captured in the medium- and long-term. Although this approach might be inevitable in certain circumstances, governments should not overlook how to make the best use of available resources and should consider all relevant effects, whether positive or negative, when making resource allocation decisions. In difficult economic times, it becomes even more important to use resources in such a way that they bring the best returns to the economy.

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