

# **Prioritising health and disability support services: principles, processes and problems**

**A report to the National Health Committee  
on the HFA's proposed prioritisation process**

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## **Preface**

This report has been commissioned by the National Health Committee, as part of its role to provide an independent assessment for the Minister of Health ‘of the quality and mix of services that should...be publicly funded’, and ‘whether the current and proposed...services funded by the Health Funding Authority (HFA) are a fair and wise use of resources’ (National Advisory Committee on Health and Disability Terms of Reference). The report reviews the HFA’s proposed prioritisation process – a process which aims to (i) introduce a more explicit means by which priorities are decided for health and disability support services, and (ii) introduce formal economic evaluations into the prioritisation process.

The authors of this report have backgrounds in economics and public policy, including experience with economic evaluation and prioritisation processes in health care. We have reviewed both the overall prioritisation process and the technical aspects of the proposed economic evaluation framework, with particular attention given to how we think the processes might work in practice. We have not covered all issues associated with the proposed process. Further consideration is required to be given to: philosophical and ethical issues raised by the proposed process, Maori views, the views of Pacific people and other ethnic groups, and the views of people with disabilities. Similarly, we have not considered clinical issues in depth.

Our review focuses on two HFA documents: the 14 May 1998 paper entitled ‘How Shall We Prioritise Health and Disability Services?’ and the August 1998 HFA Board paper ‘Prioritisation Methodology and Process’. Substantial changes which may have been made to the proposed process since these reports were completed are not reflected in this review.

## ***Acknowledgements***

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# Executive Summary

## General approach

- We strongly support the general objective of the Health Funding Authority (HFA) to put into place a method of prioritising health and disability services which is systematic, explicit, and transparent.
- We endorse the general principle-based approach of the proposed process, including the use of Programme Budgeting and Marginal Analysis (PBMA) and, where appropriate, also Cost-Utility Analysis (CUA). It is our view that these are likely to improve the quality of decision making compared to the status quo. This does not imply that prioritisation can, or should, be undertaken by means of any simple formula. Any prioritisation process should, in the end, always be guided by informed judgement.
- PBMA is still under development as a process for priority setting in health care. Given the need to spend time on getting participants and others to understand the process, and considering the complex process issues involved in undertaking a PBMA exercise, we recommend that the HFA proceed carefully, and consider using it to assist in making decisions *within* categories of services in the first instance.
- It is essential that the HFA:
  - proceed carefully and, if necessary, undertake pilot studies
  - document information used for prioritisation and the reasons why particular decisions are taken
  - consider further how to open all aspects of the decision-making process to scrutiny and discussion with the public, providers and other key stakeholders
  - continually update information on costs and effectiveness of services
  - evaluate the prioritisation process as it develops.

## Operationalising the principles

### Effectiveness

- The choice of an instrument for measuring health state preferences in CUA should be solidly within the ‘mainstream’ i.e. an instrument for which an extensive body of international research exists.

- Whatever health state classification system is used, research should be undertaken to explore issues that are specifically New Zealand in focus, including (a) the extent to which there are significant Maori–non-Maori or other cultural differences in health state valuations, and (b) the extent to which the dimensions included in such health state classification systems adequately represent the aspects of health-related quality of life that are important to New Zealanders.
- The ‘mapping’ of clinical evidence to relevant health and disability states for use in CUA requires judgement as well as skill. Who makes these judgements, and how robust any mapping process is, needs to be explored.
- Quality-adjusted life-years (QALYs) measure health gain, but do not capture the effects of health services on non-health-related quality of life, ‘soft’ outputs (such as ‘the value of information for its own sake’) or consumers’ preferences beyond health gain (e.g. regarding service delivery and process attributes such as decision-involvement and customer satisfaction). The process by which such benefits can be incorporated systematically into the prioritisation process needs development.

## Cost

- The HFA documents underplay the difficulties encountered in estimating costs for use in PBMA and CUA. Careful attention must be paid to: the measurement of costs shared with other services, the importance of assessing *marginal* costs, the treatment of high start-up costs, and regional variations in costs.
- A requirement of CUA analyses is that they be undertaken from the perspective of the HFA. However, in order to avoid any systematic bias in favour of services which are able to shift costs on to private individuals, all analyses should also at least *identify* (and preferably also attempt to value) any significant resource implications for public and private groups or individuals.

## Putting cost and effectiveness together

- The HFA will need to consider how it will prioritise services in situations where sensitivity analysis changes the rank order of services or reveals wide ranges of overlap in cost-effectiveness.

- The factors that determine cost-effectiveness are dynamic rather than static. Effectiveness and cost may change for a number of reasons. We suggest that the HFA develop explicit criteria to indicate the circumstances which would trigger their re-analysis of the cost-effectiveness of services.

## Acceptability

- Prioritisation by its very nature means that there are likely to be winners and losers. Public judgements about what is and what is not acceptable will also inevitably be clouded by a lack of information and objectivity. The principle of acceptability therefore needs to be applied with caution.
- If acceptability is going to have the power of veto, a preliminary assessment of acceptability should be placed at the *front-end* of the prioritisation process to avoid wasting time and resources on the detailed analysis of changes in expenditure priorities which are unlikely to be acceptable.
- Consideration needs to be given to the means by which the principle of acceptability is incorporated in the prioritisation process with a view to protecting any important residual cultural values and norms which are not captured by the other principles, but which also does not lead to inertia in resource re-allocation.

## Maori Health and Independence

- Clarification is required on the points at which analysis of Maori Health and Independence and Treaty of Waitangi obligations will be incorporated into the prioritisation process.
- As noted above, questions regarding the instruments used to measure health state valuations and their validity and meaningfulness to Maori should be explored.

## Equity

- The implications of selecting equity of outcome as the main operational meaning of equity, and the method of translating this principle into practice, requires careful examination.
- The extent to which the provision of health and disability services can reduce inequalities in health status is questionable. However, we recommend that the potential to reduce disparities in health status should be included as part of the process of selecting services at the margin.

## **Service-specific challenges in prioritisation**

- Features of particular services which would make the application of CUA difficult, if not entirely inappropriate, include:
  - a lack of evidence about the effectiveness of a service
  - the insensitivity of quality-of-life measures to some relevant aspects of health and independence outcomes
  - the insensitivity of quality-of-life measures to any non-health impacts of services.
- We recommend that consideration should be given to the relevance of each of these features before any attempt is made to assess the effectiveness of a service on the basis of the common currency of QALYs. Where necessary, prioritisation should be based instead upon a partial analysis, which in some instances may need to rely on qualitative, rather than quantitative, information about the potential effectiveness of a service.

## **Personal health services**

- CUA was developed as a means of exploring the economic efficiency of personal health services. Its feasibility and merits, relative to other methods of economic evaluation, are well established for these services. There are nevertheless analytical challenges relating to: the evaluation of services which have significant ‘spill-over’ benefits i.e. benefits beyond those captured by the recipient of treatment (e.g. caregivers), the ability of QALYs to capture non-health-related outputs (such as improvements in quality of life that are not health-related), and the evaluation of services that comprise multiple interventions (e.g. primary medical services).

## **Mental health services**

- Mental health problems may be recurrent or of long duration, involve multiple agencies, and require treatments which (a) have uncertain outcomes and (b) provide benefits to family and caregivers as well as to patients. All of these points suggest that it would be unwise to apply a full analysis which includes CUA for purchasing mental health services at this time.
- A QALY approach should not be applied for mental health services until more work has been undertaken on the sensitivity of current instruments to health outcomes which are relevant for users of mental health services.

## Disability support services

- Many disability support services are fundamental to life itself as well as to quality of life. This does not mean that *all* disability support services should be exempt from the prioritisation process. It does suggest, however, that some preliminary assessment needs to be made of the acceptability of cutting back a service *before* any further analysis is undertaken.
- We have been unable to find *any* examples of CUA being applied to disability support services. In principle, services that avoid reductions in quality of life can be evaluated in the same way as services that capture gains in quality of life. However, given the lack of experience with CUA in this area, QALYs should not be used to measure the effectiveness of disability support services until research has been undertaken to examine the relevance, sensitivity, reliability and validity of these measures for these services.
- The possibility of CUA biasing resources away from people with disabilities cannot be entirely dismissed. There may be remaining issues of acceptability and equity that need to be monitored especially as prioritisation across ring fences occurs.
- Where services have clear implications for other agencies and caregivers, the HFA should include some assessment of the effects of these services on other agencies and on the quality of life of caregivers.

## Public health services

- For those public health services delivered to individuals (e.g. screening services) CUA is demonstrably feasible and this facilitates comparison of value-for-money across ring fences. However, as far as we are aware, CUA has *never* been applied to public health services of a public good nature. In principle CUA of these services is possible; in practice there are many conceptual and practical challenges that may arise in applying economic evaluation to such services. We understand that the Public Health Group is working on ways in which the PBMA framework can be implemented without the use of QALYs as a measure of effectiveness. For the reasons given above, we endorse this approach. Exploratory research is required to demonstrate the feasibility of CUA in this context before it can be adopted to inform prioritisation.

## Implementation issues

- The HFA faces a number of challenges in implementing the prioritisation process, including: obtaining and interpreting information, ensuring that the costs of the prioritisation process are kept reasonable, and ensuring that the service changes that are indicated by the process can be implemented.
- There is an important interaction with decision-making which takes place at different levels of the health and disability support system. For the HFA key issues are to:
  - analyse particular interventions and who receives them
  - link prioritisation to clinical guidelines and other clinically-based prioritisation tools
  - develop appropriate contracts to promote efficiency and evidence-based medicine
  - consider how moves to devolve purchasing to integrated care organisations fit in with the proposed prioritisation process.
- The HFA has developed criteria for determining which services might be subjected to analysis. It is less clear how (a) ideas for new services will be developed and (b) which sub-services will be considered as those which might have additional funding and those which might have less. The HFA should develop a robust framework for identifying these marginal sub-services for analysis in the PBMA process.
- Care needs to be taken to ensure that services about which there is a lot of information are not systematically preferred over those about which there is little information. Similarly, quantitative information should not be systematically preferred over qualitative information.
- The development of mechanisms for the ongoing involvement of the public, patients and key stakeholders should be an integral part of the prioritisation process. The HFA will need to trial different methods of public consultation.
- It is important for the HFA to look outside of the health and disability support sector at relevant analyses and information gathering exercises being undertaken by other agencies – e.g. the use of Cost Benefit Analysis by the Land Transport Safety Authority and inclusion of measures of self-reported health status in surveys by Statistics New Zealand.

# 1 Introduction

Many countries have begun to question how priorities in health care are determined and how processes might be designed which make priority setting more explicit. In May 1998, the New Zealand Health Funding Authority (HFA) released a document 'How Shall We Prioritise Health and Disability Services?', in which it argued for a more explicit process for determining priorities in New Zealand. The HFA suggested that with limited resources to spend on health and disability services, prioritisation is necessary, and should proceed on a basis that is explicit and transparent. The HFA proposed a particular process for thinking about priorities, which it called a 'principle-based approach'. The process involves identifying the extent to which services (those services currently delivered, as well as new services) contribute to policy goals of maximising effectiveness, minimising cost, promoting equity of outcome, and improving Maori health. Public acceptability of the services purchased is also essential<sup>1</sup>.

As part of its role in advising the Minister of Health on whether those services which are publicly funded represent a fair and wise use of resources, the National Health Committee (NHC) commissioned this review of the proposed prioritisation process.

The aims of the review are to:

- review and evaluate frameworks, principles, and methods (processes and tools) for priority setting at the service or programme level
- critically assess the proposed HFA prioritisation process, including its practical application
- assess the process for a range of services, with a particular focus on personal health, disability support, and public health services
- recommend changes to the prioritisation process, alternative methods of prioritisation or alternative tools for use in prioritisation, if necessary.

We agree with the HFA that a more transparent and explicit priority setting process is desirable. Although, as a society, we should debate the appropriate level of health and disability support spending, we will always have to make difficult choices about what we can and cannot afford from available budgets: rationing is therefore unavoidable.

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<sup>1</sup> The HFA is not the first agency in New Zealand to propose an explicit priority setting framework. The National Health Committee has designed its own framework for thinking about priorities and has used four principles - benefit, fairness, value for money and acceptability - in its work in recent years (National Advisory Committee on Core Health and Disability Services 1992, 1993, 1997; National Advisory Committee on Health and Disability 1997). The Public Health Commission also designed a framework for prioritisation for population-based services, and that framework has been carried over into the public health strategy at the Ministry of Health (Ministry of Health 1997). The Regional Health Authorities, which preceded the HFA, also designed frameworks for thinking about priorities in health care; however, these were not used as extensively as is planned by the HFA.

In this context, the NHC has asked us to evaluate the merit of the HFA's proposals. The merits or demerits which may be claimed of the proposals depend largely upon the approach with which they are being compared. Because we cannot *observe* what the outcomes of a health service are where priorities are determined in the way the HFA proposes, we can only offer our opinion on how their proposals *might* work and whether this would represent an improvement on the way health service priorities are determined at present. On balance, our views are that the use of the Programme Budgeting and Marginal Analysis (PBMA) framework in decision making is likely to accomplish the HFA's stated objectives to a greater degree than the status quo. Further, the use of Cost-Utility Analysis (CUA) for personal health services is likely to facilitate better decision making compared with current approaches. However, there is little experience internationally in the use of CUA for disability support services and certain types of public health services, and our judgement of the relative merit of this specific approach to evaluating value-for-money for these services is therefore more cautious.

We note that the prioritisation exercise is likely to achieve, at best, a thorough ranking of only a selection of services, due to the huge informational and expertise requirements of the process. The absence of effectiveness data for some services, questions about the validity of the process for particular groups of services, and uncertainty over the means by which principles such as equity and acceptability are to be incorporated, raise the question of whether 'it is better to be vaguely right than precisely wrong' (Sen, cited by Kleinert 1998, p.1244). Because there is little possibility of ever achieving an across-the-board optimum resource allocation in the health and disability support service sector, partial attempts at prioritisation risk producing expensive 'second best' solutions<sup>2</sup>. For this reason, much of this report focuses on technical issues, highlighting the numerous pitfalls and analytical challenges that the HFA will encounter in the implementation of their proposals. These comments aim to assist the HFA to implement their proposals in a way that is most likely to be consistent with their stated objectives, and to represent an improvement on the status quo. As such, this report should be seen as being a constructive response to, rather than a rejection of, the proposals.

Furthermore, although a significant part of this paper focuses on the technical aspects of the proposed prioritisation process, this should not be interpreted as meaning that quantitative aspects should dominate decision making. The absence of quantitative effectiveness data for

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<sup>2</sup> The "theory of second best" in the welfare economics literature concludes that, where at least one condition for optimality remains unfulfilled, there is no guarantee that reducing the number of other unfulfilled conditions will increase welfare (Mansfield, 1975).

the majority of services lends support to the HFA's view that the prioritisation process will initially, in many cases, need to rely upon judgement-based decisions of service managers. Over time these decisions will increasingly be informed by (a) experience in determining priorities using a principle-based approach and (b) improved quantitative data about the costs and effectiveness of services. Even so, any prioritisation process should, in the end, be guided by informed judgement.

This report is divided into six sections. Section two provides a brief introduction to the priority setting processes which have been in use in New Zealand and in other countries. We then discuss, in Section three, the principles chosen by the HFA, focusing on how these principles might be operationalised. Section four considers the relevance of the principles and the proposed process for particular services - personal health, mental health, disability support, and public health. Section five discusses a number of issues regarding implementation of the proposed prioritisation process. Conclusions are set out in Section six. A glossary of terms is provided in an Appendix.

## 2 Setting priorities explicitly

### 2.1 Overview

The principles, processes and tools for explicit priority setting in health care and disability support services<sup>3</sup> are not well developed. Below we outline various approaches that have been adopted but it is important to note that *any* approach to priority setting is likely to involve political aspects – where decisions are resolved through debate and bargaining. Hence an understanding of political decision-making processes is important since priority setting, regardless of the specific methods used, will always be influenced by ‘continuous and collective argument’ (Klein 1993; see also Coast 1996). Key issues for consideration are then who is involved in priority setting and how to ensure that some voices do not dominate decision-making to the systematic detriment of others.

Increasingly, countries are developing a principle-based approach to priority setting. This approach aims to identify a set of principles upon which resources might be allocated. Principles might include allocating resources according to: needs, severity<sup>4</sup>, concepts of justice and equity, effectiveness, and so on. Having identified key principles, an assessment is then made of the extent to which particular services contribute to each principle.

There are a number of concerns with a principle-based approach. Principles require translating into priorities for services and patients, yet particular principles can be interpreted in many different ways (Holm 1998) and may apply differently in different contexts (Klein 1998). Such an approach is also often criticised for identifying a large number of principles which are not always well defined, nor weighted clearly, and where trade-offs between principles are not always made explicit. A principles-based method suffers from the problem that it is not very clear how it links into the services which are already delivered.

In the priority setting literature, significant controversy continues to rage over the contribution that technical methods can make to both a principle-based approach and political processes. Technical methods are based upon the assumption that a particular technique can be chosen and used to make resource allocation decisions. The two most commonly discussed methods are needs assessment and economic analysis.

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<sup>3</sup> New Zealand is probably unique in including disability support services within Vote:Health. For this reason, much of the discussion on international experiences and health state preference tools in this report is focused specifically on health care.

<sup>4</sup> As was attempted in Norway. See (Mooney 1984; Holm 1998).

Needs assessment methods aim to identify needs and then allocate resources according to those needs. Sometimes, total needs may be assessed; at other times, there will be an assessment of needs which appear not to be being met within a population. The concept of need is itself subject to debate: some arguing it equates with ill-health and others that there cannot be a need if there is ill-health but no means of treating such ill health. Needs-based methods have been criticised because they are often unclear about how they might compare different types of needs, because they do not consider service priorities at the margin, and because they do not consider the relative cost of meeting needs in the determination of priorities.

With economic methods, an assessment is made of the costs and benefits of alternative services, with the aim of maximising the amount of benefit delivered for the resources spent (i.e. to promote efficiency). Formal economic evaluations, as well as the more pragmatic programme budgeting and marginal analysis (PBMA) process – discussed in further detail below – fall into this category. Economic methods are, however, often criticised for promoting efficiency over equity and other policy goals.

Both needs assessment and economic methods require significant amounts of information, which, if available at all, can be costly to collect: the more technical the approach becomes, the greater the need for information to support it (Mooney 1994b; House of Commons Health Committee 1994-95; Cumming 1998).

## **2.2 Priority setting in practice**

In the early 1990s a number of countries began to consider how they might determine priorities in health care using more rational approaches (i.e. using a clear set of decision rules). (See Cumming 1996 for a review.) Yet, there now appears to be a move away from such approaches. The reasons for this are related to:

- the practical problems which arise because of the amount and quality of information needed
- the lack of impartiality on the part of the decision makers (e.g. different interpretations of principles such as severity)
- fundamental conceptual problems such as the numerous, and sometimes fuzzy, goals in the health sector, which makes it hard to balance goals against each other (Holm 1998)
- experience in a number of countries - for example, the Netherlands, Israel and Scandinavian countries - which has shown how difficult it is to reallocate resources (Mulder 1995; Chintz, *et al.* 1998; Holm 1998).

The HFA may well find similar problems in New Zealand. Some problems – for example, the existence of numerous, fuzzy goals – may be worse in New Zealand given the inclusion of disability support and public health services within the health vote.

The emphasis in a number of countries is increasingly on the process for determining priorities, including ways to ensure that priority setting is done transparently and in ways which take into account the interests of all groups (and not just those who complain the loudest). A new process in Norway, for example, takes a ‘bottom-up’ approach, where specialty working groups define severity, utility and efficiency in their own specialty, rank the conditions treated, and recommend changes in priorities. The government makes the final decisions, and the working group membership is intended to be broadly based (Holm 1998).

Rudolf Klein, in his editorial following the second international conference on priorities in health care in October 1998, states:

‘once we acknowledge that setting priorities is inescapably a political process - it involves making painful decisions socially acceptable and mobilising consent among both the health professionals who have to implement them and the public who are affected by them - we can turn to devising the appropriate mechanisms for doing so’ (Klein 1998, p. 959).

In this context, we believe that the technical approach proposed by the HFA (Cost-Utility Analysis (CUA), a form of economic analysis) has merit. We also believe, however, that the important role that values play in assessing priorities and the international experience suggest the need for caution in attempting to apply CUA across the board. In addition, we would argue that the *process* of setting priorities – including engaging stakeholders – is as important as the technical aspects of CUA.

### **2.3 The HFA process: Programme budgeting and marginal analysis (PBMA) and a principle-based approach**

The proposed HFA prioritisation process combines a principle-based approach with the marginal analysis phase of a technique called programme budgeting and marginal analysis (PBMA) (May 14 document, pp. 53-54). PBMA has been designed around economic evaluation techniques, but it incorporates a *process* for considering priorities: it begins from, and is linked into, the existing allocation of resources and is intended to be more pragmatic than full economic evaluations in terms of information requirements.

There are two main phases to PBMA: a ‘programme budgeting’ phase and a ‘marginal analysis’ phase. The programme budgeting phase involves a group of decision-makers building up a picture of existing expenditures and outputs (e.g. numbers of people treated within existing expenditure patterns) and outcomes (i.e. improvements in health and independence) for a range of ‘programmes’ (equivalent to our definition of ‘services’) (e.g. mental health programmes, including services for depression, schizophrenia and anxiety disorders). The purpose of this phase is to gain a clear understanding of existing expenditure patterns.

The marginal analysis phase involves a number of key steps, using the programme budget information as a framework for analysis<sup>5</sup>. First, the services which would be purchased if additional funding were made available are identified, as are those services which would be reduced if less funding were made available. Second, the costs and benefits associated with these changes are identified, in as much detail as possible and with a focus on outcomes (length and quality of life) if possible. Finally, decisions are made about which services to increase and which to reduce, based on the relative costs and benefits to be obtained from such resource shifts (Mooney *et al.* 1992; Donaldson 1995; Cumming *et al.* 1996).

There is now experience with PBMA in the United Kingdom (Brambleby 1995; Cohen 1995; Craig *et al.* 1995; Madden *et al.* 1995; Twaddle and Walker 1995; Posnett and Street 1996; Ruta *et al.* 1996; Miller *et al.* 1997), Australia (Mooney *et al.* 1997; Peacock *et al.* 1997) and New Zealand (Sceats *et al.* 1995; Bohmer 1996; Cumming *et al.* 1996; McKean *et al.* 1996; Vaithianathan 1996). Much of the literature reports on trials of the process and focuses on ways in which particular implementation issues can be resolved.

Generally, PBMA has gained some acceptance as a valuable process for thinking about priorities, and for challenging resource allocations, particularly within programmes or services. It has typically been used to consider priorities at a local level, and to engage a range of stakeholders in priority setting.

Key issues raised about PBMA include:

- it takes time to implement, particularly in developing an understanding of the process, discussing issues, and collecting and analysing data<sup>6</sup>
- there can be difficulties in allocating all interventions to service groupings in meaningful ways and in linking cost information to programme or service groupings

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<sup>5</sup> See Donaldson, Walker and Craig (1995) for a discussion on the possibility of only undertaking the marginal analysis phase of this process.

- there can be a reluctance to identify those services which might be reduced
- there are often difficulties involved in reaching consensus where vested interests wish to maintain existing patterns of expenditure
- the process does not resolve easily the issues relating to priority setting across programmes or services, either requiring explicit identification of weights which might be applied to different services or requiring broad judgements to be taken by some group of people in society
- the results of the process cannot always be implemented and so the process can lose credibility.

A number of these issues, however, are faced in any process which aims to make explicit purchasing and priority decisions.

A key issue in PBMA is who is involved in decision-making. The involvement of health and disability support providers is seen as particularly important, given the role they play in implementing the results. A Southern Regional Health Authority report on its experiences with PBMA stated that ‘strong links with the community, open dialogue with health professionals, and well managed relationships with providers are identified as hallmarks of a successful approach to resource allocation’ (McKean *et al.* 1996). Good management is likely to be an essential ingredient of a successful PBMA exercise, particularly if resources are to be cut for some services.

PBMA is still under development as a tool for priority setting in health care. Given the need to spend time on getting participants to understand the process, and given the complex process issues involved, we recommend that the HFA proceed carefully in using PBMA in New Zealand, and consider using it to assist in making decisions *within* services in the first instance.

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<sup>6</sup> One New Zealand exercise, considering resource allocations in respiratory care, was estimated to have taken 900 hours of the participants’ time (Pain *et al.* n.d.).

## 3 The HFA's prioritisation principles

### 3.1 Introduction

The principles upon which the HFA proposes to base its prioritisation process are:

- effectiveness
- cost
- equity
- Maori health, and
- acceptability (Health Funding Authority May 1998, pp. 16-24).

We are broadly in agreement with the set of principles proposed to determine purchasing decisions. However, the key questions in relation to these principles are (i) the means by which each is defined and operationalised and (ii) how the prioritisation process incorporates the principles: the relative weight assigned to each, how trade-offs between principles are to be dealt with, and whether any of the principles provides a veto over the priorities suggested by the others.

The HFA appears to have already made a decision that cost-effectiveness will be the key principle upon which purchasing decisions will be made. This in itself is, arguably, a controversial decision. Australian research on the opinions of a cross-section of the public found little support for the idea that the objective of the health services is to maximise the number of QALYs gained where the consequence is a loss of equity and access to services for the elderly and for people with a limited potential to improve their health (Nord *et al.* 1995)<sup>7</sup>. Similarly, the Swedish Parliamentary Priorities Commission argued that cost-effectiveness be ranked third as a principle for priority setting in health care in Sweden, and that it should only be applied when comparing methods for treating the same disease. The Commission stated that:

‘the principle of human dignity comes before that of need and solidarity, which in turn comes before the principle of cost-efficiency [and that] severe illness and substantial impairments of quality of life must come before milder ones, even though the care of serious conditions is a good deal more expensive. The cost-efficiency principle, therefore, cannot justify refraining from or impairing the quality of care given to the dying, the severely and chronically ill, old persons, dementia patients, the mentally retarded, the severely handicapped or other persons for whom care would not “pay”’. (Swedish Parliamentary Priorities Commission 1995, p. 21)

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<sup>7</sup> However, as Mooney (1998) notes, there remains a concern about Nord *et al.*'s research that “the respondents simply did not grasp the notion of opportunity cost” (p.1172).

Cost-Utility Analysis (CUA) remains in the HFA's August 1998 document the key means by which the principles of effectiveness and cost will be addressed (see section 3.2 for further discussion on CUA). Cost-effectiveness determined on these grounds acts as a 'necessary but not sufficient' condition in decision making. The principles of equity and acceptability are to be addressed as subsequent evaluations, each having the ability to modify the priorities suggested by the CUA process. Maori health issues are to be addressed as a key consideration *within* each of the evaluative steps of the prioritisation process (p.18), and a 'sub-framework' for Maori-specific issues is being developed by the HFA to facilitate this.

The HFA's August 1998 document sets out four levels of scrutiny to which health and disability support services might be subjected, and specifies clearly the criteria for deciding which level of scrutiny will apply. The four levels of scrutiny range from 'full analysis' (CUA plus evaluation of equity, Maori health and independence, and acceptability, for all new services or existing services above a certain financial threshold) to 'no analysis' (for services that must be purchased mandatorily, or for which the total cost is very small) (p.12).

A key shift that has occurred between the May 14th and the August HFA documents is that the HFA has drawn back from its initial intention to have priorities determined *across* Personal Health, Public Health and Disability Support Services, and now emphasises that 'the process will be applied only within ring fences, not across them' (p.10). The implication of this is that a common currency for all three categories of service is no longer required, at least in the short term<sup>8</sup>.

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<sup>8</sup> The HFA is required by law to spend the money allocated to it within the ring-fences stipulated by the Government. The Government however still requires a process for considering allocations across the ring-fences. Although there are arguments for protecting spending within the ring-fences, there are some groups of services where consideration of spending priorities across ring-fences would appear to be a sensible approach, e.g. spending money on hip replacements (which are funded from personal health services) in order to reduce spending on disability support services.

## 3.2 ‘Operationalising’ the principles

### 3.2.1 Effectiveness

The HFA proposes to capture the effectiveness of health and disability support services by measuring the number of Quality Adjusted Life Years (QALYs) gained as a result of receiving that service. QALYs capture the effects of services in terms of both length of life and quality of life (for a succinct overview, see Kawachi *et al.* 1990). The estimation of QALYs requires explicit measures of the value attached to all relevant health states<sup>9</sup>. This involves scoring health states relative to one another, where those health states are described in terms of a range of dimensions (e.g. mobility, self care, ability to engage in usual activities, pain, anxiety/depression) and different levels within each dimension (e.g. no problems walking, some problems walking, confined to bed within the mobility dimension). The estimation of QALYs involves identifying people’s relative preferences for health states and combining information on changes which occur in quality of life and length of life as a result of receiving treatment into one index. It has the advantage of providing a single measure which can then be used to compare effectiveness over a wide range of interventions, treatments and services with dissimilar types and magnitudes of outcomes.

We agree that CUA is an appropriate tool for use in New Zealand and that it offers significant advantages over other types of economic evaluation. However, we believe that the application of any kind of economic evaluation, including CUA, to many types of services will be problematic (see section 4). We also agree with the choice of a quality-adjusted life-year (QALY) rather than a healthy-year equivalent (HYE) as the means of measuring health outputs. While the latter is arguably superior to QALYs in certain respects (e.g. preferences are measured for paths of health states through which an individual would pass, rather than for each single health state as in QALYs) it introduces enormous complexity both in the valuation exercise that would be required and in their use in CUA (see Drummond *et al.* 1997 and Gold *et al.* 1996).

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<sup>9</sup> As QALYs have been developed in relation to health states only and not for disability support services, in this section we use the terminology ‘health state measurement tools’ only in the context of health services.

### *a. Choice of instrument for measuring health state preferences*

A number of instruments have been developed for eliciting health state preferences. These instruments differ in terms of the type and number of dimensions of 'health' that are included, and the levels which exist within each dimension.

There has been much debate in the economics literature about the most appropriate tool for measuring preferences in health gains across a wide range of services. The Washington Panel on Cost-Effectiveness in Health and Medicine recently reviewed the available instruments for eliciting health state utilities (Weinstein *et al.* 1996). The instrument which the HFA proposed, in its May 14th document, to use - the Quality of Life and Health Questionnaire (QLHQ) - was not one of those mentioned in the consensus report of the Washington Panel. We have been in communication with members of the Panel to confirm that the QLHQ, the papers on which were published in 1995 (Hadorn and Uebersax 1995; Hadorn *et al.* 1995), was in fact considered by them as a serious contender as a CUA instrument. Their responses confirm that they did consider the QLHQ. One of the Panel members noted that the authors of the report 'did not consider it [the QLHQ] to have the same standing in the field as the other measures' (personal communication, M. Weinstein, 13/10/98).

The Washington Panel refers to a number of possible instruments including the Health Utilities Index (HUI), the EuroQol Group's EQ-5D, the Quality of Well Being index (QWB) and the Years of Healthy Living index (YHL). The official position of the Panel is that it chose not to endorse one health state classification system over the others. Each has different properties and each member of the Panel valued these properties differently.

The EQ-5D and HUI seem to be viewed as the front runners internationally in research of this nature. The QLHQ and QWB have deficiencies because the weights between various health states are not derived from preferences expressed in terms of trade-offs (personal communication, M. Weinstein, 13/10/98). The QLHQ appears not to allow any health state to be considered worse than death, and suffers the additional disadvantage of not being in widespread use. The HUI arguably has some advantages over EQ-5D because it includes more dimensions and more levels within each dimension, thus allowing for finer distinctions between health states (personal communication, G. Torrance, 14/10/98). However, while choosing a health state classification system with a greater number of dimensions or levels *may*

lead to an increase in the ability to discriminate between clinical conditions, it also leads to an increase in the valuation exercise<sup>10</sup>.

The August HFA document indicates a shift on the issue of choice of method for valuing health states. The later document does not advocate the use of the QLHQ and indicates that the HFA will carefully consider the merits and de-merits of a range of other available instruments<sup>11</sup>. We endorse this approach. It is our recommendation that the HFA choose an instrument which is solidly within the 'mainstream' - i.e. an instrument upon which research is available regarding the issues of reliability and validity, and for which an extensive body of international research exists which may be tapped for comparative purposes.

In this vein, it is our view that the HFA would be most unwise to attempt to develop its own health state classification system. The research effort required to develop and then test the characteristics of any new system in terms of sensitivity, validity and reliability would be immense, and the outcome is likely to be a system which has some merits but also some de-merits relative to already available systems - i.e. it may not place the HFA any further ahead. Given that the HFA wishes to enact its process in the interim, the delays in undertaking the basic research required to develop a new taxonomy would require the HFA to choose an existing one in the short term anyway.

While initial HFA analyses may need to rely upon 'off the shelf' tariffs of health state valuations generated overseas using such instruments, we recommend that research be undertaken in New Zealand to explore issues that are specifically New Zealand in focus, including (a) the extent to which there are significant Maori–non-Maori or other cultural differences in health state valuations on these generic instruments and, more fundamentally, (b) the extent to which the dimensions included in such health state classification systems adequately represent the aspects of health-related quality of life that are important to Maori and to other New Zealanders in relation to the wide range of health, disability support and public health services which are purchased through the HFA's funding.

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<sup>10</sup> Unrelated to the HFA proposal, research is currently in the early stages of being undertaken jointly by staff at the University of Otago and the University of Auckland, in conjunction with the Centre for Health Economics at the University of York, to explore the health state preferences of the New Zealand general public using the EQ-5D (VAS). For an exploratory look at the results of applying this approach to a sample of health professionals in New Zealand, see Devlin and Williams (forthcoming). The Longitudinal Survey of Income Dynamics (LSID) currently being developed by Statistics New Zealand is also considering incorporating the EQ-5D self-assessment of health status in the surveys which they are developing.

<sup>11</sup> A number of health state classification systems are noted on p.32 of the August 1998 document, and each is briefly reviewed *except* the HUI. This is an odd omission.

We further recommend that the Maori Health Group referred to in the August 1998 document be involved in advising on this aspect of the process. The applicability of the instruments to mental health, disability support and public health services also requires thorough investigation before an instrument is selected for New Zealand. (See section 4 below.)

*b. Whose values?*

The HFA has noted (on p.30 of its August document) some of the issues that need to be considered in selecting the appropriate group for eliciting values of health states. A further disadvantage of seeking patients' views is that each patient experiences only one health state (or some small set of health states particular to the disease they suffer from), and therefore they cannot be asked to value a wide set of health states. The process of eliciting health state valuations from patients therefore involves identifying which diseases lead to which health states in the health state classification system used and then identifying a sufficiently large sample of patients corresponding to each of those conditions (personal communication, A.Tsuchiya, 4/11/98). If instead patients (meaning anyone with an adverse condition) are asked to value a set of health states that may or may not coincide with the condition they themselves experience, then there is no advantage in this over and above seeking the values of the general public, most of whom at some point in their past have experienced one or other of the hypothetical health states anyway.

We recommend therefore that values of health states be elicited from the general population. We note, however, that new evidence is emerging that suggests (contrary to earlier research - see Froberg and Kane 1989) there are differences in health state valuations between older members of the general public and others (see Dolan *et al.* 1996). If these results are confirmed, an issue for the future will be whether preferences of representative samples of the population should drive *all* decisions, or whether choices between services for a particular sub-group such as the elderly should be based upon the preferences of that group.

*c. How are the health state valuations obtained?*

The choice of the health state classification system does not necessarily predicate the method used to elicit health state preferences. A system may be used in conjunction with a range of methods to gauge the value attached to the health states described under that system. For example, the EuroQol system of defining health, using 5 dimensions and 3 levels within

each dimension, has formed the basis of research to derive health state preferences using the Visual Analogue Scale (VAS), the Time Trade-Off (TTO) and the Standard Gamble (SG) approaches outlined in Appendix C of the HFA's August 1998 document. As noted by the HFA in the Appendix to their August document, the SG has the merit of being based upon fundamental axioms of utility theory and the values generated can be considered as cardinal utilities (Drummond *et al.* 1997, pp.143-156). Both SG and TTO approaches require complex valuation exercises. In addition to the points raised by the HFA in that Appendix, we would note that the rankings implicit in VAS or other rating methods can be interpreted as pairwise comparisons, and scaling methods then used to generate tariffs of values which researchers have found are close to those generated using TTO or SG.

A conceptual problem with the Person Trade-Off (PTO) technique outlined on p.31 of the HFA's August document is that it incorporates distributional weights as well as health state valuations, and there may be some advantage in keeping the two separate and explicit. The PTO method directly produces *inter*-personal valuations, whereas the VAS, TTO and SG approaches are based upon *intra*-personal valuations of health states, which are then used in the context of making *inter*-personal choices.

#### *d. Getting from clinical evidence to QALYs*

The estimation of QALYs involves detailed clinical evidence about the outcomes of specific treatments being 'mapped' to the relevant health states under whatever health state classification system is to be used, so that the corresponding preference values can be identified. This process in itself presents a number of challenges:

(i) Clinical evidence will typically show a range of efficacy and effectiveness outcomes, depending upon the study context, method and subjects. HFA analysts need to ensure that efficacy evidence is translated into evidence of effectiveness in community settings, that all evidence is relevant to the local setting, and that any variation in effectiveness is built into QALY estimates under sensitivity analysis.

(ii) Clinical evidence on health-related quality of life usually employs disease-specific measures (i.e. measures designed specifically for a condition or group of conditions). Mapping these to the health states defined under a generic health state classification system requires judgement. Who makes these judgements, and how robust the mapping process is, needs to be tested and reported.

(iii) The existence of co-morbidities is likely to pose particular problems in mapping evidence about effectiveness to health states.

(iv) The estimation of QALYs for a 'service', which comprises multiple interventions, which in turn have multiple possible outcomes (corresponding to successful and unsuccessful treatment, side-effects, and so on) requires a complex study design. The requirement for sensitivity analysis for any disease-specific analytical assumptions may potentially pose problems later when determining priorities from 'league tables', if results are particularly sensitive to these assumptions to the extent the rank-order of the service, relative to others, changes.

(v) Where evidence does not exist - as in the case of new services or services which are configured in ways which are unique to New Zealand or a local setting - judgement will need to be exercised about the likely outcomes and how these map to relevant health states. Again, this raises the issue of who is to make these judgements.

(vi) Many interventions may result in some loss of quality of life (e.g. where treatment is painful) and these 'disbenefits', as well as benefits from treatment, need to be incorporated into CUA if comparisons between competing services are to be valid.

#### *e. The breadth of effectiveness*

As a more general observation, we wish to make note of the breadth of the issues and variables that are intended to be dealt with under the principle of 'effectiveness'.

(i) Bearing in mind that the HFA's interest is in prioritising its purchasing of *services*, the effectiveness of those 'services' is determined by the bundle of (potentially heterogeneous) clinical interventions which comprise those services, who gets those interventions (which is, in turn, influenced by the method of rationing services used by providers), where the interventions are delivered, by whom, and how. Effectiveness analysis also faces the challenge of accommodating relevant local issues, such as the possibility of regional variations in medical practice *within* services. A national 'one size fits all' approach to gauging effectiveness and cost-effectiveness may override relevant efficiency issues at a local level. The very concept of 'the margin' upon which PBMA is based is a dynamic one, and there is no a priori reason why the level of efficient purchasing should be the same across different localities, especially given that the starting point in terms of levels of services currently purchased are different, and

therefore the relevant marginal costs and benefits may also differ (see Gerard 1993), and considering that local values may differ from those expressed in other parts of the country.

The distinction between services (which the HFA wishes to prioritise) and interventions (which is the level of analysis at which CUA operates) is further highlighted by the trend towards devolved purchasing and integrated care - we discuss this in section 5.2.3 below.

(ii) QALYs focus upon the effects of health and disability support services on *health*, and, more specifically, the health of those to whom services are delivered. There are important concerns about the exclusion of other factors, including:

- benefits to patients such as information, caring and reassurance. CUA does not normally incorporate benefits beyond pure 'health' and such benefits may not be easily measured (see Mooney 1994a; Jan and Mooney 1997; Dowie 1995)
- 'spill over' benefits from health services such as benefits to people other than the recipient of care (e.g. to carers or family/whanau members) and 'option' benefits - the notion that individuals place a value on knowing that services, for which they may have no current requirement, are available if needed (Cullis and West 1991)
- QALYs may not capture all aspects of consumers' preferences regarding the *process* by which services are delivered e.g. the population may prefer to have a 'more cuddly, information-providing, decision-involving process' even if the implication was less health gain as measured by conventional QALYs (Dowie 1995, p.233). (See section 4.2 for further discussion of non-health benefits.)

There are also a range of other issues related to effectiveness. For example, operational efficiency issues related to service provision (e.g. where a health or disability support service is effective in one region but not in another, because of personnel or equipment factors); barriers which might contribute to inequities in access to health and disability care (e.g. geographic barriers, financial barriers, ethnic barriers arising from culturally inappropriate services, and time barriers such as waiting lists); and the acceptability of particular services to particular patients (e.g. choice of medication, choice of more culturally appropriate services). The HFA argues (p. 21, May 14 document) that this information will be described qualitatively in many cases, but will also be used in quantitative assessments. Particular issues which we think the HFA should give further consideration to include: that CUA does not normally incorporate benefits beyond pure 'health' and that such benefits may not be easily measured; that an approach which is not very clear about what is and is not included and which is not separately identifiable will thwart the HFA's objective of having a more explicit and transparent process;

and that if barriers to access and issues of acceptability are to be included in considerations of effectiveness, then the choice of which ‘services’ to include in the analysis becomes very important and such ‘services’ will need to be defined in some detail.

#### *f. Jointly-funded services*

A good number of New Zealand’s health and disability support services are jointly funded from public and private funds (e.g. hospice services, services for children with intellectual disabilities). Although the HFA may easily identify the expenditure on these services, it may well be very difficult to estimate the effect such expenditure has on outcomes where private funds are also employed to deliver the same outcomes. It is unclear to us how this issue can be addressed adequately, but both the HFA and the NHC should consider undertaking further work on this issue.

### 3.2.2 Cost

#### *a. Estimating costs*

Neither the May 14th or August HFA documents indicate an awareness of the pitfalls associated with what might appear the simplest aspect of its quantitative analysis: measuring the costs of service provision. Again, we emphasise that these do not invalidate the HFA’s process, but that these are issues to which careful consideration needs to be given.

(i) In a broad-spectrum prioritisation exercise (i.e. where most services are to be subject to at least some level of analysis) the costs of each service are being measured as separate bundles, whereas the characteristic of cost functions for each service may in part depend upon other bundles of services with which they are being jointly produced. The presence of economies of scope introduces challenges for analysts identifying the costs for separate services and interventions within those services, since these costs are being observed within a specific production context that may not apply *ex post* (for example, if other jointly-produced services or interventions are not subsequently purchased from that provider, or purchased in different orders of magnitude). In such situations, analysts need to interpret cost data with great care, and

there may be an argument for contiguous evaluations of jointly-produced services to be undertaken<sup>12</sup>.

(ii) The PBMA framework focuses upon *marginal* shifts between programmes, and observations regarding *marginal* costs. Marginal costs are difficult to measure: they are both context- and output-level specific. The HFA documents do not indicate an awareness of this or indeed mention marginal costs at all. Analysts may feel tempted to resort to average cost data which are (usually) more readily available from existing provider accounting and reporting systems, but which disguise important aspects of resource use or savings at the margin. Analysts need to be careful that recommendations to purchase more, or less, of particular services are accompanied by an incremental approach to costing that takes into account the changes to costs consequent upon those decisions. Observations of incremental costs are unlikely to be possible from secondary data sources i.e. these will require analysts to seek or generate primary data from individual providers and to establish a model of providers' fixed and variable cost structures from which changes to total cost over relevant output ranges may be estimated. Commitment to the process and its objectives also requires the HFA to carefully monitor, as an ongoing matter, changes to costs in order to determine how the relative economic efficiency of one service over another changes as decisions are implemented.

(iii) Note that both the average and marginal costs of delivering the same service will differ across the country depending upon a range of factors, such as the size of provider units, their ability to capture economies of scale, and the availability of spare capacity within existing provider units. It is not clear from the HFA's proposals whether it is the intention for CUA of services to be undertaken at a national level, and to what extent relevant local production and cost conditions will be taken into account. Taken in conjunction with the issue discussed below regarding the perspective from which costs are considered, a tendency to draw cost data from larger secondary or tertiary institutions where throughput is high and lower average costs are achieved, combined with the exclusion of private access costs other than travel costs, may lead to HFA decision making not being particularly sensitive to issues of population dispersion over wide geographic areas.

(iv) High start-up costs, in terms of new skills and capital, of new or innovative services (e.g. emerging for-Maori, by-Maori services) may disadvantage new services relative to

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<sup>12</sup> This issue applies not only in relation to publicly funded services, but also to privately funded services. For example, many disability support services are provided by voluntary organisations who raise funds through

established services in prioritisation. The HFA needs to consider how start-up and development costs will be incorporated in their cost data and cost-effectiveness estimates.

(v) The HFA will need to be mindful of the distinction between *costs* of service provision and the *prices* which the HFA may pay for these services. For example, unit costs higher than the prices generated by HFA efficient pricing/benchmark pricing models have been suggested to be one factor contributing to CHE deficits (Devlin and O'Dea 1998). This also highlights issues about the relationship between CUA and contract negotiation: (a) if a unit cost evident for a service being analysed by the HFA is higher than the corresponding benchmark price, this may be used by providers to negotiate higher a contract price and (b) if the benchmark price is greater than the unit cost, the HFA may use this to bargain down a contract price. The possibility of cost data, sought for analytical purposes, being used in the bargaining process, introduces incentives for gaming in the seeking and providing of cost data.

The means by which costing of services is handled has significant implications for the quality and relevance of the information generated by CUA or lower-order analysis. The HFA should consider developing guidelines for costing for its analysts.

### *b. The issue of perspective*

The initial May 14th HFA document distinguished between the financial cost of a service ('... which only includes the direct contracting cost to the HFA' p.18) and the 'economic' cost (which in this context is illustrated as flow-on costs and savings to the HFA). However, what was being proposed was not to estimate the economic cost of the service (which in usual economic terms would be taken to include the cost of all resources used or averted in order to provide that service, including those falling on other Government agencies and/or private groups or individuals, and the opportunity costs of those resources) but, more modestly, to calculate the net cost to the HFA.

The August HFA document indicates a shift on this issue (pp.18 and 33). The HFA has indicated its intention to incorporate 'flow-on costs across the health sector and other publicly-funded sectors' (p.18). We endorse this decision: by failing to take other fiscal implications into account, the decisions made by the HFA may fail to recommend services that are clearly common-sense from the Government's point of view. An example would be facilitating the return to work of a patient claiming the sickness benefit while awaiting surgery (even though

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donations. Changes in public funding may have significant implications for the service costs of a wide range of

from a wider social perspective such transfer payments are cancelled out by corresponding benefits to the recipient). Ignoring the fiscal impacts resulting from HFA decisions would also have failed to acknowledge the interface between health and disability support sector decisions and other Government services.

‘Which costs to include’ depends upon the *perspective* of the evaluations proposed to determine the HFA’s purchasing decisions. The principal argument used to restrict the focus to that of the HFA in the May 14th document was that ‘the Health and Disability Services Act puts the HFA in charge of improving people’s health and reducing limits on independence within the Vote:Health allocation, which suggests the HFA should not be concerned about costs incurred outside of this allocation’ (p.33) and that, in the case of personal costs, to incorporate these would pose too many measurement problems.

Notwithstanding the HFA’s intention to shift from an HFA-only to a Government perspective, there are a number of unresolved issues regarding perspective:

(i) There is still no explicit mention in the August document of non-Government costs, other than a brief mention, on p.33, of travel costs to the patient. (The earlier document also briefly mentioned the inclusion of patient co-payments in costings, and we feel that the HFA needs to clarify whether this is still their intention.)

(ii) The implications of the HFA’s prioritisation decisions being restricted to a Government perspective are potentially profound. By not taking private costs into account, the ranking of services *may systematically favour those services which are able to shift costs from the HFA onto private individuals or groups to the greatest degree*. Thus, the economic evaluations will fail to represent economic (allocative) efficiency. Decisions made on this basis may simply represent ‘false economies’.

(iii) There is, however, some debate regarding the appropriate definition of opportunity cost in the context of health service decision making (Gerard and Mooney 1993). For example:

‘...taking the assumption that opportunity cost should be defined in terms of QALYs foregone...then one concern for QALY league tables and their interpretation is that only health care costs should be included in the cost side of the analysis. It is frequent, however, to come across analyses that have counted patient and social service costs in the analysis. In situations where the opportunity cost of a resource can be measured in terms other than QALYs then CUA is in trouble. Although a societal perspective may be desirable for some purposes, to include patient time and travel costs or the costs of intersectoral consequences as part of a CUA concerned with allocative

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services beyond those publicly funded.

efficiency issues would be to assume these costs only had alternative health care uses. This is too restrictive an interpretation on such costs. CUA applied to allocative efficiency questions in health care should be restricted to questions of efficiency of health care resources only.' (Gerard 1993 pp.113-114)

It is therefore our recommendation that, while we accept that CUA is appropriately undertaken from the perspective of the HFA, these analyses should be accompanied by an attempt to *identify* (and, where possible, value) any significant resource implications for public and private groups or individuals, to facilitate the consideration of priorities from alternative viewpoints and to guard against cost-shifting

### *3.2.3 Putting costs and effectiveness together*

The CUA results generated from the full analysis of services will produce an ordering of projects (a 'league table') which shows services that are most cost-effective (have the lowest cost per QALY) to least cost-effective (highest cost per QALY). These league tables will avoid most of the problems usually attributed to league tables if they are based upon a comparable and consistent methodology. Nevertheless, the HFA will need to be cautious in its interpretation of league tables. Sensitivity analysis will obviously change the absolute cost per QALY reported, but, more importantly, may also change the rank-order of services considered on this basis. The range of CUA results produced by a diligent testing of assumptions may not allow a stable ranking. For example, a cost-effectiveness analysis of interferon  $\alpha$  in hepatitis C patients showed a range of results from \$1,500 to more than \$33,000 per life-year gained, results that 'were too broad to enable meaningful decision making' (Raine 1998). Overlap between services in terms of cost per QALY resulting from service-specific sensitivity analysis is likely, and the HFA needs to decide how it will proceed in such cases. Finally, the analytical process will need to be conscious of significant changes to any prevailing factors influencing cost (for example, changes to technology) and effectiveness (changing epidemiology, improved clinical procedures etc) and be prepared to revisit CUA to incorporate these where necessary. We suggest that the HFA develop explicit criteria to indicate the circumstances which would trigger their re-analysis of cost-effectiveness of services.

### 3.2.4 Acceptability

The August HFA document outline of its ‘full analysis’ suggests that the principles of cost and effectiveness, as incorporated in CUA, will be the principal driver of prioritisation. The three remaining principles: equity, Maori health and acceptability, are to be addressed as the last steps in the full analytical process (p.13).

Acceptability is arguably the most poorly specified of all the principles. On p.13 of the August document it is described as encompassing ‘political and social acceptability’. How this will be evaluated is unclear, as is the extent to which an adverse result on this principle (i.e. ‘change is unacceptable’) is intended to alter or over-ride priorities determined on the basis of the preceding analyses. For example, if a controversial decision yielded by the earlier stages of prioritisation (to make abortions more freely available, to cut back on palliative care for terminally ill patients and so on) is deemed so politically sensitive or unacceptable that the status quo prevails, this assigns the acceptability principle a right of veto. If this is the case, then potentially an enormous amount of HFA time and expertise may be wasted on engaging in full analysis of services when change is never feasible anyway. In these cases, perhaps a preliminary assessment of acceptability should be placed at the *front-end* of the full analysis.

The concept of acceptability is problematic for other reasons: ‘acceptable’ to whom? The process of prioritisation will almost inevitably end up denying some service to some group of people, and one might reasonably expect that this group will find this decision unacceptable. In other cases, services which provide significant benefit to some groups of people may be seen as ‘unacceptable’ by the wider community (e.g. treatment for people with AIDS; community-based mental health services). If such aspects of ‘acceptability’ are allowed as legitimate, and if the principle of acceptability requires consensus for each decision, then resource allocation is either doomed to inertia or to implementing decisions which are morally unfair.

A related issue regarding the use of the principle of acceptability in tandem with CUA is that CUA is based on expressed preferences for different health states. Once the process overrides this with some other criteria, this seems to undermine the whole principle upon which CUA is based, i.e. preference-based decision making. The inclusion of ‘acceptability’ risks becoming a kind of formalised escape clause to avoid contentious decisions, unless it is based upon some clearly articulated and agreed set of precepts regarding justice or human rights.

We recommend that the HFA consider in greater detail, before implementing these proposals, the means by which acceptability is to be incorporated in their analyses. There is a

need to operationalise this principle in a way that ensures that interpretation of particular principles broadly accords with New Zealanders' values, that protects any important residual cultural values and norms not captured by other principles, but that also satisfies the stated objectives of the prioritisation process. Furthermore, the HFA should consider in more depth how it intends to gauge public acceptability. (See section 5.5 below for further discussion.)

### 3.2.5 *Maori health and independence*

The August HFA document is inconsistent on *where* in the full analysis Maori health and independence is addressed. In the outline of the full analysis on p.13 it appears, along with acceptability and equity, to be undertaken subsequent to CUA and, as with acceptability, presumably acts as a potential brake on decisions rendered through that process. However, p.18 of that document, which outlines in greater detail the steps in the full analysis, indicates that the Maori Health principle will be incorporated and addressed at 'all phases of the analysis', as well as facilitating opportunities for Maori to be involved in the design and provision of services being analysed.

It is our view that the proposed prioritisation process requires further development in partnership with Maori. Considerably more work is required in relation to where and how in the process Maori health and independence is best addressed, and in relation to key issues such as: the dimensions of health and independence which are considered under the effectiveness principle and in QALY calculations; how to evaluate services which are new or in developmental phases; and how benefits to whanau, hapu and iwi might be incorporated into analyses.

### 3.2.6 *Equity*

CUA is based on an implicit assertion that the main objective of publicly-funded health (and, in New Zealand's case, disability support) services is to maximise the number of QALYs generated overall. This is, in itself, a value judgement. We may be concerned not only with *how many* QALYs are produced, but *who receives them*, and whether the distribution of QALYs accords with notions of fairness. An assumption that is fundamental to the QALY approach is that a change in health status from a utility value of 0.1 to 0.2 is valued equally to a change from 0.9 to 1.0. Thus simply maximising QALYs may not reduce - and indeed may increase - inequalities in health. This is because the ability to benefit from treatment may differ across

socio-economic groups i.e. the effectiveness of health care interventions and disability support services depends in part on the context in which they are provided.

‘The evidence-based approach, dominated by a focus on health outcomes from health interventions, overlooks that society is not a level playing field. Policies aimed at maximising health outcomes from health care interventions by basing decisions on this research ‘evidence’ risk deploying resources inefficiently and in ways which systematically favour those groups with favourable ‘prospects for health’ (or non-health care determinants of health), and the conditions that those groups in society tend to suffer from, and away from those groups with less favourable prospects for health’ (Birch 1997, pp.547-559)

The August 1998 document indicates that the HFA’s intended means of addressing this principle is to ‘favour services that tend to reduce inequitable disparities in health status, even if those services do not improve overall health status within the larger population as much as some other combination of services might. Thus, we are willing to sacrifice some allocative efficiency...in order to reduce inequitable disparities in health’ (p.23). We support this approach, but note that the key questions relate to the magnitude of the trade-off we should be prepared to make, how equity is defined, and how in practice equity is incorporated in the prioritisation process.

There are two elements of equity with which a health system might be concerned: horizontal equity - the equal treatment of like individuals - and vertical equity - the unequal treatment of dissimilar individuals. Both notions of equity can be applied to judge the extent to which a health system fulfils its objectives in terms of equity of access, utilisation or outcome. The HFA suggests that the main operational meaning of equity for prioritisation purposes should be equity of *outcome*. This choice is convenient for a number of reasons, one of which is that it allows equity to be incorporated directly into the analysis by, for example, attaching weights to the outputs (QALYs) being ‘fed into’ CUA (thus QALYs gained by particular groups e.g ethnic groups, being multiplied by a number greater than 1)<sup>13</sup>. The HFA’s approach is also consistent with the Government’s goal to reduce inequalities in health status in New Zealand, especially inequalities between Maori and non-Maori.

The choice of equity of outcome represents a significant shift away from the principle of equity of access which has, arguably, had broad acceptance and has traditionally underpinned most health policy in New Zealand (Scott *et al.* 1986; Peacock *et al.* 1998). There

are a number of concerns noted about focusing on equity of outcome (see National Health Strategy 1991). First, most inequities in health are caused by social and economic factors which may only be mitigated to a certain degree by health and disability support services (National Advisory Committee on Health and Disability 1998). Therefore, it is not clear that decisions made about resource allocation in this way will in fact reduce inequities. Second, some argue that while it is the community's responsibility to ensure that all people have an equal *opportunity* to achieve equal health status, to go further than this is too prescriptive. Mooney, for example (as cited by National Health Strategy 1991) argues that as long as people have equal access according to need, if they choose not to exercise equal use because of personal preferences, this should be accepted. Third, it has been argued that the achievement of equality of health outcomes could only be achieved at inordinate cost, and that the same resources used to bring a small number of people up to a higher level of health status has the opportunity cost of denying improvements in health to a great number of people. Put another way, the pursuit of vertical equity has an opportunity cost in terms of overall health gain, and this again raises the question of what basis will be used to choose the weights. Further, it isn't clear from the HFA's proposals exactly which groups will be considered as having 'inequitable disparities in health', and this requires clarification.

Regardless of whether explicit distributional weights will be used in the quantitative analysis, or a qualitative *ex post* assessment of equity as a separate principle is to be made, the inclusion of equity and the means by which it affects service priorities will require extremely careful handling and trialing.

We believe that further work is required to consider the implications of this shift prior to it being incorporated explicitly into prioritisation exercises. The NHC has established a separate group to specifically address concerns regarding equity and prioritisation, and it is hoped that the conclusions of that group will provide practical guidance to the HFA's process in this regard.

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<sup>13</sup> This approach is currently being explored in Australia, with weights between 1 and 2 for Aboriginal health gains being derived from surveys of the general public (personal communication, G. Mooney, 13/12/98).

## 4 Service-specific challenges in prioritisation

### 4.1 Introduction

In addition to the general points that have already been discussed, there are some issues which relate specifically to particular types of services. The four categories of services discussed here are personal health services, mental health services<sup>14</sup>, disability support services, and public health services.

These four categories each comprise a diversity of different services. It is therefore difficult – and indeed quite inappropriate – to make blanket recommendations for any of these four broad categories of service. Rather, it is necessary to consider the characteristics of different services *within* each of these four categories. The validity of our conclusions and recommendations for any particular service within a service category depends upon the presence or absence of each of the characteristics that we discuss.

### 4.2 Personal health services

#### 4.2.1 *Measuring effectiveness*

The general prioritisation methodology seems to have been developed with certain categories of personal health services – most particularly secondary services – in mind. The process follows the prioritisation framework developed by Pharmac for purchasing pharmaceuticals. It is services such as these that can most readily be assessed through randomised controlled trials and other methodologies designed to evaluate efficacy and effectiveness. However these trials most commonly use disease specific indices or generic health status indices (such as the Short Form 36 and the Nottingham Health Profile) to measure the effectiveness of interventions rather than preference-based measures. While disease specific and generic health indices are useful and valid measures of health outcomes, there is no standard procedure for translating these indices into the common currency of QALYs (see section 3.2.1d).

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<sup>14</sup> Although mental health services are included within the personal health budget, mental health services have some special features which are relevant for prioritisation decisions. We have therefore chosen to discuss them separately.

Notwithstanding the fact that CUA has been developed for and most widely used in relation to personal health services, there remain challenges in its application. Infertility services provide an interesting example. Can the dimensions of health in the various instruments capture the improved quality of life from infertility services, or is infertility more than just a ‘health’ problem? (One version of the HUI included a measure specifically for infertility but this was subsequently dropped.) Who gets the improved quality of life: the mother, her partner, wider whanau? Where do the relevant effects end? And what about the (unknown) QALYs of the baby if the service is successful, does this mean that the measure of the effectiveness of the service should include one new life at perfect health? The cost per QALY for infertility services would hang crucially upon the answers to these, and other, questions. Drummond *et al.* (1997) note that the standard CUA framework does not capture such ‘spill over’ effects on other persons – while in *theory* it is possible to capture such effects using the tools of CUA, ‘...in practice, this has not yet been done’ (p.209). It is concerns about these sorts of limitations of CUA that have led to the development of other methodologies, such as Conjoint Analysis (CA)<sup>15</sup>. CA takes into account patients’ preferences and considers attributes beyond just health outcomes using an indirect willingness-to-pay methodology. This approach generates values for health services which may be weighed up against costs using Cost Benefit Analysis. There is growing interest in the application of this method to personal health services (such as IVF – see Ryan 1999).

These issues illustrate that QALYs are sometimes not as objective as they might appear. It will be important for the HFA to be very explicit about any underlying assumptions that have been made during the process of estimating measures of effectiveness.

#### 4.2.2 *Primary services*

Primary care incorporates a wide range of diagnostic procedures, treatments and prevention services. A single GP consultation may itself comprise a number of different interventions. Moreover, the cost-effectiveness of any single treatment depends upon the severity of the illness and the patient’s ability to benefit. These factors make it impossible to

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<sup>15</sup> Conjoint Analysis (CA) is a technique that enables a dollar value to be placed on health care services on the basis of observations regarding people’s willingness to pay for services where the characteristics of those services are defined in terms of specific attributes such as the probability of a successful health outcome, aspects of the quality of care and the cost to the patient. Trade-offs between these attributes provide an indication of preparedness to pay. Values derived using CA facilitate the economic evaluation of those services using Cost Benefit Analysis (CBA).

estimate a meaningful measure of the cost-effectiveness of the ‘service’ that is being purchased by the HFA.

This problem applies to health services more generally but seems more acute in primary care because of the diversity of interventions that are provided by general practitioners and other primary care providers. The cost-effectiveness of purchasing then depends crucially upon the clinical decisions made by these health professionals. In these circumstances, it will be important for the HFA to develop contracting mechanisms which incorporate incentives for the provision of cost-effective services by providers. (See Sections 5.2.1-5.2.3 for further discussion.)

### **4.3 Mental health services**

#### *4.3.1 Appropriateness of instruments for measuring health state preference*

Examples of utility measurement in mental health are rare. This paucity of studies may be indicative of the paucity of effectiveness data of mental health interventions - and therefore of economic evaluations - more generally (Evers *et al.* 1997). However it may also reflect some inherent difficulties of applying CUA to mental health services. Of those CUA studies which have been undertaken in mental health care, the quality-of-life instruments have not performed very satisfactorily in terms of measuring the impact of care on marginal changes in the quality of life.

All of the alternative instruments for measuring generic health states incorporate some dimension(s) of mental and/or emotional health status. However, surveys of the users of mental health services indicate that the dimensions of health status which are relevant to this group (such as psychological well-being, personal independence, social participation, social support and the availability of professional help) are rather different from the standard domains of physical mobility, pain, and emotional state (Chisholm *et al.* 1997). There is, however, insufficient evidence as yet to recommend the use of any of these instruments in measuring the mental health-related quality of life.

This suggests that the HFA may need to fall back on specific health state measures, designed for mental health services, in order to evaluate effectiveness. Mapping these results to the generic quality of life measures is likely to be difficult (given the possible irrelevance and insensitivity of the generic measures), such that comparing the effectiveness of mental health

services with other services using a standard measure (a QALY) is unlikely to be feasible in the short term.

#### *4.3.2 Mental health legislation and blueprint*

It is likely that a significant proportion of mental health services in New Zealand are provided under the auspices of the Mental Health (Compulsory Assessment and Treatment) Act 1992. Legislative requirements such as this may make it difficult for the HFA to think about re-allocating resources from such services to other services. Similarly, the relationship between the HFA prioritisation process and the Mental Health Commission's Blueprint for Mental Health needs further clarification.

#### *4.3.3 Recurrence of mental health disorders*

Another characteristic which is common to mental disorders (and also to many personal health disorders) is their chronicity. Symptoms may continue for many weeks or even years before they are alleviated. Moreover they may reoccur at any time. Hence even when one is in what may be valued as 'full health', the threat of relapse at any time may undermine one's sense of well-being. This suggests that accurate measurement requires temporal considerations to be included in QALY calculations<sup>16</sup>.

#### *4.3.4 Multiple agencies; multiple benefits*

The management of mental health problems (and also care for people with disabilities) often involves many different agencies in addition to health and disability support services. These include family and friends, social services, community groups, employers and so on. A broad perspective which includes any costs incurred by these groups is therefore especially important for mental health (and also disability support) services. Similarly, the benefits from such services are often likely to accrue to family and friends, and to include reassurance that a person is being adequately cared for and that future potential harm is being avoided. Thus, for mental health care, a societal perspective is likely to be more appropriate than an HFA perspective.

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<sup>16</sup> It was this deficiency of QALYs which led to the development of an alternative instrument, Healthy Year Equivalents (HYEs) (Mehrez and Gafni 1989). Unfortunately, as the HFA has noted (p.29) the valuation procedure required for HYE's would be too cumbersome for prioritising purchasing decisions across a wide range of different services.

All of these points suggest to us that it would be unwise to apply a full analysis which includes CUA for purchasing many mental health services at this time. Much work needs to be undertaken on the feasibility, reliability and validity of current instruments, and on the implications of using these instruments in the context of chronicity and uncertainty of outcomes.

## **4.4 Disability support**

### *4.4.1 Is economic evaluation appropriate?*

In its comments on the HFA Discussion Paper, the NHC drew attention to the view that, because many disability support services are fundamental to quality of life, they should be regarded as essential services and therefore not be part of the prioritisation process. This question is akin to the notion of ‘Rule of Rescue’ – i.e. is there something special about disability support services which makes them socially desirable, in spite of the fact that they may not be cost-effective if evaluated using CUA?

It seems likely that some disability support services will fall into this category. For example, many services for people with disabilities are in fact essential to life itself (e.g. the ability to feed oneself or to be fed). We suggest that in such cases it would be sensible for the HFA to undertake a preliminary assessment of the acceptability of cutting back on these services before committing resources to any quantitative assessment of the costs and benefits of the services (see section 3.2.4). However this comment applies to some health services also. Therefore, there does not seem to be a strong case for excluding disability support services from the prioritisation process on these grounds, although it does suggest that the HFA needs to consider more carefully the situations where services might be regarded as ‘essential’ and that this label may apply beyond the acute and emergency personal health services usually considered as such.

It is pertinent to note that, had funding for disability support services not been shifted off Vote: Social Welfare and on to Vote: Health in 1993, then these services would not now be subject to the proposed prioritisation process. This illustrates (a) the arbitrary nature of the HFA funding boundary and (b) the need to consider the implications of prioritisation of expenditure in a broader context.

#### 4.4.2 *Appropriateness of instruments*

Quality of life instruments are sometimes criticised on the grounds that they are insensitive to the effects of services which ameliorate suffering, or which reduce the rate of deterioration, rather than provide a positive health or independence gain<sup>17</sup>. The outcomes of many disability support services clearly fall into this category.

Reference to CUA studies would provide information about the validity of the different instruments for disability support services. However we have been unable to locate *any* CUA studies of these services internationally. This paucity of studies could be interpreted as proof of the inappropriateness of existing QALY tools for assessing the effectiveness of these services. By the same token, it may simply reflect the fact that, in most countries, disability support services are funded outside of the health sector.

It is our recommendation that (i) the various instruments for measuring health state preferences be tested for their sensitivity to the kinds of outcomes that are relevant for people with disabilities, including the concept of independence and (ii) that an exploratory CUA of a disability support service be attempted to determine the feasibility and appropriateness of the approach for such services. In the meantime, information about current services, costs, and outcomes should be collated via on-going partial analyses as described by the HFA in its August paper (p.13), including the use of the wide range of specific quality-of-life measures which have been developed in recent years (see for example Wilkin *et al.* 1992).

#### 4.4.3 *Are QALYs biased against people with disabilities?*

Utility-based measures will generally rank the health status of people with disabilities lower than that of those in full health. However this does not necessarily imply that there is a bias against people with disabilities in estimating effectiveness. From a purchaser's perspective, it is the *change* in health or independence status (or prevention of a deterioration in health or independence status) and corresponding gains in QALYs provided by a service that is important, not the absolute starting-point or final level achieved. Therefore, for services that aim to improve quality of life e.g. contribute to the amelioration of a disabling or painful condition or its effects – but have no effect upon length of life – bias against disability support

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<sup>17</sup> In his seminal paper on "Effectiveness and Efficiency", Cochrane (1971) discussed "care" as a dimension of equality on the grounds that too little was known about caring services to judge them on the grounds of effectiveness and efficiency.

services is unlikely and indeed many disability support services may be highly cost-effective as judged by CUA because their benefits extend over a long period of time.

However, it is possible to conceive of other circumstances where bias might arise. The evaluation of value-for-money of a hypothetical programme that will save the lives of people with disabilities will, *ceteris paribus*, compare unfavourably with a similar programme that will save the lives of able-bodied people, as the number of QALYs gained in the latter are higher and is therefore more economically efficient as judged by CUA. Whether this is "right" or "wrong" becomes a matter of equity and acceptability.

An assumption underlying QALY measures is that one's preference for any given health state is independent of the length of time spent in that health state. But this is clearly not the case for a person with a long-standing health problem such as a permanent disability (or for chronic health problems more generally). People tend to adapt to their condition over time and to develop methods of adjusting to its effects. Valuations elicited from the general population for the health states experienced by people with disabilities therefore tend to be lower than the value that would be ascribed by the people with disabilities (or with chronic illnesses) themselves. Again, this does not mean that QALYs incorporate an inherent bias against people with disabilities (or who are chronically ill) because it is the *change* in health and independence status that is relevant for purchasing purposes – i.e. the number of QALYs gained – rather than the absolute level of health or independence status.

Because we cannot entirely dismiss the possibility of bias against disability support services, exploration of the use of CUA for these services and comparisons of value for money between disability support and personal health services should monitor the ways in which 'capacity to benefit', as measured by QALYs gained, is affected by the disability status of service recipients. Finally, from the perspective of people with disabilities, the initial valuations in themselves might be seen as devaluing the lives of people with a disability. Some sensitivity will be needed in handling this valuation, and it is important for those who are valuing health and independence states to base their values on a realistic assessment of the quality of life of people with disabilities, rather than on stereotypes.

#### 4.4.4 *Benefits for caregivers*

Many disability support services provide significant benefits to the family, caregivers and friends of those receiving a service (National Advisory Committee on Health and Disability 1998). If these benefits are not recognised, any services which confer these benefits will be systematically undervalued. Recognising this point, the HFA suggests (on p.17 of the May 14th paper) that ‘when externalities are significant, the effects of services...should be assessed from the perspective of immediate family/caregivers as well as individual patients’.

In theory there is no reason why a common currency cannot be used to measure the quality of life of both those receiving treatment or care and caregivers. However the generic instruments that have been developed to date were not designed to measure the dimensions of quality of life which are relevant for caregivers. While we have not had an opportunity to examine this issue in any depth, we are aware of at least one instrument which has been developed specifically for evaluating the quality of life of caregivers (Mohide *et al.* 1988).

In addition, it is possible that some services made available to caregivers are provided largely for the benefit of the caregivers themselves, and indeed may be detrimental to the person with a disability (particularly in the short-term). The HFA will need to consider such trade-offs carefully in undertaking its assessments of effectiveness.

It is our recommendation that, where services have clear implications for caregivers (for example, of elderly people or people with mental, physical, or intellectual disabilities) the HFA should include some assessment of the effects of these services on the quality of life of the caregiver.

### 4.5 **Public health services**

In this section we are concerned primarily with those services which are delivered to whole communities rather than to individuals. Examples include population-based health promotion campaigns, water quality assessment and treatment services, sewage treatment services, and healthy cities and communities programmes. Many of these services have public good characteristics, i.e. it is difficult to exclude individuals from obtaining benefits from them and one individual’s consumption of a service does not reduce the amount of that service available for others to consume. The comments in this section are not relevant for the personal health services such as mammography and cervical screening. Although funded out of the HFA’s public health budget, the feasibility of CUA for such services is well established (for

example, see Hall *et al.* 1992) facilitating the consideration of priorities for these services across ring-fences.

The primary objective of public health services is to prevent disease and to promote health and independence. *In theory*, QALYs can be used to measure ‘reductions in quality of life avoided’ in the same way as they can be used to measure ‘increases in quality of life gained’ (Richardson, 1998). However, the use of CUA in the evaluation of services designed to benefit the wider community is uncharted territory. As far as we are aware, *no* CUA studies have ever been undertaken of public health (i.e. population-based) services. Below we discuss the difficulties that might arise in the application of CUA to such services in practice.

#### *4.5.1 Non health-related quality-of-life outcomes*

Whereas personal health and disability support services are concerned with the health and independence of individuals, many public health services are concerned with the health and independence of communities. For example, the Healthy Cities programme, in addition to improving the health and independence status of local residents, may strengthen family relationships and generally provide a safer and happier environment in which to live and work. It may also provide a range of wider non-health effects such as a reduction in crime rates and an increase in participation rates at school, in community activities and in the work force. Such outcomes are not captured by QALYs, which aim to measure only health-related quality of life.

Many public health interventions comprise a combination of strategies or intersectoral approaches which involve expenditure by agencies and groups outside the health and disability support sector. For example, a strategy for the prevention of youth alcohol and drug problems may comprise education, community-based activities, and regulations. While the effects of HFA expenditure cannot be separated from the effects of expenditure by other agencies, marginal analysis of the number of QALYs gained/lost from a marginal increase/decrease in HFA funds is possible, but again overlooks non-health-related benefits also generated.

#### *4.5.2 Measuring effectiveness*

Unlike treatments for individuals, there is rarely an opportunity to conduct a controlled trial of public health interventions (National Advisory Committee on Health and Disability 1998, p.61). Moreover, outcomes associated with prevention services often occur many years

into the future (with the benefits sometimes extending to future generations) and numerous confounding factors will also have influenced health status during this time:

‘It is difficult to evaluate health promotion, as many strategies involve ‘a long chain with weak links’. There is often a long time lag between the implementation of the strategy and the health outcome goal; the steps between cause and effect may be tenuous and health outcomes may only be observed in ‘statistical lives’’. (Hall 1998 p.188)

Given these problems, a common approach is to evaluate a service in terms of its impact on *intermediate* outputs rather than on health gain. For example, a drink-driving campaign may be evaluated in terms of community awareness of the campaign, or possibly by reported changes in drinking or driving behaviour rather than by the number of fatalities or injuries avoided. There may even be measurable physiological changes, such as a reduction in cholesterol as a result of dietary change. While these are valid measures of the *potential* impact of the programme on health gain, they are not useful measures for including in CUA (Drummond *et al.* 1997). A large element of judgement would be necessary to estimate the impact on actual health status. This is not to say that these sorts of services should be exempt from economic evaluation: resources devoted to such services have the opportunity cost of denying funding for other health services (and the corresponding loss of health gains). Where evidence of the relationship between public health services and changes in health status are not available, the starting point is to establish the sort of evidence of effectiveness that must precede economic evaluation.

Further challenges in relation to the economic evaluation of public health services include the following:

(i) Because public health services are delivered to communities, their apparent cost-effectiveness will depend crucially upon the size of the population covered<sup>18</sup>. Health protection measures, for example, will generally be more cost-effective in regions with larger populations because, for any given expenditure, the cost per QALY gained declines as the number of people benefiting from the intervention increases. This does not invalidate the use of CUA in guiding purchasing decisions. It does mean however, that, in these circumstances, evidence of efficiency could tend to dominate considerations of regional or community equity.

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<sup>18</sup> As an example of the way in which population size can influence public health policy, the Ministry of Health recently sought proposals for research to find “..the minimum population for which the oral health benefits from water fluoridation are greater than the treatment costs” (Ministry of Health project specification, cost-benefit analysis of water fluoridation, 1998, p.7).

(ii) The effectiveness of public health interventions depends in part upon the social or cultural context in which the service takes place (for example, a no-smoking campaign is likely to be less effective in an environment in which smoking is the norm than in an environment in which smoking is less socially acceptable). The effectiveness of interventions - especially community-based services - may also depend crucially on community 'buy in'. This may make it inappropriate to generalise from available research findings on the effectiveness of public health interventions to local New Zealand contexts.

(iii) Health promotion often involves the 'bundling together' of strategies – such as smoking cessation services and health promotion messages to reduce smoking – and the impact that such services have on a broad range of health and independence outcomes (e.g. reductions in lung cancer, heart disease, and disability) contribute to the complexity of estimating effectiveness for specific services. Hall (1998) argues that each strategy works to ensure predisposing, enabling and reinforcement of change, and that this '...can require an investment to reach a threshold level beneath which there is no effect' (p.188). There is a risk that the PBMA framework leads analysts to focus only on the latest effects 'at the margin', and that the longer-term payoff fails to be recognised because the analyst has assumed diminishing marginal returns.

Many of the points we have raised in this section pose *general* problems for the economic evaluation of public health services i.e. they are not necessarily specific to CUA.

#### *4.5.3 Acceptability and public health interventions*

We question the relevance of the principle of acceptability to public health services. Some public health interventions, which have the potential to be extremely effective, are unlikely to be broadly accepted by the public, at least in the short term. It is for this reason that many aspects of public health are controlled by regulation rather than by voluntary compliance.

#### *4.5.4 Discounting*

Where the costs of public health programmes are incurred now but the benefits fall some time into the future, the use of any positive discount rate will reduce the value of future benefits and therefore increase the estimated cost per QALY. Much concern has been expressed about this point by those in the public health field.

It is our view that these concerns about discounting have probably been over-stated. Just as “too high” a discount rate could bias resources away from preventive programmes, “too low” a discount rate could bias resources away from curative programmes. As a pragmatic solution, it is a simple matter to explore the implications of discounting by conducting a sensitivity analysis on a range of discount rates, including a zero discount rate. This approach has been endorsed by the Washington Panel on Cost-Effectiveness (Weinstein *et al.* 1996). However, there is a possibility that the rankings of services with different inter-temporal characteristics will alter to a considerable degree under sensitivity analysis, with the implication that the HFA’s operational social discount rate will be a key factor in determining the balance between preventive and curative services purchased. An extensive literature exists on the various social opportunity cost and social time preference rate arguments underpinning the choice of the discount rate in public sector analyses. We understand that the HFA has recently commissioned a review of this literature to inform its choice, and we commend this course of action.

#### *4.5.5 Selection of services for prioritisation*

The HFA have suggested some financial thresholds for selecting which services should be subjected to a full analysis (Health Funding Authority, August 1998, p.12). For example, a service might be identified as ‘high cost’ if it accounts for more than 1% of the operating group budget. Because the public health budget is much smaller than other operating group budgets, the threshold level for public health services will be much lower in dollar terms. This problem would be resolved if the various thresholds are expressed either in dollars, or as a percentage of the total HFA operating budget.

In summary, the application of CUA to public health services poses a number of analytical challenges. The problems we have indicated above may not be insurmountable - however, we would emphasize that, as with disability support services, the use of CUA in the evaluation of public health services is largely uncharted territory. We have been unable to find any international examples of such services being evaluated using CUA. Under these circumstances, and until attempts have been made to explore analytical issues specific to CUA of these services, the HFA would be unwise to rely upon CUA as a principal means of determining priorities for services of this nature. Exploratory research applying CUA to a

public health service would be a good way of determining the feasibility and usefulness of the approach.

We understand that the Public Health Group at the HFA is working on ways in which the prioritisation process can be implemented without the use of QALYs as a measure of effectiveness. For the reasons outlined above, we endorse this general approach (without endorsing the specifics, which we are not privy to at this point in time) accepting that in doing so, the prioritisation process will inevitably depend upon a greater degree of judgement.

## **4.6 Conclusion**

There are no grounds for excluding all services within any of these four categories of services from the prioritisation process. However, within each of the categories there are some services which have features which make the application of a full analysis which includes CUA difficult. The relevant features include:

- a lack of evidence about the effectiveness of a service
- the insensitivity of current instruments for measuring some dimensions of health and independence outcomes
- the insensitivity of instruments for measuring non-health and independence impacts of programmes.

We recommend that consideration should be given to the relevance of each of these features before any attempt is made to assess the effectiveness of a service on the basis of the common currency of QALYs. Where necessary, prioritisation should be based instead upon a partial analysis which in some instances may need to rely on qualitative rather than quantitative information about the potential effectiveness of a service.

## **5 Implementation issues**

### **5.1 Introduction**

We believe that the HFA faces a number of issues in implementing the prioritisation process and in making changes in patterns of purchasing as a result of that process. Some of these have been discussed earlier:

- the HFA faces a challenge in obtaining good quality information on effectiveness and cost and in interpreting that information in relation to the particular services that it is interested in. In addition, a huge amount of information would be required to implement the process completely
- the HFA also faces a challenge in mapping evidence on effectiveness to health state measures, where full analyses are to be undertaken – in particular, in the first instance, judgements will dominate this work rather than objective measures
- a balance needs to be made between the effectiveness, equity and Maori health principles, and the principle of acceptability.

In this section, we raise a number of additional implementation issues.

### **5.2 The relationship between priority setting, levels of decision-making and contracts**

#### *5.2.1 Levels of health and disability support service decision-making*

The HFA discussed (pp.10-12, May 14th document) the different levels at which resource allocation decisions are made. It also noted (p.10) that ‘The principles that guide the decision making process should be the same, regardless of the level’. We endorse this view, but note that the HFA’s documents provide little guidance as to how consistency of principles across the different levels might be achieved. This will be important, given that different methods of setting priorities are used by different decision-makers at different levels.

In particular, it will be essential to ensure that purchasing priorities are aligned with the processes which guide clinical decisions. The methods of economic evaluation generally and CUA specifically were developed in the context of evaluating specific interventions or ‘treatments’. However, the HFA intends to use CUA to determine its purchasing priorities for

‘services’ – some of which may comprise specific treatments, but most of which combine bundles of interventions of known or unknown composition (see the table following).

<b>Type of decision</b>	<b>Key decision makers</b>	<b>Prioritisation method</b>
How much money to spend?	Government	Historic expenditure + population/inflation adjustment + ad hoc decision-making
What services to purchase?	HFA	CUA + Maori Health, Acceptability, and Equity Principles
What procedures to provide within this service?	Service managers and health professionals	Guidelines and contracts with HFA
Who gets these procedures?	Health professionals and patients	Booking lists, protocols, guidelines etc Needs assessment for disability support services
What duration, intensity and frequency of procedures should be provided?	Health professionals and patients	Guidelines

While the table is obviously simplistic, it illustrates the general point that CUA will be applied at the second level of decision-making, whereas it is arguably more readily applicable to decisions at the third, fourth and fifth levels. It also illustrates that other mechanisms are being used at the fourth level – probably largely because of the practical difficulties of applying CUA.

This raises a further issue. There is an important interaction between the analyses being taken at all levels. Who gets specific treatments, and what treatments they get, will obviously strongly influence the economic efficiency of the relevant ‘service’. CUA is reliant upon either prediction or observation about the health gains of those to whom the service is offered. The fourth level of decision making therefore influences the extent of measured effectiveness, which determines how cost-effective those services are and how much HFA funding they should attract. In some cases, eligibility criteria themselves can be addressed within the sensitivity analysis of CUA (for example, the age group of women who might receive

mammography screening). However, in the case of many personal health services ‘who gets what’ is likely to be determined by considerations other than the number of QALYs generated and two (or infinite numbers of) sets of inconsistent prioritisation criteria exist in parallel to one another. The same quantum of service could appear either more or less cost-effective just by changing the rules about who gets those services.

Explicit rationing criteria have been developed to determine ranking of patients on waiting lists, with the aim of delivering services to those with ‘the greatest capacity to benefit’ (Hadorn and Holmes 1997a, 1997b). These points systems seek to provide an explicit and transparent basis for internally consistent decision making. However, whether they select patients who will capture the greatest gain in QALYs is unknown. The dimensions of health status used in such booking systems are specific to clinical areas and differ from those used in the generic systems that underpin the estimation of QALYs. For example, in the case of the points system developed for CABG surgery, patients receive a score for four indicators of clinical severity of their condition and one measure of disability. These scores represent the patient’s *starting point* in health terms, although they are intended to proxy their capacity to improve their scores (benefit from treatment). The scores do not incorporate age, and therefore while they allocate treatment to patients who might enjoy improved quality of life and/or improved prospects of survival, there is no consideration of the *duration* of time over which these benefits are conferred (as under QALYs). Further, whereas in theory QALYs may be calculated for anyone *affected* by treatment, the points system focuses on the person being treated.

In the disability support area, the interaction of needs assessments and priority setting is also unclear.

### 5.2.2 *Priority setting and contracts*

A key to the successful implementation of the prioritisation process will be the development of appropriate contracts. It is not appropriate to discuss alternative contractual arrangements here but we think that it is important to highlight the central role that contracting plays in achieving the HFA’s aim of purchasing those services that are cost-effective.

Two issues stand out. First, the HFA must obviously purchase from efficient providers. The prioritisation process itself should inform this process. Second, contracts will need to embody incentives which encourage providers to pursue a mode of practice which is evidence-

based practice – indeed, if the HFA finds that the most gains come from treating particular patients at the margin and not treating others, then it must find ways of ensuring that those receiving the services are largely the ‘kinds of patients’ identified in its analyses. If this does not occur, the entire process will be undermined. In this vein, the idea that the HFA may use purchasing protocols as the basis for contracts merits further thinking (Sheldon and Borowitz 1993).

One approach is for the HFA to engage health and disability support providers in its priority setting process itself: such involvement in, for example, identifying marginal changes is probably more likely to facilitate implementation of the results of prioritisation, and is particularly important where effectiveness differs according to the ‘kind of patients’ treated or cared for.

### *5.2.3 Priority setting and integrated care*

The HFA has clearly signalled its desire to move towards greater integration between services. Integration may take many different forms, from two service providers working together to provide particular services for a specified group of people, to the full devolution of funds by the HFA to a sub-purchaser.

In the first model, the HFA retains the full purchasing role. That is, it can specify the services it wishes to purchase from integrated organisations. However, it may choose to purchase health and independence outcomes<sup>19</sup>, in which case it effectively devolves decisions about which services can best achieve these outcomes to the providers. Nevertheless, the HFA still effectively retains control as there are a range of contractual arrangements which could limit the type of services provided or the situations under which services can be provided.

The second model is the difficult one. In this the HFA effectively devolves purchasing decisions to an integrated care organisation. In order to minimise regional inequities, it seems likely that the HFA may still wish to guide (or restrict) these purchasing decisions through some form of contractual requirements. We also understand that the HFA has to ensure that devolved purchasing must allow for the continued provision of services set out in the Service Coverage Document (part of the accountability arrangements between the Government and the HFA) (Minister of Health 1998). However a key attraction for providers of an integrated care approach is the opportunity to have greater influence over both the services which are

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<sup>19</sup> In practice, this may be difficult to achieve. See Cumming and Scott 1998.

purchased/provided and the method of service provision. Devolution of decision-making is also likely to encourage innovation in service provision. This is, of course, the foundation of the whole core services debate i.e. the tension between central guidance and regional autonomy.

The moves towards integrating care and devolving purchasing pose a number of important questions about the means by which priorities for these services are to be determined. We make no attempt to answer these (and other) questions, but wish to highlight some of the issues which need to be considered and debated in the move towards integrated care:

- How does devolving the responsibility for purchasing bundles of services to an integrated care organisation fit into the prioritisation process, given that by its very nature, devolved purchasing involves passing decisions about what to purchase and for whom onto third parties?
- Whose responsibility will it be to undertake full/partial analysis of the interventions and services delivered under integrated care organisations?
- What challenges does integrated care pose for the CUA of specific interventions which are components (in unknown mix, or at least in a mix beyond the control of the HFA) of those bundles of services?
- Will the HFA monitor the performance of integrated care organisations on the basis of its principles and, assuming it does, will it seek to modify the purchasing decisions of integrated care organisations where it perceives different bundles of interventions are delivered differently or where interventions delivered to different groups of patients could have yielded better outcomes?
- What requirements will the HFA place on integrated care organisations in terms of consultation with the public in determining the services to purchase/provide and how would public values be incorporated into integrated care organisation decision-making?

### **5.3 Identification of marginal services**

We believe it is unlikely that the HFA will shift funds either towards or away from complete ‘services’. In practice, the margins of personal health - and many other - services will most commonly be identified in terms of either marginal treatments/procedures, or in terms of those patients whose ability to benefit from any given service is higher/lower than others. Prioritisation then takes the form of giving priority to particular kinds of patients, rather than to particular services.

Prioritisation of this sort is already being undertaken in resource allocation decisions about many personal health services by means of treatment protocols, booking lists, clinical guidelines, peer review, and so on. As noted above, it will be important to ensure that these processes, which are implemented at the provider level, form an integral part of the process of selecting services for prioritisation analysis.

A further issue which is noted in the HFA's August document relates to the choice of services for analysis using the prioritisation process. The HFA has a number of criteria for choosing the broad services which are to be considered for analysis – for example, full analysis is to be undertaken for all new services and those costing more than one percent of operating group budgets (August document p.12). At some points the HFA suggests that some prior considerations may mean that services are not subjected to analysis. For example, the HFA (May 14 document, p.54) states that constraining factors such as contractual obligations, demand-driven services and socio-political realities, need to be considered prior to undertaking an analysis. We accept the need for such pragmatism, but note that the tensions which will arise between trying to review services at the same time as ensuring acceptability means that recommendations on service change may not in fact be able to be implemented. This may mean, for example, that full analysis of some services will never be worthwhile because other considerations – such as human rights or Treaty of Waitangi considerations – will be given priority. At the same time, care needs to be taken that the acceptability principle does not lead to inertia in considering how resources might be re-allocated.

Although the HFA has criteria for deciding when analyses might take place, it not clear how it intends to identify the specific sub-services which might be considered for the marginal analysis phase of PBMA. How will they choose which sub-services might be considered: for spending new money on; for shifting resources to in place of those sub-services already provided; or for dropping or reducing in size? And how are potential new services to be identified? For example, having decided that the maternity bundle of services is to be reviewed, what are the specific sub-services within this service which the HFA will analyse? Which new services might be considered?

Early PBMA frameworks were vague about how options for change might be developed. The process runs the risk of including only pet projects of those involved in any priority-setting process. And as those involved in trials of PBMA have been reluctant to identify those services which would be cut back if less funding were made available, it would

seem sensible to have a framework for assisting in thinking about what those services might be (Posnett and Street 1996).

Donaldson *et al.* (1995) suggest a range of methods by which problems of gaming might be overcome. For example, they mention: careful consideration of service objectives and the extent to which existing services meet these objectives, thought experiments, a secret ballot to ensure one or two people do not dominate proceedings, literature reviews, local knowledge and opinions - including information from people who are not included formally in the process -, and suggestions in national policy documents. Posnett and Street (1996) develop a useful framework based on the process of health care (i.e. through diagnosis, different stages of treatment, and follow up care) for a particular group/disease in order to ensure all relevant options might be considered in drawing up lists of services which might be expanded or reduced. We also believe that such a framework should incorporate health and independence promotion, disease prevention activities and palliative care, although in the New Zealand context this may cause problems where such services span the existing ring-fences and budget information.

Further development of a framework for identifying services at the margin is essential if a defensible range of options is to be considered for analysis.

## **5.4 Information issues**

While some personal health services/treatments have been evaluated fairly rigorously for both effectiveness and cost-effectiveness, most have not. In disability support, mental health and public health services, we believe that there are even fewer evaluations. The HFA suggests that, if anything, higher priority is likely to be accorded to those services/procedures where there is good evidence of effectiveness. (Examples include pharmaceuticals and new technologies or methods of service provision which have been the subject of rigorous evaluation.)

If this is the case, then the prioritisation process embodies some incentive to document service outcomes. However, because a full economic evaluation can only be applied to those services where there is good evidence of effectiveness, these services are more likely to be subjected to the full prioritisation analysis while other services - where effectiveness is less clear - will continue to be provided by default (or may indeed be cut or reduced in size). This highlights the importance of safe-guarding against opportunities for interest groups to 'work

the system'. In particular, it will be essential to develop a rigorous process for identifying services at the margin (see above).

The HFA notes that it is difficult to say whether being 'on the table' is an advantage or disadvantage because the funding of marginal services could be increased or decreased. However, where it is suspected that a service would be accorded low priority, there is obviously some incentive to keep it 'off the table' as far as possible. This applies most particularly to those services/procedures which are an accepted part of current practice, even though there is little evidence of their effectiveness.

A similar concern relates to the balance which the overall prioritisation process accords to qualitative as opposed to quantitative evidence. There is often a tendency for people to accord more weight to quantitative evidence than to qualitative evidence. Given the important role that qualitative evidence is likely to play in relation to the prioritisation process – in thinking about effectiveness evidence beyond that available in clinical trials and including benefits such as caring, and in weighing up the various principles – there is a need for particular vigilance that quantitative evidence does not dominate the process.

## **5.5 Consultation with key stakeholders and the public**

Public values are an important aspect of the proposed prioritisation process. They are relevant in relation to:

- the choice of principles and the way in which those principles are weighted. For example, how important is cost-effectiveness relative to effectiveness; how will changes which improve cost-effectiveness be traded-off against public acceptability?
- measures of effectiveness. In relation to qualitative approaches, consultation is required about definitions of health and independence, and about the weight that should be given to any non-health outcomes. In relation to QALYs, the choice of dimensions of health and independence benefit represents an important set of values. Public opinion also needs to be elicited about the relative values of QALYs to different groups of individuals: is a QALY a QALY regardless of the age, stage in the life cycle, or health and independence status of the individuals receiving the service?
- the choice of which services are to be analysed and which are not
- acceptability and the final resource allocation choices which are actually made. This is particularly important because the principles may be interpreted and operationalised in

many different ways: in order to gain the transparency desired by the HFA, the public needs to be involved in this stage of the process.

The HFA's documents are not particularly clear about how patients and the public are to be involved in priority setting. Because involving the public in priority setting in relation to health care and disability support services is a relatively new idea the HFA will need to trial different methods of public consultation. The NHC experiences of public consultation, including citizens' juries, should be explored further. The Central Regional Health Authority had some work done on this issue and we recommend that the HFA consider this further (McKinlay Douglas 1997). There is also a body of literature from the United Kingdom which discusses the issue in some depth (Bowling 1993; Bowling 1996; Donovan and Coast 1996; Lenaghan *et al.* 1996; Toth 1996).

Similarly the HFA is not very clear about the role that health and disability providers and other stakeholders will play in the prioritisation process. We believe that the need to consider interventions and 'kinds of patients' requires that health and disability providers be involved at all stages of the prioritisation process: without this involvement, the HFA will find it extremely difficult to make the resource allocation decisions which will improve allocative efficiency. Some attention may therefore need to be paid to informing, in depth, the public, as well as health and disability providers, about the proposed process, and to improving knowledge and understanding of broad issues involved in determining priorities and specific issues in making particular decisions.

Of particular importance will be that the HFA documents clearly the information sources used in prioritisation and the decisions which are made as part of the process. Public scrutiny and discussion of the way in which the principles are interpreted will go some way to ensuring that the goals of explicitness and transparency can be met. Some monitoring and audit of the way in which the process is implemented can then be undertaken, perhaps by the NHC.

## **5.6 The interface between health and disability support sector and other sectors' decisions**

Significant gains in health and independence are achieved by policies and influences outside the health care and disability support sector. Arguably, the issues regarding allocative efficiency with which the HFA process is primarily concerned also apply to allocative decisions being made at the broader fiscal level. Ideally, evaluation of health care and disability support

sector projects would also facilitate comparison alongside non-health and disability support sector policies and options.

One drawback of CUA is its inability to facilitate this broader assessment of 'value for money' across competing fiscal domains. Leaving aside the other issues raised throughout this report with regards to potential shortcomings of CUA as a prioritisation tool (i.e. assuming these issues could be resolved and an 'ideal' ranking of projects within the publicly-funded health and disability support services achieved) the enormous investment of time and resources required to achieve this end will still not enable the Government to answer obvious questions such as: does the last \$1m spent on health care or disability support represent better or worse value for money compared to spending that same money on education, social welfare, land transport safety, housing, etc.? The opportunity costs that exist at the margin in spending either more or less on health care and disability support will remain unknown, because the principal outputs of those competing programmes cannot be expressed in terms of QALYs. This problem is not insurmountable: the amount which the HFA spends per QALY on that service which is purchased last from its budget (which, all other things equal, will represent the highest cost per QALY of the bundle of services purchased) might be considered to represent the marginal value of that QALY. That information could form the basis of a cross-sectoral evaluation.

The key issue here is that the Government should be concerned that the allocation of resources is right not just within one Vote but across competing Votes. The use of different prioritisation approaches in different domains in itself gives rise to the potential for bias and misallocation. As an example of this, consider the methods currently used by the Land Transport Safety Authority (LTSA) to appraise their projects. This is particularly relevant, since a principal objective of LTSA is the avoidance of injury and premature mortality i.e. health and disability related outcomes. The LTSA does not use CUA, but rather Cost Benefit Analysis (CBA) where a monetary valuation is placed upon all outcomes. In the case of premature death, each death averted by a road safety programme is valued at \$1.9m (1991 prices) regardless of the quality of that life or the number of years of life gained by averting that death.

## 6 Conclusions

We strongly support the general objective of the HFA to put into place a method of prioritising health and disability services which challenges thinking about services and their goals, and which is systematic, explicit, and transparent. We endorse the general principle-based approach of the proposed process, including the use of PBMA and, where appropriate, also CUA. It is our view that, subject to the caveats expressed throughout this report, the shift towards ‘thinking at the margin’ and systematically reviewing value for money of competing claims on resources is likely to improve the quality of decision making compared to the status quo. This does not imply, however, that prioritisation can, or should, be undertaken by means of any simple formula. Any prioritisation process should always be guided by informed judgement.

The particular concerns that we have about the proposed process and the use of CUA are about the ways in which the principles are interpreted in practice; the tools which are used to determine quantitative measures of effectiveness; the importance of outcomes which cannot or are not captured by CUA; the lack of appropriate effectiveness, cost and other information for many services; the lack of clarity about how decision-making by the HFA links in with decisions at other levels of the system; and the likely cost of the process itself and whether it will result in decisions which are different to those taken currently. Furthermore, although PBMA at some points appears to be a key part of the proposed process, it also often vanishes and the details of how the process will work in practice remain unclear to us.

These concerns suggest there may be enormous technical pitfalls in implementing the process robustly – and in ways which do not allow gaming. A defensible prioritisation process requires a high level of skill and a reasonably consistent application of the principles and the CUA methodology. Because we believe the HFA will need to consider interventions and treatments *within* services, we believe the key to success lies in careful management of the interface between the HFA and providers. This includes involving health and disability support providers in the PBMA process and developing contracts which embody incentives for health and disability support providers to practice effectively and efficiently.

The HFA also has a careful balancing act to perform in choosing services for analysis and ensuring decisions which are taken are generally acceptable. Thus, in the same way as the HFA needs to develop good relationships with health and disability support providers, it will also have to develop ongoing relationships with communities. Without the involvement of

these stakeholders, we believe the HFA will have a difficult time in undertaking analyses and in implementing the results of the prioritisation process.

Our overall conclusion is that the HFA should proceed carefully and explicitly and openly pilot the proposed process. We believe that pilot studies should involve analysing services which are likely to: allow for the testing of instruments, consider how the principles might be interpreted in practice, and raise issues of how public acceptability, for example, might be established. Examples might include palliative care, a ‘public good’-type public health service and infertility services.

We also believe that it is important for the HFA to document, monitor and evaluate the process systematically and carefully. This will provide greater transparency about the way in which the process is implemented in practice. Measures of success for the process should be devised, which might include: that the process successfully challenges thinking about the services which are delivered, encouraging service managers, health and disability providers and others to think hard and to justify the services purchased; that this challenging occurs more than has occurred in the past; that decisions which are made as a result of the new process are sufficiently different from those made in the past; and that the costs of the process itself – including CUA – are not perceived as significantly high for the benefits gained. The NHC too should have an on-going interest in how the process is developing, and in ensuring that explicitness and transparency are indeed obtained.

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## Glossary of Terms<sup>20</sup>

**Allocative efficiency:** Where outputs are not only produced in a manner that is technically and cost-efficient, but are also produced in quantities that are optimal given the opportunity cost of their production. See also **Production efficiency**.

**Average cost:** For any given level of output, the total cost of producing that level of output divided by the number of units of output produced.

**Cost-effectiveness:** This term may be used either in a generic sense, to describe decisions which represent technically- and cost-efficient uses of resources, or to refer specifically to a method of economic evaluation which weighs up the costs of a health intervention with its outcomes, described as some index of outputs (for example, ‘number of lives saved’, ‘number of pain-free days’ or ‘number of QALYs gained’). Cost-Utility Analysis (CUA) may be thought of as one form of cost-effectiveness analysis. See also **CUA**.

**Cost-utility analysis (CUA):** A method of economic evaluation which weighs up the cost of the health intervention and its outcomes, where those outcomes are measured as the number of Quality Adjusted Life Years (QALYs) (or similar, such as Healthy Year Equivalent) gained as a result of that intervention. No monetary value is placed on the outcomes described in this manner. The results of CUA may be expressed either in terms of ‘cost per QALY gained’ (where the options that are most desirable have the *lowest* cost per QALY gained) or in terms of ‘QALYs gained per dollar spent’ (where the options that are most desirable have the *highest* QALYs gained per dollar spent). See also **QALYs**.

**Diminishing returns:** The ‘law of diminishing returns’ states that the addition of successive units of a particular input (in this case, a particular health service) will eventually result in smaller *increases* in total output (in this case, health status improvements) i.e. that the increases in output that result from each added unit of input will decline beyond a point, holding all other factors constant.

**Economies of scale:** These are said to exist where an increase in the scale of production by a provider-unit (for example, a hospital or clinic) results in a lower average (or ‘unit’) cost per unit of output produced. See also **Average cost**.

**Economies of scope:** these are said to exist where a number of different goods or services can be more efficiently produced together than by separate firms.

**EuroQol:** The EuroQol instrument (the ‘EQ-5D’) describes health states in terms of 5 dimensions (mobility, self-care, usual activities, pain/discomfort, anxiety/depression) with 3 levels within each (e.g. 1 = no pain/discomfort, 2 = moderate pain/discomfort, 3 = severe pain/discomfort). This gives 243 possible health states, to which unconscious and dead are added to give 245. The EuroQol is one of a number of instruments which is available to measure the value people place on various health states, including the QLHQ, QWB and HUI (see section 3.2.1 (a) of this report for discussion). See also **HUI**.

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<sup>20</sup> This glossary draws upon a number of sources, including Culyer, A.J. *A glossary of the more common terms encountered in health economics*, University of York, and a number of the papers and books referred to throughout this report and listed in the References section.

**Health Utilities Index (HUI):** A health state classification system which describes health states in terms of a number of different dimensions and levels within each. There are a number of different versions of the HUI. ‘HUI3’, for example, includes dimensions for: vision (6 levels), hearing (6 levels), speech (5 levels), ambulation (6 levels), dexterity (6 levels), emotion (5 levels) cognition (6 levels), and pain (5 levels). The HUI is one of a number of instruments which is available to measure the value people place on various health states, including the QLHQ, QWB and EuroQol (see section 3.2.1 (a) of this report for discussion). See also **EuroQol**.

**Margin/Marginal/Marginal Analysis:** The change in the “total” resulting from a small change in a given variable, e.g. “marginal cost” refers to the change in total cost resulting from the production of one more (or one less) unit of output, “marginal benefit” refers to the change to total benefit resulting from the consumption of one more (or one less) unit of output, and “marginal analysis” refers to the comparison of marginal cost and marginal benefit from one more (or one less) unit of the good produced/consumed. See also **Marginal Cost**.

**Marginal cost:** The *change* in total cost associated with the production of the last unit of a good or service produced.

**Priority setting:** Given a finite level of funding and potential claims on those resources which exceed those funds, priority setting describes the *process* which agencies such as the Health Funding Authority use to determine what services should be given priority over others.

**Production efficiency:**

**Technical efficiency:** where a given output is produced without using any more inputs than is necessary.

**Cost-efficiency:** where a given output is produced using the least-cost technically efficient combination of inputs.

**Quality-adjusted life-years (QALYs):** QALYs comprise two elements: length of life, and quality of life. The gains in QALYs resulting from a health care programme are described in terms of changes to length of life and/or changes to quality of life. For example, a 60 year old with severe arthritis might have an expected length of life of 20 years, but each of those years of life is lived in such pain and disability that each is valued at only 0.5 of a year of normal health i.e. the individual’s quality-adjusted life-expectancy is 10 years. Following a hip-replacement, the individual’s life-expectancy remains unaltered, but they may now attain a quality of life equivalent to 0.9 of a year of normal life. Following treatment, the individual’s quality-adjusted life expectancy is 18 QALYs (20 years at 0.9);  $(18-10) = 8$  QALYs have been gained as a result of treatment. The estimation of QALYs hangs crucially upon the values attached to quality of life. These are generated using a number of instruments developed for this purpose - see also **HUI** and **EuroQol**.

**Rationing:** Given finite resources and potential claims on those resources which exceed those funds, rationing is the term used to describe decisions which, by implication, mean that the decision to fund some services occurs at the expense of others i.e: every decision to purchase a particular health or disability service has an opportunity cost - the benefit that might have been derived from the next best alternative use of those resources.

**Resource allocation:** The particular allocation or ‘share’ of resources (in this instance, Health Funding Authority funds) over each of the full set of health and disability services resulting from actual or proposed Health Funding Authority purchasing decisions.

**Service:** a group of interventions, treatments or care, delivered to a particular population group or aimed towards a similar health goal. For example, a maternity service includes ante-natal, birth and post-natal interventions (such as ante-natal classes, ultrasound scanning, blood pressure checks; hospital hotel care; midwife delivery care; nappy services; breast-feeding advice etc); a mental health service includes psychiatric assessment; drug treatment with specific medications; hospital hotel care and physical and mental health support (psychiatric and other counselling, day activities).