



## Changing expectations concerning life-extending treatment: The relevance of opportunity cost

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### ABSTRACT

Rising public expectations and health care costs along with demographic ageing raise questions about whether individuals should consider the drain on community resources when deciding whether to have expensive, life-extending medical interventions towards the end of their lifespan. All respondents ( $n = 208$ ) in this novel, policy-capturing study were prepared to nominate an age along their life trajectory where they would likely decline a life-extending medical intervention indicating a “sense of limits” or “reasonableness” associated with the concept of a natural lifespan. The results showed that individuals altered end-of-life decisions in circumstances of higher opportunity cost and competing need but their propensity to do so was affected by their age, gender, and their expectations of medical progress. Other within-person factors (type of scarcity, treatment side effects, and health at diagnosis) affected the age one would decline a medical intervention in the face of a life threatening illness. Between-person predictors of this age included subjective life expectancy and attitude to health spending. The results suggest possibilities for building on this sense of reasonableness in public discussions of the opportunity cost of current health care resource allocation and by having physicians consider appropriate ways of presenting cost of treatment in end-of life contexts.

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### Introduction

The interplay between demographic ageing and advances in medical technology have been identified as the two main drivers of increasing health care expenditure (Banks, 2008), a phenomenon common to most Western societies. Consequently, countries globally are struggling to reconcile the reality of limited resources with rising public and professional expectations within the context of an ageing population and medicine's ever increasing capacity to “do something” (Gill, 2004). In recognition of these circumstances Callahan (1987) advocates the need for a ‘sense of limits’ to inform our expectations of treatment across the life-span, along with recognition of the competing needs of others. We were interested in whether individuals making prospective decisions about the desirability of life-extending medical intervention across their life-span would indicate such a sense of limits and further, whether the presence of competing need would impact that decision. We were not interested in

juxtaposing one respondent's individual need against another, but rather to frame the issue within the broader societal context where decisions to use scarce resources in one way will mean that those resources are not available to use in alternative ways, thus emphasising the opportunity cost to society that such decisions represent.

To achieve these ends we implemented a policy-capturing study, which enabled us to manipulate a range of factors likely to affect the age a person would choose to decline a medical intervention including opportunity cost. We hypothesised that participants will take competing needs into consideration by choosing to decline treatment at a younger age in instances where opportunity cost is more pronounced.

### Background

The unsustainable trajectory of health care spending (Darzi et al., 2011) has led to calls for health care ‘prioritisation’ (Smee, 1997). However, in most instances where citizens are asked, support for rationing *per se* is low (e.g., Dicker & Armstrong, 1995; King & Maynard, 1999; Robertson, Walkom, & Henry, 2011) often being viewed as unacceptable even when insufficiency in resources is acknowledged (Coast et al., 2002). This is commonly because

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scarcity is not seen as credible, but rather is attributed to inadequate funding of health care (Robertson et al., 2011). It is generally acknowledged that as health care costs are viewed as a shared responsibility, borne collectively as taxes and insurance premiums (Donley & Danis, 2011), more end-of-life care will inevitably be demanded (Sloan & Taylor, 1999). This illustrates the commons dilemma (Hardin, 1968), which four decades ago Hiatt (1975) claimed would lead to unsustainable pressures on health care costs. A study by Chao, Pagán, and Soldo (2008) exemplifies this dilemma in that the majority of respondents recommended forgoing costly end-of-life treatment when out of pocket costs meant less remaining finances for their spouse, but opted for treatment, even with low survival rates, when expenses were covered by the state or insurance.

In recognition of the shared societal responsibility for using limited medical resources wisely Donley and Danis (2011, p. 185) assert “individuals should be encouraged to forgo some benefits for the sake of society as a whole” and Callahan and Nuland (2011) suggest that those over a reasonable natural lifespan, nominated by Callahan (1987) as around 80 years of age, might receive a lower priority for treatment.

Active debate continues about the use of age as a criterion for rationing health care, with some supporting it (Callahan, 1987; Daniels, 1988), while others argue vehemently that it is discriminatory (Binstock, 1994; Evans, 1997). Indeed, many argue for greater prioritisation of the elderly precisely because of their greater need (Jecker & Pearlman, 1989; Mak, Woo, Bowling, Wong, & Chau, 2011). However, in studies where respondents are asked to prioritise treatments for individuals in scenarios where *not all can be treated*, typically younger recipients are prioritised over older ones (e.g., Johri, Damschroder, Zikmund-Fisher, & Ubel, 2005; van der Heide, Vrakking, van Delden, Looman, & van der Maas, 2004). A comprehensive review of the empirical literature on preferences (Dolan, Shaw, Tsychiya, & Williams, 2005) concluded that the majority of studies support prioritisation of young over old. Edlin et al. (2008) also provide a useful summary of the theoretical literature in their review of ageism and cost-effectiveness analysis.

Because scarcity is not always recognised or accepted by the public as a justification for prioritising treatment decisions we were interested in responses under two different types of scarcity – fiscal and commodity. As Mariner (1995) points out, people tend not to accept limits on their own or their loved ones’ treatment in the face of fiscal scarcity because it is generally perceived as an unwillingness of others (government or insurance companies) to fund all needed services. However, scarcity is considerably more credible and difficult to ignore when a resource is naturally in limited supply, such as in the case of transplant organs (Morreim, 1991). For this reason we included both types of scarcity in our study, represented by types of intervention. We hypothesise that although people may be influenced less by scarcity and associated opportunity cost in the case of expensive treatments (fiscal scarcity), in the face of competition for a transplant organ (commodity scarcity) greater influence will be evidenced.

Scarcity and opportunity cost are expected to explain within-person variance in decision-making about declining medical interventions. However, we also expect there will be between-person variance in such decisions that might be predicted by individual differences in attitudes and demographic variables. Apart from having a direct effect on decision outcome (age one would choose to decline treatment) such differences might also moderate the within-person effect of scarcity and opportunity cost. In other words, we aimed to identify factors that would account for differences in the extent that people took opportunity cost into consideration when making decisions about whether to decline life-extending treatment towards the end of life. Two attitudes that

might affect decision-making in this context are one’s belief about the extent to which people believe spending on health care should be unlimited and their expectations about medical efficacy and its continuing progress.

Both King and Maynard (1999) in the United Kingdom and Busse (1999) in Germany reported a majority of the general public supported unlimited funding of health-related expense. Gill (1999) found that Australians who supported unlimited spending were more inclined to favour intervention at older ages than those who supported limits to spending. We suggest that a higher expectation of the diagnostic and curative capacity of medicine and its continued advancement would encourage active treatment at later ages. The importance of rising public expectations of medicine and what it can accomplish has been emphasised for decades (e.g., Evans, 1986) and continues to accelerate, typically leading, as Short (1995) notes to an overvaluing of treatment over non-treatment.

In addition to age, gender, and self-rated health (SRH), we suggest that subjective life expectancy (SLE) is a novel demographic variable that will affect the age at which a medical intervention would be declined and potentially the personal priority accorded to cost and consequent notions of scarcity. Hesketh, Griffin, and Loh (2011) assert that self-estimates of how long one might live provide a ‘mental model’ of remaining years, acting as a guide for future-related decisions.

## Methods

The project and survey instruments were approved by the University of Western Sydney Human Research Ethics Committee. Return of a completed questionnaire by post indicated participant consent.

### Participant recruitment

The study was undertaken in Sydney, Australia between August and November 2009. Participants were primarily recruited from public transport hubs, accepting a hard copy survey from researchers as they entered or departed from train and bus stations, and which they returned by reply post. In order to ensure adequate representation of older people, surveys were also distributed to mail boxes in a retirement community (where all participants lived independently in self-contained accommodation). The overall response rate from those who accepted surveys was approximately 42%.

### Questionnaire

A questionnaire was used to present the policy-capturing scenarios and to measure demographic and attitudinal variables.

### Policy capturing scenarios

A typical policy-capturing study involves presenting participants with a series of scenarios in which the independent variables of interest are manipulated, providing data that can be examined at both a within-person and between-person level of analysis. We adopted this approach because it allowed us to systematically manipulate and compare the influence of opportunity cost of an intervention on the age that participants would personally decline medical intervention, relative to the type of intervention (treatment vs. organ transplant) which represented different types of scarcity (fiscal vs. commodity scarcity respectively). It also enabled us to manipulate two other variables which impact decisions to undergo treatment, namely “health status at diagnosis” (good vs. poor); and the severity of intervention side effects (severe vs. mild).

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