

Kohlhammer

Versorgung gestalten – Gestaltung der Gesundheits- und Sozialversorgung heute und morgen

Herausgegeben von

Jürgen Zerth und Elmar Nass

Die Reihe „Versorgung gestalten“ umfasst sowohl Monographien als auch Sammelbände, die das Themenfeld Gesundheitsversorgung aus interdisziplinärer Perspektive untersuchen.

Gesundheits- und Pflegeprozesse sind immer Beziehungen zwischen Ärzten, Patienten, Pflegenden und Gepflegten. Diese Beziehungen sind jedoch in einer organisatorischen und finanziellen Gestaltungsstruktur eingebettet, die wiederum integraler Bestandteil von (regulierten) Marktmechanismen ist. In diesem Sinne sind handlungstheoretische Perspektiven und Begründungsebenen genauso relevant wie die Auseinandersetzung mit organisationstheoretischen Anreiz- und Managementaspekten sowie werteorientierten Führungs- und Leitungsstrukturen. Die Reihe greift daher Fragestellungen der Handlungs- wie Organisationsebene im Gesundheitswesen genauso auf wie Aspekte der Technologieimplementierung im Gesundheits- und Sozialmarkt und den damit einhergehenden Konsequenzen für Akteure, Betroffene, Organisationen und Institutionen.

Die Analyse übergeordneter institutioneller Strukturen (regulierter) Gesundheitsmärkte komplettiert den interdisziplinären Blick auf die Herausforderung „Versorgung gestalten“.

Jan Schildmann/Charlotte Buch/Jürgen Zerth (Eds.)

Defining the Value of Medical Interventions

Normative and Empirical Challenges

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The cost-effectiveness of what in health and care?

Paul Mark Mitchell

Abstract

Assessing the value for money offered by new health technologies is playing an increasingly important role in aiding decision-making in health and care. Even in a pre-COVID-19 world, international healthcare systems were struggling to meet the demands of their patient populations and the rising cost of new health technologies, such as pharmaceuticals. With the impact of the coronavirus pandemic on the global economy and the provision of other health and care services more generally, difficult decisions will continue to be required over what basket of health and care services are available to the general population.

Health economists have developed methods to aid decision-makers who want to improve population health as the primary goal. Tools such as quality-adjusted life years (QALYs) combine health-related quality of life and quantity of life into a single outcome. QALYs allow for population health to be maximised. However, there is debate over whether the quality of life content captured by QALYs is too narrow. In addition, the aim of maximisation in health may be at odds with other goals of health and care, such as reducing health inequalities.

This chapter discusses some of the key steps involved in the construction of the QALY to value patient benefits from health and care interventions, and also how the QALY is commonly used in economic evaluation to aid healthcare decision-making. A critique and an alternative to QALYs is also provided.

Evaluating peoples capabilities has been proposed as an alternative to health focused outcomes, such as QALYs, to inform health and care decision-making. Developed initially by nobel prize winning economist and philosopher, Amartya Sen, capabilities represent what a person is able to do and be in life that they have reason to value. Although health functionings are an important component of Sen's Capability Approach, using QALYs does not fully extend the evaluative focus on to how such health outcomes and other non-health functionings are reflective of what people can and cannot do in their life that they have reason to value. Aiming to get people to a decent or sufficient level of capability also provides an alternative to the health maximisation objective commonly pursued in health economic evaluations.

Adopting a different quality of life measurement approach in health economic evaluations, as well as a new objective, has important implications for what patients and treatments are prioritised in health and care. Previous research has shown how interventions that improve quality of life for patients with mental health conditions and more severe health conditions will be more favourably treated using a capability measure. It is also recognised that health inequality has largely been neglected in the singular focus of QALY maximisation. Shifting to a “sufficient capability” objective may help address efficiency and equity concerns without the need for more complex economic evaluation frameworks that require dual objectives to deal with population health and health inequality simultaneously.

Keywords: health economics, QALY, capability approach

1 Introduction

Health economics are two words that some may be surprised to see side by side. Commonly misinterpreted as a subject that is solely focused on the economy or the wealth of nations, the subject of economics is interested in the study of choices people make and how these choices impact on different markets, including the market for health and care (Bishai and Rochaix, 2020). For a variety of reasons, the market for healthcare is very different than other markets, with a requirement of government intervention to deal with “market failures” that would otherwise occur (Morris *et al.*, 2007, pp. 125–145).

Increasingly, adopting an economic approach is undertaken in the assessment of new health technologies. Healthcare agencies who emphasise evidence-based medicine are not only interested in clinical and ethical concerns such as the quality, safety and efficacy of new health technologies, but also the cost-effectiveness of such interventions too (Taylor *et al.*, 2004).

The requirement of at least some consideration of the cost-effectiveness or value for money offered by new health technologies is also linked to another fundamental principle in health economics: the notion of scarcity. In health and care, scarcity translates to the availability of health and care where demand for healthcare exceeds supply. Health and care resources, as in the availability of health and care professionals, buildings, equipment, and medicines, are not in infinite supply in any healthcare system, however funded. Therefore, funding for additional health and care interventions means choices are required to allocate health and care resources (Morris *et al.*, 2007, p. 3).

Cost-effectiveness analysis (CEA) has become a key component in the valuation of new health technologies. CEA aims to aid decision-making by determining whether a new technology is *worth* the (typically) additional cost to the

health and care system under consideration (Drummond *et al.*, 2015). The provision of a new health technology will be at the expense of existing or other new health and care resources that will not be able to be funded as a result. CEA has become synonymous with health technology assessment (Wisløff *et al.*, 2014), but it can be applied across other areas of health and care too (Hauck *et al.*, 2019).

This chapter provides an overview of some of the key ideas in the valuation of healthcare that have emerged from the sub-discipline of health economics over the past fifty years. What health economists refer to as “cost-effectiveness” in healthcare and how this is determined will receive close attention. How health economists define what is a cost-effective use of healthcare resources is not without challenge from a number of standpoints.

From a normative economics perspective (Robeyns 2017, p. 28), there are those who argue that how cost-effectiveness is typically defined by health economists is too narrow a focus on predominantly physical health outcomes and not on the broader wellbeing benefits individuals may obtain from treatment (Brazier and Tsuchiya, 2015; Coast *et al.*, 2008b). A number of researchers have made the argument for adopting the assessment of people’s capabilities instead, drawing from the work of nobel prize winning economist Amartya Sen and the Capability Approach (Sen, 1993). Sen’s critique of welfare economics has been used to justify a move away from the traditional rationale for assessing the costs and benefits of policies in monetary terms (Brouwer *et al.*, 2008; Coast *et al.*, 2008c). Yet, there is debate about how much of Sen’s capability approach can be applied in economic evaluation to inform health and care decision-making (Coast *et al.* 2008b; Cookson, 2005).

This chapter provides an overview of the rationale for using economic evaluations to inform policy decisions more generally, before moving on to focus on how methods for economic evaluation have been uniquely shaped for application in health and care. The key steps involved in constructing patient *benefits* using the quality adjusted life year (QALY) will be detailed. Finally, an alternative economic evaluation framework based on the Capability Approach is provided for consideration as a different way economic analysis can be used to inform health and care decision-making.

2 Economic evaluation in health and care: the rationale

Economists have played an important role in influencing policy decisions. They have developed toolkits to help address questions on how a government or organisation should proceed when faced with multiple alternative courses of action. Economic evaluation is one of these toolkits used for aiding decision-making. Economic evaluation has been defined as “*the comparative analysis of*

alternative courses of action in terms of both their costs and consequences” (Drummond *et al.*, 2015, p. 4).

The most straightforward and commonly used economic evaluation outside of health and care is called cost-benefit analysis (CBA). Essentially, in CBA if the monetary benefits outweigh the costs of introducing a new policy, the new policy is net beneficial and should proceed, and vice-versa (Drummond *et al.*, 2015, p. 10). The origins of CBA have been dated back as far as the 1840s, when French civil engineer turned economist, Jules Dupuit, wanted to determine the optimum strategy for introducing a toll on a new bridge (Ekelund, 1968). More recently, CBA ranges from providing evidence to help decide whether to build a high speed rail line from the north of England to London (DfT, 2020a), to more local decisions, such as whether a core UK city should build a large indoor arena to regenerate a derelict city centre site (KPMG, 2018).

Key to all CBA are that the costs and benefits of a policy are measured in the same unit (i.e. in monetary terms), making it relatively straightforward to compare cost and benefits to one another and decide if a policy represents value for money. Typically, the costs and benefits focus on economic impacts, in terms of the monetary cost of a policy compared to the monetary benefits, such as predicted Gross Domestic Product (GDP) growth following increased productivity; for example, the economic growth opportunities offered by the building of a new airport terminal (DfT, 2017). The aim of CBA is to maximise the benefits to society in monetary terms, with the welfare economic rationale of adopting a utilitarian maximisation objective as the social welfare function. This objective argues that society will be better off so long as the average population utility levels, in terms of individuals happiness or fulfilling preference satisfaction – commonly proxied by income – are increasing (Brouwer *et al.*, 2008).¹

The sub-discipline of health economics has developed rapidly in just over sixty years. Kenneth Arrow was an influential figure in the foundation of health economics. Arrow recognised that the healthcare market required greater public intervention than other markets in society due to market failure in healthcare related to uncertainty in the treatment and need for medical intervention (Arrow, 1963). The argument has been made that typical CBA evaluations are not appropriate in healthcare, as it would involve challenging ethical questions for practical use, such as putting a direct monetary value on life, as well as issues of income influencing the willingness to pay estimates of individuals – thereby use of CBA could favour interventions for those with larger incomes (Coast, 2004). CBA is rarely applied in practice in health and

¹ See chapter by Ubels in this publication for further details on utilitarianism in economics.

care, yet some notable attempts in using it have been made (McIntosh *et al.*, 2010).

Health economics represents a broad array of research that aims to answer specific economic questions related to health and care (Jones, 2020). A large component of health economics research has been involved in the development of alternative economic evaluation methods aimed specifically at healthcare and addressing some of the issues with using CBA in healthcare. Health economic evaluations have become particularly prominent in healthcare decision-making for new health technologies, as national regulatory bodies such as the National Institute for Health and Care Excellence (NICE) in England and similar bodies internationally require economic evaluations to be conducted before new health technologies are adopted by the national healthcare system (Rowen *et al.*, 2017). Although such methods are not routinely applied equally in all high-income countries, with Germany (Caro *et al.*, 2010) and the United States (Garrison *et al.*, 2018) notable exceptions, their increasing use internationally suggests a need for evidence to help in controlling the costs of health and care in a way that meets the requirement of both healthcare consumers (i.e. patients) and their providers.

It has already been discussed that the aim in standard welfare economic analysis is to maximise individuals utility, but it has been argued that such an approach is inappropriate when it comes to healthcare – how happy a person is may not be the only consideration we want to account for in healthcare decision-making (Sen, 2002). Instead, health economists have developed methods than aim to maximise patient health gains from health and care interventions.

Two areas in particular are given prominence in CEA (also referred to as *cost-utility analysis* by health economists (Drummond *et al.*, 2015, p. 11)). Health gains are measured in terms of gains in life years from interventions, an important objective for some healthcare interventions. In addition, the health-related quality of life (Karimi and Brazier, 2016) changes from an intervention may also be important if the intervention is not only aimed at life extension. Even for life extending interventions, it is also helpful to know the quality of life experienced in that life extended period. Therefore, CEA moves away from a common currency across costs and benefits in an attempt to account for dual considerations of improved health-related quality of life and quantity of life.

3 Health economic evaluation: key steps

3.1 *Defining evaluation perspective*

An important aspect in any economic evaluation is to consider what is known as *the perspective* that is appropriate for the decision-making context at hand. Health economic evaluations in some jurisdictions, such as in England, take a

healthcare perspective as the reference case economic evaluation in the assessment of new health technologies (NICE, 2013). What this essentially means is that the focus of analysis is limited to the impact on the healthcare costs and patient health benefits, in terms of health related quality of life and quantity of life. Although health economists are increasingly arguing for a broader “societal” perspective to be taken, whereby costs and benefits account for the wider impacts of health and care interventions (Neumann *et al.*, 2017; Walker *et al.*, 2019), the most common approach in practice continues to adopt a healthcare perspective (Kim *et al.*, 2020).

3.2 Generating QALYs

Moving from a CBA to a CEA economic evaluation framework requires a greater level of consideration as to how to measure and value benefits from health and care. Typically, it requires consideration of outcomes from interventions that account for the dual goal of capturing changes to quality and quantity of life. Otherwise, comparisons between interventions that only impact quality or quantity of life or both are not comparable for resource allocation purposes (Weinstein *et al.*, 2009).

The QALY has become the main outcome used to quantify the benefits of health and care interventions in economic evaluations. The idea of using QALYs was initially developed fifty years ago. The use of QALYs in healthcare decision-making has been driven by health economists, but also by a need in health and care to efficiently allocate scarce healthcare resources (MacKillop and Sheard, 2018).

QALYs represent patient benefits in a composite measure of health related quality of life, adjusted for the life years that health related quality of life was experienced. So if a person lives in a perfect health state with a quality of life score of 1 for a year, that person would have one QALY. Any gains in length of life are thus valued by the health related quality of life experienced during that period (Weinstein *et al.*, 2009).

Whilst the life years component of QALYs is relatively straightforward to calculate – from an analytical point of view, it is simply a case of whether or not someone is alive – the quality adjustment requires much more consideration. Here, the focus will be on the most commonly recommended approach for generating the quality adjustment in QALYs (Kennedy-Martin *et al.*, 2020).

Firstly, a health state measure/questionnaire is completed by patients. A common health state measure used in the generation of QALYs is the EQ-5D. EQ-5D measures health across five dimensions that looks to identify problems in mobility, self-care, usual activities, pain/discomfort and anxiety/depression (Devlin and Brooks, 2017). Patients complete the five EQ-5D questions before, during and after treatment to see how their health-related quality of life has

changed as a result of treatment. Clinical trials, where patients receive different treatments for the same condition, is one way that allows for the cost-effectiveness between different interventions to be assessed.

The next step in generating QALYs is to assign *preferences* or *weights* or *values* to all possible health states. QALYs are anchored on a 0-1 *dead-perfect health* scale, whereby milder health states are likely to be closer to 1 and more severe health states closer to 0. Health states valued below zero are also technically possible on the QALY scale (Carr-Hill, 1989).

QALY weights tend to be assigned through general population surveys, where people are asked to give *stated preferences* for different health states over others (Weinstein *et al.*, 2009). There are a number of different options available for conducting such valuation exercises (Brazier *et al.*, 2017). The method used by NICE in England is the time trade-off method, whereby people are asked to choose between better health-related quality of life for a shorter quantity of life, compared to worse health-related quality of life for a longer time period (Dolan, 1995).

There are a number of reasons why health economists argue that general population surveys are conducted instead of specific patient valuations. General population valuation exercises allow for comparisons across a range of patient groups. It also allows members of the general population to have input into healthcare decisions for taxpayer funded healthcare, such as in England (Drummond *et al.*, 2015, p. 165). Another argument states that adopting a Rawlsian “veil of ignorance” approach allows for a more neutral stance across patient groups in the average estimate of generic health state values (Williams, 1996).

3.3 Using QALYs to aid decision-making

Once a value set for all possible health states is available for a health status measure (e.g. EQ-5D), this then acts as a new currency that allows for the assessment of the cost-effectiveness of new health interventions. A decision-maker can then assess if the cost of additional QALY gains in a patient group is *worth* it. Using QALYs in health and care decision-making raises many ethical and philosophical questions.²

Early applications of attempting to introduce the QALY into decision-making focused on producing league tables. Interventions that produced the lowest cost-per-QALY gained were placed at the top of the league table, with the idea that interventions would be funded as far down the league table as available funding and healthcare resources would allow. However, the ranking

² See Nord (Nord, 1999) and Hausman (Hausman, 2015).

of some interventions over others highlighted some of the ethical challenges associated with using QALYs in decision-making. For example, the initial league table produced in the Oregon experiment in the United States led to higher priority for minor health conditions (e.g. tooth capping) over life-saving interventions (e.g. appendectomy) (Hadorn, 1991).

A more indirect approach is now more commonly seen in healthcare decision-making when using QALYs. This is where a cost-per-QALY gain threshold a decision-maker is willing to pay acts as the cut off for what is likely to be deemed a cost-effective use of healthcare resources. In England, a threshold of £20,000–30,000 per QALY gain is considered by NICE as a cost-effective use of healthcare resources (NICE, 2018). This means that if an intervention can produce additional QALYs for less than the cost-per-QALY threshold value (i.e. less than £20,000 per QALY gain), it is considered cost-effective. Extenuating circumstances are required for approval with a cost-effectiveness of between £20,000–30,000 per QALY gain. A health technology with a cost-per-QALY above £30,000 is less likely to be recommended for funding by NICE (Dakin *et al.*, 2015).

The exact origin of this arbitrary £20,000–£30,000 NICE cost-effectiveness threshold in England is not precisely known. Early estimates for cost-effectiveness in the United States were benchmarked on the cost of renal dialysis in the 1970s, which were estimated to be around \$50,000 per QALY gain (Neumann *et al.*, 2014). This number roughly translates to the £20,000–£30,000 threshold used by NICE, when applying long-term currency conversion rates between the United States and the UK.

4 An alternative to QALYs based on the Capability Approach

From a public policy perspective, an outcome like QALYs, that are focused on health-related quality of life, makes it difficult to compare benefits across other sectors in society and so limits comparisons to a healthcare budget. This is increasingly problematic as health and care systems continue to expand the services they provide, such as the growing trend of *social prescribing*, including the “cycling on prescription” intervention to tackle obesity in England (DfT, 2020b).

QALYs represent a shift away from standard approaches to welfare assessment in economics. QALYs and the Disability Adjusted Life Years (DALYs) – a similar measure to QALYs that are typically used in CEA in low- and middle-income countries (Brazier *et al.*, 2017, p. 303) – draw *post hoc* theoretical justification from Amartya Sen’s critique of welfare economics assessment to support a shift away from the sole focus on utility (Culyer, 1989; Murray and Acharya, 1997).

Amartya Sen, a nobel prize winning economist and philosopher, dedicated much of his research to the role of standard welfare economics assessment in judging how “good” or “well” individuals are in society. His ideas have offered a compelling critique of economic analysis that limits such assessment to an individual’s “utility”, with the social welfare function of maximising utility likely to miss out important factors in the comparative assessment of wellbeing across society. He argued for a broadening of focus from individual’s utility to also consider the person’s capability to live a life they have reason to value (Sen, 1993).³

Sometimes referred to as extra-welfarism, proponents of QALYs and DALYs drew on Sen’s work on functionings and capabilities to move away from a sole reliance on individual utility assessment. Yet, Sen’s Capability Approach does not limit functionings assessment to health-related functionings. Sen also argued that focusing on functionings alone may be an insufficient assessment of a person’s wellbeing without also assessing their capability to function across valuable different aspects of life (Sen, 1993). Therefore, extra-welfarism as currently applied in health economic evaluation is a limited interpretation of the Capability Approach in practice (Brouwer *et al.*, 2008).

4.1 Capability measures

An alternative application of extra-welfarism that more closely follows Sen’s broader evaluative space has been developed. A number of capability measures have been developed over the past decade for different purposes across health and care settings (Helter *et al.*, 2020). Capability measures, such as the ICECAP capability measures (Al-Janabi *et al.*, 2012; Coast *et al.*, 2008a; Sutton and Coast, 2014), exhibit similar generic features to health state measures in that they allow for comparison across different patient groups to aid resource allocation decision-making across health and care. Capability measures have been recommended in economic evaluations for interventions in social care in England (NICE, 2016) and long-term care in the Netherlands (Zorginstituut Nederland, 2016), where QALYs have been recognised as being too narrowly focused on health to fully capture the benefits of interventions in these areas.

4.2 Measuring and valuing capabilities

Capability measures attempt to broaden the quality of life space captured in such tools by measuring capability directly. Attributes on the ICECAP

³ See chapter by Ubels for further information on Sen’s Capability Approach.

measures, for example, tend to be broad to allow respondents draw from a number of influences that might impact on their quality of life. For instance, the stability attribute on the ICECAP-A, worded as “feeling settled and secure”, aims to cover not only health considerations, but also employment and finances, home and surroundings, friendships and family groups, and a strong belief system (Al-Janabi *et al.*, 2012). Indeed, for the ICECAP-A and ICECAP-O, the word *health* does not feature in the description of the attributes. Studies have shown associations between ICECAP attributes with physical and mental health measures (Afentou and Kinghorn, 2020; Proud *et al.*, 2019).

Measuring quality of life in terms of health or capability raises a similar challenge in that there is no gold standard measurement available for either concept (Streiner *et al.*, 2015). Therefore, different measurement tools place greater emphasis on certain areas over others depending on the population under consideration or the value judgements made by the respective measure developers (Pickles *et al.*, 2019; Richardson *et al.*, 2015). For instance, the attributes on the ICECAP measures were developed using qualitative research methods to identify the most important capabilities with members of the general public using semi-structured interviews. Other capability measures primarily rely on a pre-existing philosophical list of central human capabilities (Nussbaum, 2011, p. 33–34) to decide what items to capture on their measurement tool (Helter *et al.*, 2020).

A challenging aspect of implementing capability measures in economic evaluation is the role of valuing the relative importance of capabilities. Many of those who advocate a capabilities perspective reject any role of individuals preferences in deciding how to allocate resources, as Sen’s critique of welfare economics emphasised the over-reliance of people’s preferences in reaching decisions to pursue socially optimal policies (Robeyns, 2017). The default position in capabilities research is to treat all capabilities equally, with some arguing that capabilities cannot be traded off between one another (Simon *et al.*, 2013). Even though this argument provides an ideological departure from welfare economics, it does not necessarily provide helpful information to decision-makers where they have a choice of policies that prioritise some capabilities, and different people’s capabilities, over others. However well-meaning attempts are to take a neutral stance where all capabilities are valued equally, such a position will still have implications if such measures are then used to aid decision-making concerning the allocation of scarce resources (Greco, 2018).

One valuation methodology that has been argued to link closely with Sen’s critique of preferences, yet still allow for individual choices, is known as best-worst scaling. Best-worst scaling takes into account the extremes of people’s preferences in terms of their most preferred and least preferred outcomes from a larger set of options. This valuation approach is based on random utility theory (Louviere *et al.*, 2015).

Best-worst scaling methodology therefore relaxes some of the strict preference assumptions made in stated preference studies that are used to generate QALYs; these instead rely on complete (or “transitive”) preference ordering (Dagsvik, 2013). Another key advantage of best-worst scaling is that it is a relatively straightforward valuation task for people to complete. It allows people to participate who may be unable to otherwise (Bailey *et al.*, 2019).

4.3 Using capability measures to aid decision-making

A shift to valuing capabilities instead of health could also result in a change in how patient groups and condition severity are considered in economic evaluation. A multi-country study looking at the relative impacts of health and capability across seven different health conditions indicated that moving from a health to a capability focus would lead to priorities shifting towards mental health conditions, and interventions that improved severe and moderate health conditions compared to mild conditions (Mitchell *et al.*, 2015a).

One of Sen’s seminal contributions was made when he posed and explored the following question – “the equality of what?” – meaning what areas in life are we trying to equalise across individuals to improve social welfare (Sen, 1992). Although Sen only mentioned it in a footnote in one of his contributions, he also stated that another important question to address is “the efficiency of what?” (Sen, 1993) – that is what are we trying to produce the most of at least cost to improve social welfare. This question has resulted in a relative shortage of research compared to important equality contributions that have been made in the Capability Approach (Robeyns, 2017). Nonetheless, one of the main contributions to this latter question has been made in health economic evaluations.

As with QALYs, decisions are required to be made about what the objective might be when measuring capabilities. Adopting the maximisation rule from welfare economics may not be an appropriate objective when trying to implement a broader application of the Capability Approach in economic evaluation (Coast, 2009). Indeed, there is growing recognition of the need for a sole focus on QALY maximisation to change in health economic evaluation, as it does not effectively deal with the dual public health policy goals of increasing population health and reducing health inequalities; these goals do not necessarily correlate with one another (Cookson *et al.*, 2017).

“Sufficient capability” is an attempt to focus on both societal wellbeing and inequalities of capabilities, by shifting the quality of life emphasis from health to capability, and the policy objective from maximisation to a decent or sufficient level of capability wellbeing (Mitchell *et al.*, 2015b). There are a number of different interpretations of what a sufficientarian objective actually entails (Fourie and Rid, 2017). For clarity, a shift to sufficient capability here prioritises

the maximisation of capabilities only up to a level deemed sufficient and is consistent with other applications of the Capability Approach in practice (Mitchell *et al.*, 2017).

How to decide what a sufficient level of capability might be requires addressing when moving away from absolute maximisation. Deliberative research with the general public in England suggests that society would deem a sufficient level of capability on the ICECAP-A at the second highest level across all attributes for the purposes of public health and social care resource allocation decisions (Kinghorn, 2019). There are four levels on each of the five ICECAP-A attributes ranging from full capability, a lot of capability, a little capability and no capability (Al-Janabi *et al.*, 2012). Applying this sufficient capability threshold at “a lot” of capability means that any improvement in capability from “a lot” to “full” capability is not valued for public policy resource allocation purposes (Mitchell *et al.*, 2015b).

Using sufficient capability as the objective allows for the generation of Years of Sufficient Capability (YSC), whereby 1 YSC is equal to one year in a sufficient level of capability and 0 YSC is no capability across all capability states (Mitchell *et al.*, 2015b). To use YSC in decision-making, like QALYs, there is a requirement to establish how much a decision-maker or society is willing to pay for a YSC gain.⁴ As well as shifting quality of life measurement from health to capability, a shift from maximisation to a sufficient capability objective could influence what interventions are considered a cost-effective use of health and care resources (Goranitis *et al.*, 2017).

Another consideration over the use of the current economic evaluation framework is that it treats what people value (e.g. generic health states) and how much they value it (using a single population valuation survey) the same irrespective of where individuals find themselves on the life-course. Ongoing research is looking to implement a new economic evaluation framework that allows for multiple capability measures to be used in aiding decision-making across the life-course (Coast, 2019). A life-course approach poses additional challenges when conducting economic evaluation, such as what measure or measures to use to fully capture the changes in quality of life at different stage of life (Mitchell *et al.*, 2020).

5 Summary

The discipline of economics is also known as the study of choice (Bishai and Rochaix, 2020). The choices that need to be made by policymakers in health and care can make economics, what some refer to as *the dismal science*, look even

⁴ See chapter by Himmler in this publication for ways this could be done.

more sombre. However, such decisions are required when healthcare resources are constrained, and choices need to be made over what treatments and patients to prioritise.

This chapter has highlighted the choices health economists have made to inform such decisions. An alternative way health economists can inform those decisions is proposed that (1) broadens the quality of life focus from health functionings to capabilities, and (2) moves from a health maximisation objective to one that prioritises getting individuals to a decent or sufficient level of capability (Mitchell *et al.*, 2015b). It is important for decision-makers to recognise that their choice of using QALYs or capability measures or any other measurement tool to aid resource allocation in health and care, will have an impact on what type of interventions and patient groups are prioritised under their remit (Mitchell *et al.*, 2015a).

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