Health Care Need: Three Interpretations

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ABSTRACT  The argument that scarce health care resources should be distributed so that patients in ‘need’ are given priority for treatment is rarely contested. In this paper, we argue that if need is to play a significant role in distributive decisions it is crucial that what is meant by need can be precisely articulated. Following a discussion of the general features of health care need, we propose three principal interpretations of need, each of which focuses on separate intuitions. Although this account may not be a completely exhaustive reflection of what people mean when they refer to need, the three interpretations provide a starting-point for further debate of what the concept means in its specific application. We discuss combined interpretations, the meaning of grading needs, and compare needs-based priority setting to social welfare maximisation.

1. Introduction

Policy makers and political commentators alike often use a notion of need to justify distributive decisions, and distribution based on need is typically seen as the only alternative to allocation based on patients’ ability to pay; but the meaning of ‘need-based distribution’ is rarely contested. In the United Kingdom need has become an integral and generally accepted part of health policy terminology. On the fiftieth anniversary of the British National Health Service the Minister of State for Health Alan Milburn said:

Fifty years on, it is impossible to imagine life in Britain without the national health service, and we should all be proud of what the NHS has achieved: the great advances in medicine, the improvements in life chances, the banishing [. . .] of the fear of becoming ill. We should also be proud of how those achievements have been made, through the simple but practical principle of providing care on the basis of need, and need alone.¹

Almost six years later Tim Yeo (MP) Conservative spokesman for Environment and Transport pledged the Opposition’s allegiance to the health service using very similar language:

We are utterly committed to that founding principle — that care should be available to patients on the basis of need, not on the basis of ability to pay. So there should be equal access for all, free at the point of delivery. That principle [. . .] lies at the heart of all our health policies.²

How is it that two politicians, who disagree on many things, can suddenly come to agree on something as fundamental as a core principle for distribution of resources?
The rhetoric may be deceiving, however, as neither quote gives an indication of what this supposedly fundamental principle precisely entails. This reflects a general problem when need is used as a principle for distribution: despite a widespread view that the concept of need is important, there is no consensus on its precise meaning in the setting of health care.

Daniels and Sabin argue that since there is no consensus on what theory of distributive justice should be adopted in priority setting, we should instead focus on the process by which decisions are made. On their account, need constitutes one important reason for providing funding for a health care intervention. Since they also highlight the importance of consistency in the use of reason it becomes vital that the precise meaning of this concept is made clear.

In this paper, we propose three interpretations of different intuitions of health care need, in order spell out one possible definition of the concept of need within a decision-making process. In the next section we examine the characteristics of the term ‘need’ in the setting of distributive decisions in health care, and argue that claims of need have five general features. In Section 3 we formulate three concrete interpretations of needs, based on these five features. In Section 4 and 5 we discuss the combining of these criteria and the implication of these criteria for the question of whether need is a binary or graded concept. Section 6 considers the distinction between needs-based priority setting and social welfare maximisation. Finally, Section 7 summarizes our conclusions.

2. General Features of the Concept of Health Care Need

In the setting of health care, it is often said that a person, or group of people, is ‘in need’. This way of talking can give the impression that need refers only to a person’s state of health — implying that such a state is undesirable in some significant way. In the context of distribution of resources, however, a needed intervention must relate to a person or a group of people for whom an intervention has, at least, some potential for providing benefit (for example improving health or preventing deterioration of health). Thus, for an intervention to be needed, the intervention must be effective in at least the minimal sense that it has a potential for conferring benefit on those in the relevant condition.

Conversely, it would be wrong to talk of a particular intervention being needed without also specifying the health state of the person who might be said to need the intervention. A person with diabetes might be said to be in need of insulin; a person with high blood pressure (but not diabetes), however, would not need insulin. Thus the term ‘need’ relates to an intervention in the setting of a particular set of conditions. We will call this a ‘condition-intervention pairing’.

In clarifying the needs concept it is important to consider whether the cost of an intervention can affect the need for it. The issue depends on the role claims about need play in priority setting. In this context, few people would dispute that the cost of an intervention, at least when it is sufficiently high, must be a significant factor. However, if a person is suffering and needs health care, then this is independent of whether other people, and how many, need health care as well. A claim that a particular condition-intervention pairing is a need is not necessarily the same as claiming that the intervention
should be provided, and in particular it is not the same as claiming that the intervention is cost-effective. The concept of need must therefore, in isolation, be independent of costs.7

One might think of the concept of need as all-or-none: if a person needs an intervention then he needs it, and there is no point in asking whether he needs it a lot or a little. If one takes the view that all health care needs should be met, before those benefits that do not address needs are provided, then grading needs may not be necessary (unless resources allow only some needs to be met); but such a binary concept of need seems implausible. Unless need is reserved only for the most extreme situations, e.g. urgent life-saving treatment, then some needs will be greater than others.

In summary, there seem to be five general characteristics of a health care need. First, the concept of need must relate to an intervention for a person, or group of people, in a particular condition: need relates to a condition-intervention pairing. Second, for a condition-intervention pairing to be a need, the intervention must have at least some way of conferring benefit on people in the relevant condition. Third, need is a concept independent of costs. Fourth, to claim that a particular intervention-pairing is a need is not necessarily the same as claiming that it should be provided by a public or private sponsor. And fifth, some needs are greater than others, i.e. need is a graded concept.

3. Three Interpretations of Health Care Need

For the sake of explanation, we will say that an intervention improves the state of a particular patient, taking that person as typical of the relevant group. Everything that we say, however, will be equally relevant to interventions that prevent deterioration.

In order to define criteria for health care need we will use the concept of a health state. We think of these health states as being an almost complete description of the well-being of the person. Alternatively, health states could be defined quite narrowly in terms of a specific illness, or disability. For the purposes of our exposition of the different criteria of health care need, it is not crucial what specific factors we include in the definition of health states: the criteria can accommodate different conceptions of health states.

People’s health does not necessarily remain constant, whether they receive interventions or not. Thus there may be a natural history to the health states that a person will experience if he does not receive the intervention under consideration, and a natural history to the health states if he does receive the intervention. For example, a person with pneumonia may become increasingly ill and eventually die if he does not receive intravenous antibiotics, whereas, if he receives such antibiotics he may remain feverish and confused for several hours and then gradually improve until he gets completely better. There is therefore a whole envelope of health states for the person who does not receive the intervention and another envelope of health states for the person who does receive the intervention. In order to describe the three criteria of health care need we will simplify by considering only two health states: the overall state if the person does not receive the intervention (non-intervention health state) and the overall state if the person does receive the intervention (post-intervention health state). What precisely is meant by ‘overall state’, or how it is measured or characterised, is not crucial in
defining these criteria. In the case of pneumonia considered above, a claim that the patient needs the intravenous antibiotic would presumably be based mainly on the fact that without the antibiotic the person will soon be dead, and with the antibiotic the person will soon be completely well. In this case the non-intervention health state will be the state of being dead and post-intervention health state will be the state of being completely healthy. There is nothing in principle problematic in the non-intervention health states being slightly better than death (because without the antibiotic the patient lives for a short period before dying) and the post-intervention health state being slightly worse than complete health (because, with the antibiotic, the person is ill for a short period before being restored to complete health). Thus the non- and post-intervention health states represent an overall value being placed on the entire natural history, with and without the intervention. In the situation where an intervention prevents deterioration rather than improves health, the state of the person without the intervention and the state following the intervention can be replaced by the final (deteriorated) state of the person without the intervention and the final state were the intervention to be given.

What is crucial, however, is that health states can at least be ranked in terms of better or worse states. Such a ranking might be based on patients’ preferences for health states or might be constructed in many different ways. We will discuss in the context of each interpretation of need whether the interpretation requires only that health states be rank-ordered or whether they must be capable of being placed on a cardinal scale (in which there is meaning not only to the ranking but to differences in or relative values of the states).

We can define an intervention as a treatment that plays a key role in changing the state of the patient from the non-treatment health state to the post-treatment health state (or prevents deterioration, see above). As argued above an intervention under consideration can only be a need if it has a positive effect. The question that we will address is this: what determines whether a given intervention is a health care need? We will provide three different possible answers to this question in the form of the interpretations of health care need outlined briefly above.

In defining the three criteria we will implicitly assume that the intervention has its effect over a short period of time and with high probability of being successful. We explore in detail in a separate paper how the concept of need is affected by either the probability or time frame of the effect of the intervention. 

The Poor Initial State Interpretation

The first interpretation we will call the poor initial state interpretation. According to this view the key reason for claiming that a condition-intervention pairing is a need is that the initial condition of the patient is so poor that an intervention that leads to even slight improvement constitutes a needed intervention. An example might be of a person suffering a serious neurological condition such as severe multiple sclerosis. Such a person, it might be said, needs a particular intervention even if the intervention has only a small effect in improving the person’s condition.

The poor initial state interpretation defines need in terms of the patient’s state prior to an intervention. Some philosophers claim that the patient in need of an intervention is the individual who is particularly badly off with regard to his health. Such a claim
implies that the concept of need focuses on the value of the initial health state and that there is a threshold such that patients whose state is below this threshold can be said to need a (minimally) effective intervention. We propose a definition of this view as follows: if the value of a patient’s initial health state (the non-intervention health state) is below a predefined threshold then the intervention is a need, and if the initial health state is above the threshold then the intervention is not a need.

The important assumption underlying this understanding is that the need for an intervention is defined almost exclusively from the patient’s state of health before treatment. What the patient’s state of health is after the intervention is not a consideration when need is defined. In the light of our argument (above) that a useless intervention cannot be considered to represent a need, an addition to this interpretation is required. If the initial health state were identical with the non-intervention health state then the intervention would not be a need, however poor the initial state is, because the intervention would be useless.

In health policy this interpretation of need stresses the view that the worst off patients have a moral claim for a health care intervention even if the offered intervention has a very limited effect on health, and the patient is still badly off after the intervention. Harris argues along these lines when he claims that a justified claim for treatment exists regardless of the nature of the treatment that can be given to the life-threatened patient, e.g. its effectiveness or the patient’s life expectancy after the treatment:

Normally we want to have our death postponed for as long as possible but where what’s possible is the gaining of only very short periods of remission, hours or days, these may not be worth having. [...] However, even brief remission can be valuable in enabling the individual to put their affairs in order, make farewells and so on, and this can be important. It is for the individual to decide whether the remission that she can be granted is worth having.10

The claim, according to Harris, is justified to the same extent as the claim from a patient in a similarly life threatening situation who can be given a more effective treatment contributing to longer life expectancy.

The poor initial state interpretation requires that the scale on which health states are measured is an ordinal one in that health states must be able to be ranked as either above or below the predefined health state. The interpretation does not require a cardinal scale, however, as it makes no use of the idea of preference intensities or relative values of health.

The Normal Functioning Range Interpretation

We will call the second view of health care need the normal functioning range interpretation. According to this view, the key reason for calling a condition-intervention pairing a need is that the intervention takes the person from a state that is below some defined level to a state that is above that level. One example would be an intervention that enables someone previously bed-bound to move around.

We could, for example, claim that an intervention is needed if it enables the patient to reach a particularly important state of health. This is the perspective of the normal functioning range interpretation. According to this interpretation, an intervention is needed if the patient is in a state that is below a threshold before the intervention, and
is in a state above the threshold after the intervention. In other words, an intervention is needed if it elevates the patient above a predefined minimum health state. Of course, the threshold health state may be different from the threshold health state in a poor initial health interpretation.

This is an interpretation which seems to be favoured by some authors. Daniels argues, referring to Boorse’s value neutral disease concept,11 that impairments of normal species functioning reduce the range of opportunity we have within which to construct life-plans and conceptions of the good. He argues that reference to normal species functioning is objectively important because it meets this high-order interest persons have in maintaining a normal range of opportunities (p. 154). Consequently,

... health care needs will be those things we need in order to maintain, restore or provide functional equivalents (where possible) to, normal species functioning.12

A similar argument is put forward by Doyal and Gough. Their position rests on the notion that the ‘ultimate goal of human existence’ is to be able to ‘participate fully in society’. In order to do this, ‘basic needs’ must be satisfied, with basic needs defined as requirements for physical health and autonomy. According to this conception the needed intervention is thus the intervention that elevates the patient over and above a state of health where the individual is sufficiently physically healthy and autonomous to participate fully in society.13

As with the poor initial state interpretation, it is only necessary that the value of health can be measured on an ordinal scale.

Significant Gain Interpretation

The significant gain interpretation is a third way of defining need. The key to this interpretation is the degree of health care improvement that the intervention produces.

On the poor initial state and normal functioning range interpretations, the magnitude of the benefit from an intervention is of no significance per se. In contrast, for the significant gain interpretation the magnitude of benefit is the central issue. In other words, need is directly related to the capacity to benefit.14 Such an understanding rests on the assumption that a numerical value can be attributed to each health state form, for which it makes sense to compare absolute or relative differences in values.15 The value could be the (expected) number of life years, quality-adjusted life years or disease-specific measures such as bodyweight, ability to see or hear, or cholesterol levels. An intervention is needed if, and only if, it leads to a gain in health state, of a size above a predefined threshold value. We can refer this criterion as the significant absolute gain interpretation.

A variation on this interpretation focuses not on the absolute increase in health state but on the relative increase. This variation, which might be called the relative significant gain interpretation, may be defined as follows: A given intervention is needed if, and only if, the relative gain in health state value from the intervention is above a certain threshold health gain.

Both significant gain interpretations capture the idea that the individual should have the ability to enjoy a significant benefit from the intervention in order to claim a need.
Although the significant gain interpretation defines need in terms of the capacity to benefit from the intervention, it provides a different perspective on priority setting from that of social welfare maximisation alone. An implication of the significant gain criteria for distributive decisions is that if the intervention provides sufficient gain for it to be needed, this provides a reason to fund the intervention even if it costs more than other interventions that are not needs and are not funded. The interpretation moreover requires that the scale on which health states are arranged is a cardinal scale. More precisely, the absolute criterion presupposes that the difference in health state values is a meaningful statistic, i.e. health is measured on a difference scale or an interval scale. Similarly, the relative criterion presupposes that the ratio provides a meaningful statistic, i.e. health is measured on a ratio-scale.

4. Combined Needs Interpretations

We have suggested three interpretations of health care need. These interpretations considered here do not exhaust all possible definitions of health care need within this framework. For example, a condition-intervention pairing could be a need if, and only if, the post-intervention health state is better than the non-intervention health state and the post-intervention health state is at least as good as a given threshold health state. People may in fact have in mind criteria for need that are different from the interpretations we are suggesting here. What people mean by need may depend on the specific circumstances under which they refer to the concept; other criteria may be dependent on a particular cultural or religious context. The three interpretations we have suggested here, however, are what we see as the purely generic aspects of health care need and they do not rule out other supplementary interpretations.

Each interpretation highlights different features of health states and relevant interventions each of which has been identified as significant in various accounts of health need and each of which highlights an intuitively plausible aspect of need. This is not to argue that only one of these interpretations can be used, but that between them they cover at least some key intuitions about what a need is. A concept of health care need could include the features of more than one interpretation. Indeed, most people, we suspect, believe that a need for a health care intervention is not only about being unfortunate enough to be sufficiently sick or disabled (poor initial state interpretation) but is also about the kind or extent of benefit from that intervention (the threshold and significant gain interpretation). Distributions that are made exclusively in accordance with the poor initial state interpretation will thus, in some cases, conflict with our intuitions about health care needs. Likewise, most people will probably find that being in need of an intervention is not only about having a condition which can be successfully treated but is also about being in a particular poor state of health.

A combination of the criteria could take various forms. One view could be that the poor initial state interpretation, or the normal functioning range interpretation, determines whether an intervention is needed in the first place, whereas the criteria that define the significant gain interpretation determines the degree to which it is needed. An alternative approach would be to count only those interventions that meet the criteria of either two, or all three, of the criteria as needs. If need is to be defined using criteria from more than one of the interpretations then threshold health states (poor
initial state interpretation or normal functioning range interpretation) or threshold values (significant gain interpretations) together with the weight that should be given to each of the criteria, will require clarification. For example, a health care need might require both that the initial health state is poor and that the intervention achieves a health gain that is above a particular level. It will be important to distinguish the separate aspects highlighted by each interpretation, whatever the way in which these aspects are combined in an overall account of need. We must be able to do this if we are to assess and defend a claim that an intervention should be funded on the grounds of need.

5. Grading Needs

There are likely to be differing opinions on the question of whether ‘need’ is a dichotomous or graded concept. It could be argued that the concept is all-or-none, but we have claimed (in Section 2) that need must be a graded concept. Setting out the three interpretations of need, we have defined the concept such that if a condition-intervention pairing meets these criteria it is a need and if it does not it is not a need. In this sense, the concept of need is dichotomous. However, all three interpretations are capable of being adapted to give meaning to the idea of greater and lesser needs, although this elaboration is more straightforward for some interpretations than for others:

For the poor initial state interpretation a greater need would be one for which the initial health state is worse (lower) and a lesser need is one for which it is higher.

The normal functioning range interpretation could admit of the idea that there is no one threshold that determines whether a person can fulfil the requirements of ‘normal species functioning’ or whatever lies behind the identification of the threshold. A series of thresholds could be identified and interventions that took patients across several thresholds might be seen as fulfilling a greater need than those that involved crossing fewer thresholds. Such an adaptation of the criterion, however, could be seen as moving toward an interpretation that combines features of both the threshold and the significant gain interpretations. In its pure form, however, with a single threshold level, the normal functioning range interpretation does not admit grading of need.

The significant gain interpretation, in both its forms, readily allows for lesser and greater needs in terms of the extent of the gain.18

A graded concept of need appeals to priority decisions, because it provides a way of making interpersonal comparisons of needs. On the other hand, distributing health care resources according to needs (in graded formulations or not) is fundamentally different from welfarist approaches. The following section gives more details about this distinction.

6. Need-based Priority Setting

The concept of need is important both because it points to some aspects of health care interventions that may be important in the allocation of resources; and because these aspects are distinct from those that are taken into account in classical welfare theory.
Two core principles underlie welfare theory. The first of these describes what it is that is valued. In (health-related) welfare theory, what has value is health states; no intrinsic value is attached to underlying decision processes. In relation to our framework, in welfare theory the ordering of health states would be represented by individual utility functions. The second principle underlying welfare theory describes how to evaluate allocations of health care in society. The only thing that is important to the allocation is the distribution of utilities it generates for the people in the population. A welfare criterion then involves a ranking of different possible distributions of individual utilities (for example represented by a social welfare function). The socially most desirable allocation of resources from a given set of feasible alternatives is the allocation which maximises welfare.\textsuperscript{19}

These principles provide solutions to the question of how we should make interpersonal trade-offs: how, for example, we should choose between funding an intervention that treats a more serious disease in a few people compared with one that treats a less serious disease in more people, if we have insufficient resources to do both. The answer that welfare theory gives is that we should choose whichever allocation of our resources provides, overall, the maximum welfare. This will depend on both the relative costs of the competing interventions and on the amount of benefit that they bring. Interpersonal trade-offs are made in the sense that the priority decision regarding the treatment of one person depends explicitly on what we could do for other persons if resources were distributed differently.

We have argued (in Section 2), that the concept of need plays a district role from that of welfare theory. One way of allocating resources according to need could be a top-down method that satisfies the greatest needs first and then goes on to less great needs etc. until resources are exhausted. In another form, great needs could be satisfied (whatever the cost) before any intervention that is not needed (even though cost-effective) is provided.\textsuperscript{20} Our account of need does not necessarily entail either of these methods (although it is compatible with them). A condition-intervention pairing that is a need might not be funded because it is too expensive. Alternative condition-intervention pairings may take precedence, even if they are not needed, on the grounds, for example, that they are highly cost-effective. The only requirement on our analysis is that in claiming that a particular condition-intervention pairing represents a need one can provide a reason why resources should be provided for that pairing over and above a reason based on welfare considerations alone.

In the poor initial state interpretation an individual’s need for a treatment is defined independently of both the potential health gains other treatments could have offered, and the potential health gains of other people in society. The approach will therefore not necessarily be consistent with any welfare maximising approach.\textsuperscript{21} The normal functioning range interpretation could be consistent with welfare maximisation only in the case where the relevant individuals are indifferent between all health states below the threshold value and indifferent between all health states above such a threshold. Although we might be able to think of situations where this is approximately true, this is clearly not a reasonable assumption in many cases. In the significant gain interpretations need is defined on the basis of the size of health gain that the individual can obtain. In stark contrast with the welfare approach however, those interpretations do not incorporate the opportunity cost of the intervention nor do they provide a straightforward method for trade-offs between individuals. According to the significant gain
interpretations, if a condition-intervention pairing produces an amount of health gain above the threshold then it constitutes a need. On a graded concept of need one might go further and claim that the greater the gain, the greater the need. If resources are allocated only on the basis of this interpretation of need then those interventions would have priority that led to health gain above the threshold in the relevant patient group. Since the cost of the intervention is not a part of the definition of need, the allocation of resources would in general be different from that based on welfare maximisation.

In our account we have assessed health care need irrespective of opportunity costs, whether measured in monetary units or in treatment opportunities given up. Thus, a needs-based allocation method will not hinge on value judgements of a welfarist kind, e.g. utilitarian ones, for which principles for interpersonal comparison are explicitly formulated. This distinction points to a central conceptual difference between needs-based decision rules and welfare theory: in needs-based approaches interpersonal trade-offs are not relevant. If a person needs an intervention his need is not quantified in the sense of specifying the number of people with other (lesser) needs such that satisfying their needs is equivalent to satisfying his need. Trade-offs are only made implicitly when the decision-maker decides on threshold values and judges that some people should be treated because their treatment is a ‘need’, whereas other people are not treated as the treatments they could benefit from are not considered needs. If needs, as understood in terms of any of the three interpretations defined here, or a combination of them, are to be a separate driver in prioritisation of resources, then they must provide grounds for giving a particular condition-intervention pairing priority independent of the opportunity costs, and in this way be clearly distinguished from welfare maximisation.22

7. Conclusion

We have argued that if the concept of need is to play a significant role in setting health care priorities then the precise meaning of need, and what features are being highlighted in using the term, must be articulated with a considerable degree of precision. If the concept of need is to be used in order to identify reasons that should be taken into account, in addition to welfare maximisation, then it must be clear what those reasons are.

The main aim of this paper has been to propose precise interpretations of what might be meant in calling an intervention needed. We have suggested that a major aspect of the concept of need is the health state that the person is in prior to the intervention, and the change in health state that is brought about by the intervention. We have distinguished three potential interpretations, each of which highlights different aspects of these health states. We have not argued in favour of needs-based priority setting in contrast to social welfare maximisation and we have not argued in favour of one particular interpretation of need. Indeed, the concept of need may incorporate more than one criterion, and we can easily imagine a combination of need-based distribution and social welfare maximization combined in a decision-hierarchy, where the greatest needs according to some criteria are first remedied, and then subsequently the allocation of the remaining health care resources is governed by a welfare maximising criterion.
Whatever the concept of health care need is used for, a claim that a particular intervention is needed must be specified so that it is clear what aspects of the intervention are being used to justify this claim. Such clarity is necessary if priority decisions are to be compared for consistency, scrutinised and challenged.

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NOTES

5 Daniels and Sabin op. cit.
6 Wiggins op. cit. contrasts needs themselves with things that are needed and defines needs as states of dependency. Needs then have as their proper object things which are required to avoid harm, which then again leads to increased dependency. Following Wiggins’ account, it is some sort of paring between a morally significant state (i.e. state of dependence) of the individual or groups of individuals, under given circumstances and at a given point in time, and an intervention that can alleviate dependence, which gives legitimacy to a claim based on need.
7 One may also relate this interpretation to empirical findings, which show that people at large find it unfair to discriminate against patients who happen to have a high cost illness. Costs should therefore not be a major factor in priority setting. See e.g. E. Nord, et al., ‘Who cares about cost? Does economic analysis impose or reflect social values?’ Health Policy, 34 (1995): 79–94.
10 J. Harris, ‘QALYfying the value of life’, Journal of Medical Ethics, 13 (1987): 117–123, p. 120.

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By ‘make sense’ we here mean from the point of view of the decision-maker. Ideally we would require that comparisons are meaningful in a measurement-theoretical sense. See e.g. J. Pfanzagl, *Theory of Measurement*, 2nd edn. (Heidelberg and New York: Physica-Verlag, 1973).

Our approach is therefore fundamentally different from Culyer and Wagstaff’s who define the distribution problem as one of selecting from the Pareto-efficient frontier of possible health gains measured by a given one-dimensional health index (interpreted as quality-adjusted life years). In this context, Culyer and Wagstaff favour a definition of need as ‘...the expenditure required to effect the maximum possible health improvement or, equivalently, the expenditure required to reduce the individual’s capacity to benefit to zero’ cf. p. 436 in A. Culyer and A. Wagstaff, ‘Equity and equality in health and health care’, *Journal of Health Economics*, 12 (1993): 431–457. See also Culyer op. cit. and A. Culyer, ‘Equity — some theory and its policy implications’, *Journal of Medical Ethics*, 27 (2001): 275–283.

The fact that there may be several interventions for the same condition complicates these issues. For a discussion we refer to our companion paper (op. cit. at n. 8).

A special case of welfare maximisation is utilitarianism where individual utilities are simply added up, but a social welfare function could aggregate differently. It could for example sum a transformation (such as the square root) of those utilities.

Indeed, this method seems close to the practice in many health care systems.

However in our companion paper (op. cit. at n. 8) we investigate a possible connection between Rawlsian social welfare maximisation and health care distribution based on the poor initial state interpretation.

Contrasts and possible links between needs-based priority setting and social welfare maximisation are studied in detail in the companion paper (op. cit. at n. 8).