

NICE Citizens Council meeting

**How should NICE assess future
costs and health benefits?**

3rd – 4th November 2011

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NICE Citizens Council 2012

How should NICE assess future costs and health benefits?

The Citizens Council provides a public perspective on a range of challenging issues encountered by NICE. The Council met on 3-4 November 2011 to discuss “How should NICE assess future costs and health benefits?”. This meeting explored the issue of discounting, which is the way in which economists calculate and value the costs and health benefits that occur in the future. This resulting report reflects the Council’s agreed perspective and has been presented to the Board of NICE. The Council’s recommendations and conclusions will be taken into account when the Institute develops its processes and methods for producing guidance, including the Social Value Judgements document.

What we were asked to consider

Should immediate costs and health benefits be treated differently from those that occur in the future?

What factors should NICE advisory committees take into account when considering how to assess costs and health benefits that occur in the future?

The conclusions we reached

A majority agreed that discounting is a legitimate feature of the calculation of future costs and benefits.

Most of us accepted the relevance to health, in principle, of the three factors used to arrive at the discount rate (“catastrophe risk”, “economic growth” and “time preference”). But a good many of us had reservations about the suitability of the Treasury’s standard two per cent figure for economic growth, particularly in the light of the current state of global markets.

However we also felt that there is a case for treating costs and benefits of health differently. With respect to benefits, most of us agreed that there are occasions when NICE should depart from its current discounting policy - which is to apply a 3.5 per cent discount rate for costs and benefits in line with all public bodies. Although we were reluctant to compile a definitive list of the relevant factors, those that received a mention included interventions where costs were mostly up front but where benefits would be accrued over a long time in the future, those that yielded a very high QALY benefit or a total cure, and (rather less unanimously) those that involved the treatment of children. We felt that the question of which discount rate to use in which circumstances was beyond our competence, but that in practice it would be up to the committee to decide as they would know when it is appropriate. We were also aware that there is a health economic argument that suggests that this approach would have implications for the threshold range.

One issue that surprised and puzzled us was the effect of discounting when the costs of an intervention are borne in its earliest stages, but the benefits accrue over many years or even decades: the case with most preventive and public health projects. We felt that the benefit of these interventions could be undervalued. We were told that, in practice, this is seldom a handicap because most public health measures are so cheap and/or cost effective that the negative effects of discounting are only a minor influence on the final calculation. However, given that the saying “Prevention is better than cure” is a piece of folk wisdom acknowledged by public and professionals alike, it seems odd that health economists should employ a methodology offering such a paradoxical outcome where treatment is valued over prevention. Should circumstances arise in which a particular public health measure is disadvantaged by standard discounting, we would recommend that NICE take whatever measures were necessary to achieve a commonsense conclusion. Finally, we thought creatively about how discounting might be seen by different age groups in society. It seemed that, depending on whether the discount rate used could potentially favour a given group rather than another, views on the usefulness of discounting were likely to change accordingly.

How we worked

Thirty one members of our Council were able to attend the meeting, which was held on November 3 & 4 at NICE headquarters in London. The day began with a brief introduction to the topic, an explanation from NICE of why it was seeking our ideas, and an overview of the social and ethical case for and against discounting. We broke into two groups for a preliminary discussion of our understanding of discounting and the role it plays not just in this context but in everyday life.

In the afternoon we first took part in an exercise designed to assess our own “time preferences” – a key component of discounting. We then heard two different and conflicting accounts of the rationale of discount percentages and how they are set. The day finished with a feedback session on the outcome of our own time preference assessments, and an initial discussion of the questions that NICE had set us.

On day two we were led through a mock appraisal of a fictional drug based on a real anti-cancer medicine: one which had originally focussed NICE’s attention on the discounting issues that were now the topic of our meeting. Working in small groups we began to think through our views of the necessity or otherwise of discounting, and whether the percentage currently in use is the most appropriate. The meeting finished with a final discussion and an attempt to write and/or design press releases, posters and other messages encapsulating a response to some consequence of discounting as it might be viewed by different community interest groups.

All sub-group deliberations were followed by feedback sessions and a general discussion, and we had the opportunity to question the NICE staff and outside experts who came to talk to us.

What we did and what we heard

In his opening welcome NICE chairman Professor Sir Michael Rawlins admitted that the issue before us was one of the most technical - and as such among the most challenging - ever put to the Council. A subsequent show of hands revealed that none of us, at this stage, felt we had a complete grasp of the concept. Clearly we had much learning to do. One of us compared discounting with the planning of our personal finances. Someone else pointed out that as discounting in NICE calculations affected peoples' health and lives; the stakes were far higher.

Following a short discussion among ourselves on what we felt to be the most important questions we had our first presentation. This was given by Professor Peter Littlejohns, clinical and public health director of NICE. He reiterated the difficulty of what we were taking on, and warned us (correctly, as it turned out) that we might not all agree on everything.

He began by reminding us of the role of the Council in shaping NICE's Social Value Judgments document, and quoted a paragraph which emphasises that NICE decisions cannot be based on relative costs and benefits alone. NICE has to consider other factors when developing guidance, "including the need to distribute health resources in the fairest way within society as a whole". He went on to explain the concept of time preference: in essence, the extent to which most of us prefer to have something now rather than at some point in the future. This preference is one of the factors that creates the need for discounting when trying to assess the value of future costs and benefits. Health economists themselves differ over the discount rates that should be used, whether health costs and health benefits should be subject to the same rates as each other and as other non-health costs and benefits, and whether the same discount should be applied over long period of time.

Ethical and social questions

Our second presentation was from Albert Weale, professor of political science at University College, London. Pointing out that discounting raised all sorts of ethical and social dilemmas, he described this as a topic on which even the most thoughtful people have found themselves favouring different sides. In line with the Treasury's Green Book¹, he said, NICE appraisals use a discount figure of 3.5 per cent. (We were to hear more of this later on from a Treasury economist). He then explained the principles and the logic of discounting, pointing out that there can be good reasons for doing it.

The first element of the total 3.5 per cent discount rate relates to 'time preferences'. Most of us have what is called "time preference": an instinctive desire to have an asset of any kind now rather at some point in the future. We may be uncertain about that future, or feel we may not be in a position to enjoy the asset as much then as we would if we had it now. The Treasury has put a numerical value on how much less things are valued if they happen in the future, rating it as 0.5 per cent – which begs the question of whether

¹ In the UK, Her Majesty's Treasury produces a 'Green Book'. This contains guidance for government, setting out a framework for the appraisal and evaluation of all policies, programmes and projects

governments should reflect our instincts even when they are irrational, or lead by refusing to bow to them.

The second component of the 3.5 per cent figure is 1.0 per cent for what is misleadingly called “c”, but simply represents the uncertainty over, for example, the advent of a new technology that might make an existing one redundant, so wiping out the value of the investment that had gone into it. The third component, rated at 2 per cent, is the consequence of our expectation of a continually rising standard of living. The thinking is that over time society gets richer and the more goods we have the lower the value we attach to any one of them. But does this apply to health care? One line of thought suggests it does, especially if you distinguish between commodities and the benefits those commodities confer. Headache tablets (the commodity) bring about a reduction in headache (the benefit). To discount the value of the commodity itself is not necessarily to discount the value of the benefit it confers.

In reaching its decisions NICE aims to get the maximum health gain, measured in Quality Adjusted Life Years (QALYs). A gain of one QALY is treated equally across populations regardless as to who is receiving it. But some commentators argue that the system should take into consideration the time in life at which these benefits are conferred – in childhood, for example.

Professor Weale left us with some questions of social value on which to reflect.

- Should we discount the commodities, but not the benefits those commodities bring?
- Should we discount benefits at all and, if so, why?
- How important is the fact of pure time preference? Should governments work with or against it?
- To what extent can we separate these questions from questions about health gains at different points in the life cycle?

First thoughts

At this point we broke into two groups to discuss the concept of discounting and whether it should be applied to health at all. The subsequent feedback session revealed a deep scepticism about the justification for some of the figures currently used, not least the assumption of a two per cent growth in the economy. If what we are currently experiencing turns out to be a blip, all that can be said at the moment is that it does not feel like it. At this early point in the meeting we were also doubtful whether discounting can be appropriately applied to health in the way it is to most other commodities. And applying any discounting process to resource allocation makes it more complex and so less transparent to those trying to understand the logic of decision-making.

One of our difficulties at this stage was to grasp how big an effect different discount rates might have on the decisions that NICE has to make. On this point Professor Littlejohns explained that he and his colleagues had felt it was important for us to understand the nature of discounting and the issues it

raises before we explored its effects in specific instances. This we would be doing later.

Measuring time preference

The afternoon began with a practical exercise in which we measured our own time preferences. It was organised by Dr Marjon van der Pol of the Health Economics Research Unit at Aberdeen University. The measurement of time preferences is important not only, as here, for use in economic evaluations, but for trying to understand hazardous health behaviours such as smoking. Thus smokers who are more present-oriented than future-oriented are less likely to give up. Their desire for present satisfaction outweighs their desire for future health.

Measuring time preferences is not easy, but it can be done. The findings show that people vary widely in their preferences, and that preferences themselves vary according to the context. To experience how these measurements are carried out in practice Dr van der Pol gave us four tick-box questionnaires to complete (see her slide set) on money and health (QALYs). Later on in the afternoon she would return to tell us where we ourselves stood on the issue of time preference.

Two views on the correct rate

Our next presentation was given by Joseph Lowe, head of the economics branch in the Treasury's Public Spending Group. He gave us further details of the Green Book's now familiar three components that go to make up the 3.5 per cent social discount rate. The figures, he pointed out, might seem rather arbitrary, and indeed they do not represent "absolute truths". But their selection had followed years of debate among economists. They were in routine use across a wide variety of sectors, and did make it possible to compare spending options across sectors with different patterns of costs and benefit. However, his view was that health should not be viewed like other commodities, so should not have the 2 per cent component associated with a continually rising standard of living applied, resulting in his thinking that a 1.5 per cent discount rate should be applied to (health) benefits, while maintaining the 3.5 per cent discount rate for costs.

Joseph Lowe was followed by Karl Claxton of the Centre for Health Economics at the University of York. He likened appearing in front of the Council to combat experience - and by the end of what was to be a rigorous examination of the rationale of discounting and the setting of appropriate rates, many of us shared that feeling. He argued that while economics might seem a rather arid affair, social values and choices lay at its core. This, he told us, is what first attracted him to the discipline. Facts and reasoning are key components of economics. But they do not dictate values; they follow them.

He began by reminding us of the rationale for discounting health (or any other) costs. He then demonstrated that while discounting future health gains in the way that we do with money and resources may not make intuitive sense, logically and mathematically it does. The NHS, he went on, is an

elaborate machine for turning resources into health. So, if it's sensible to discount NHS costs, it must also be sensible to discount health gains because, ultimately, they are the same thing. But...what rate of discount should be used?

This, we found, was where the going got tough. Karl Claxton's starting point was to pose a question: is the NHS for promoting health or consumption²? If you aim to maximise health you must accept a consequent reduction in the consumption value of the national budget. Likewise if you want to maximise consumption you have to accept reduced health. His reasoning lies beyond the scope of this report, but his preference is for a discount percentage of 1.5 rather than 3.5 per cent, and his key message was that, whatever the rate, both costs and benefits should be discounted at equal rates, which was different to Joseph Lowe's view.

His contentions are that the NHS exists to maximise health rather than consumption, that the government can borrow at 1.5 per cent or lower, that the NICE threshold figure starting at £20,000 is unlikely to increase given the economic climate, but that the consumption value of health will grow at around 1 per cent. He highlighted that the only reason to discount health and NHS costs differently is if you think the threshold is going to grow. All the reasons for discounting health benefits at a lower rate apply equally to NHS costs. He said that is not a question of social values or opinion but one of reason that cannot be escaped.

Our own time preferences

At this point Marjon van der Pol returned to the microphone to give us the results of the time preference exercise we had completed earlier. She began by demonstrating how the discount rate is calculated and how the questionnaire might be completed by a present-oriented subject and another who was future-oriented. She then presented us with our results (see slide). We were, she said, "quite an impatient bunch". The main findings were that our average discount rate for money is higher than that for health, and that a majority of us place a higher value on health one year from now than on health further into the future. Or to put it another way, we want our money now, but take a longer term view of our health.

We also learned that our views were broadly in line with research findings reported in the literature. That is: most individuals' time preference rates for health are greater than zero; and that most individuals' time preference rates decline with the period of delay in question. Our broader view would appear to be that future health should be discounted, and that the use of decreasing discount rates should be considered where long delays are involved.

² Consumption is the term economists use for the total value of goods and services bought by people. It is important because it is normally the largest component of Gross Domestic Product. The economic performance of a country is judged mainly in terms of consumption levels and dynamics.

Experience has demonstrated that time preferences do not remain stable throughout our lives. They change as we get older and if we get ill, for example.

Further thoughts on discounting

Following small group discussions we reconvened to share our thoughts. The first group found discounting a very technical subject and admitted difficulty in getting to grips with it. This was especially so with the three components of the social discount rate. They viewed the evidence underpinning the level at which these had been set as less than compelling. The disagreement about using different discounting rates for cost and health benefits between the two economists from whom we had heard did not make matters any easier. And it remained hard to fathom the rationale for the alternative discount levels. Indeed, given the world in which we live, it might make more sense to raise the catastrophe discount rate to 2 per cent, and lower the growth component to one per cent!

The group was well aware that NICE has to make difficult decisions and, that spending on one thing means that the money can't be spent on something else. If the cost of a technology relative to its benefits over other options puts it above the threshold range it cannot be regarded as cost-effective, so a decision about discount rates, which impact on the calculations, may have an impact on NICE appraisals. But the members of the group were still not entirely certain about the consequences of a 1.5 as opposed to a 3.5 per cent or some other discount rate.

The time preference exercise had taught us all that we are inclined to want things now. But governments shouldn't necessarily make policy decisions, especially in health, that simply follow what we might do in our private lives. Governments should be paying more attention than we might as individuals to the future and to future generations.

The second group said they agreed with much of what had already been reported by their fellow members. It had become clearer that the discount rate is based partly on facts, figures and logic, but partly also on judgements and politics. The afternoon's presentations had been a powerful reminder that every investment decision taken can displace a different investment option because there is a fixed budget. The findings of the time preference study had raised the issue not only of the rate at which the discount should be set, but whether it should be the same for the entire period in question.

The group had had a long discussion about the impact of peoples' life stage on their attitude to time preference. One member had said that now he was older he tended to want things sooner than when he was younger. This raised an intriguing question about the people who actually set the discount rate; what life stage were they at? How widely had they consulted?

The group felt there was a big difference between discussing matters in the abstract (as we had been asked to do) and sitting in an appraisal committee making particular decisions about real issues. They also wondered if the

discount rate had always been 3.5 per cent, whether some other rate had been used at times in the past, and why they were being asked to consider the rate at this particular time.

Peter Littlejohns rounded off the day by answering questions - beginning with why the meeting was tackling the issue of discounting right now. He explained that NICE had never really had to confront the matter until it came up during one particular appraisal - which, in disguised form, would be the subject of the next day's presentation. It was this event that had prompted NICE to seek the views of the Citizens' Council on matters such as the level of the discount rate, and whether it should be altered in certain circumstances.

In response to a question about the scale of the impact of a change to the discount rate used by NICE, Professor Littlejohns was reassuring. In most cases, he said, it wouldn't make a great deal of difference. But in specific instances such as life-saving drugs for children it could in theory have an impact because of the anticipated long length of life to be lived. One member quoted a friend who'd suggested that NICE shouldn't waste money on old people. This comment was not well-received by all members of the Council.

Another of us wondered what would happen if no discount was applied. Professor Littlejohns accepted that it would make the calculations more straightforward, but it could have profound implications. It would also be difficult, he added, to ignore the guidance of the Treasury.

A mock appraisal

Day two of our meeting began with a mock appraisal: an attempt to give us a feel of what it's like to sit on one of the committees that produce NICE guidance. The exercise was led by someone with firsthand experience; besides being a consultant radiologist, Dr Jane Adam also chairs a NICE appraisal committee.

Pancuramab is a fictional drug for the treatment of a real fatal condition, paediatric polyarteritis nodosa³. The condition is rare - about 50 patients per year - and this is the first new treatment for 20 years. The drug has no other known uses. When given to children (at an average age of 13) it is curative in about 77 per cent of cases. This represents a seven per cent increase on the existing treatment. And with the new drug, patients live for 60+ years. Should NICE issue guidance that it is a cost effective use of money and should therefore be freely available on the NHS?

Dr Adam went on to remind us how NICE uses QALYs (quality adjusted life years) to measure the benefits conferred by a drug. Combined with a knowledge of the price of the treatment it is possible to work out the cost/QALY gained through using it. Below a figure of £20,000/QALY NICE reckons an intervention is cost effective. In the range £20-30,000 it *may* be felt cost

³ This is a progressive disease of connective tissue that is characterized by nodules along arteries; nodules may block the artery and result in inadequate circulation to the particular area.

effective, subject to scrutiny. Above £30,000 an intervention will need some strong justification if it is to be accepted.

The cost/QALY of Pancuramab is £57,000 - well above the threshold range. But that's using the standard 3.5 per cent discount rate to perform the benefit calculation. Drop the discount figure to zero per cent and the cost/QALY is just £24,000. This big difference emerges because while the costs of Pancuramab are all incurred in the early phase of the disease, the benefits last a lifetime - during which they are progressively discounted.

The Methods Guide that NICE committees follow recognises that there are circumstances (as here) where a different discount rate for benefits will make a marked difference. But paragraphs 5.6.1 and 5.6.2 of its June 2008 edition (see slide) offered contradictory instructions. Was a committee entitled or not to use a different discount rate? An actual committee making an appraisal on which the Pancuramab example was based (a childhood anti-cancer drug) found itself deeply conflicted over the issue (again, see slide). Indeed interpretation of the guidance on discounting was so crucial to the decision that, although it decided to reject the treatment, the discounting issue was referred to the NICE Board.

At this point in our meeting it was suggested that we have a show of hands on the question of whether or not to accept the drug. Unlike the committee a significant majority of us would have accepted it.

The NICE Board's response to the appraisal committee's predicament related to how to interpret the discounting guidance by issuing a clarification to the Methods Guide (see slide) that allowed a figure of 1.5 per cent (the benefit discount rate recommended by the Treasury prior to 2004) to be used in circumstances where treatment benefits are substantial and sustained. In the original (anti-cancer drug) case, applying the 1.5 per cent rate gave a cost/QALY figure of £36,000. This was still above the £20 - 30,000 threshold range. But having taken account of guidance in the NICE social values judgement document the committee decided to change its original decision and allowed the new drug.

The presentation complete we were able to discuss its implications with Dr Adam and Professor Littlejohns. One member pointed out that while we know what benefits a decision to accept a new drug will confer, we cannot know what other benefits of using other drugs to treat other conditions will consequently be lost. Another of us suggested factoring into cost benefit calculations the possibility of a new drug having additional but as yet unrecognised benefits in other illnesses. This might turn "near miss" drugs into hits.

A third member wanted to know if NICE had the right to alter the discount percentage it uses. Professor Littlejohns suggested that while Treasury figures were for "guidance", and NICE is independent, it would have to have pretty good reasons to make regular departures from Treasury recommendations. Other topics that prompted questions and/or discussion

included: the extent to which cases like this are exceptional; the time course of the real life appraisal and the controversy generated by it; the special consideration given to drugs for very rare diseases; the role of the drug companies; and the danger of setting expensive precedents.

Recap and more discussion

The final presentation of the meeting came from Dr Bhash Naidoo, NICE associate director of research and development. He began by reminding us about the nature of time preference and its implications and consequences. He went on to emphasise that the criteria people use when making their own decisions about consumption are not necessarily those they wish governments to use when making decisions on behalf of society. People demonstrate less time trade-off when acting collectively.

In health, he said, discounting tends to favour shorter over longer term benefits - and this discriminates against preventive and other public health programmes. He offered the example of cycle paths: high capital cost incurred now, but with gains lasting a lifetime and even accruing to future generations. Vaccination falls foul of the same trap: costs are incurred now, but benefits lie in the (sometimes distant) future. With reference to future generations he posed this rhetorical question. "Is a policy for allocating resources for benefits over time which automatically value the current generation higher than future generations fair?"

In short, discounting tends to "downgrade" public health benefits - so the tendency is to spend more on treatment than on prevention. The advent of yet more expensive drugs is likely to squeeze public health budgets still further. Yet without prevention, treatment costs will never fall.

The discussion period that followed Bhash Naidoo's presentation began with one of us quoting the familiar saying that prevention is better than cure. How much influence does NICE have over spending on prevention through public health, she asked. The answer was that health authorities⁴ are not obliged to act on NICE public health recommendations. There is no guarantee of funding for its proposals.

This prompted one of our members to suggest that a full review of discounting might be necessary. It seemed to her that if the use of a discount automatically militates against preventive medicine we were being driven down the wrong track. While preventive medicine offers big savings in the long run, these don't seem to show up in the figures. Something seems to be wrong. She was also uncomfortable with the use of the 3.5 per cent figure, especially when applied to public health matters. Dr Naidoo explained that many public health interventions are so cost-effective that in practice the

⁴ The Health and Social Care Act 2012 abolishes primary care trusts (PCTs), the health authorities responsible locally for public health and NHS-based disease prevention. In April 2013, local authorities take over responsibility for public health, and clinical commissioning groups (CCGs) led by GPs will commission NHS-based disease prevention. Like the outgoing PCTs, local authorities and CCGs will not be obliged to act on NICE's public health recommendations.

discount rate didn't make much difference. These interventions may come out as little as a few hundred pounds/QALY - way below the NICE threshold starting range of £20,000.

Peter Littlejohns reminded us that earlier on we ourselves had backed a very expensive drug treatment. This, he said, would have to be paid for, and perhaps out of funds that might otherwise have gone to...public health! A telling reminder to us that that these dilemmas only arise because budgets are finite.

One member said he believed that children should be treated as special cases. He said he'd put more value on the welfare of a child than someone of 80. An 80 year old will be using society's resources whereas a child has the future potential to contribute to those resources. His view was not universally shared. As someone else commented, an 80 year old has already contributed to society, and deserves to get something back. Moreover it may be that the older person is caring for someone even older, or for their grandchildren or even their own children. From a social accounting point of view they may actually be saving the NHS money and resources.

Another suggestion was that it might be fairer not have a set discount, but to fix the rate on a case by case basis; discount rates should be applied in a bespoke fashion with details shown of the categories of the discounts agreed, and the reasons why, rather than using one blanket figure. But someone else doubted the practicality of doing this, pointing out that such an operation would require a big and expensive bureaucratic machine. Alternatively a middle road might lie in listing the criteria - a treatment leading to cure, for example - that could be used to define cases meriting a different discount rate.

Question time

The final event of the morning was an *Any Questions* session with some of the day's speakers, Dr Jane Adams, Prof. Peter Littlejohns and Dr Bhash Naidoo, plus Mirella Marlow, the NICE programme director for Devices & Diagnostics, forming the panel.

The session began with a brief exploration of how appraisal committees work in practice, given that even the revised version of the NICE Methods Guide cannot be totally prescriptive about when to alter the discount rate. The intention, we were told, is for committees to tease out the really important issues as early as possible in the process. Preparing a bespoke discount rate for every assessment would make it harder to explain to stakeholders how decisions had been reached.

One of our members suggested a sliding scale of discounts rather than set figures to be altered in particular circumstances. The panel felt that this would compound the problem rather than simplifying it. But, that said, NICE's processes were under continual scrutiny by NICE itself and its external advisors, and did evolve over time.

Someone else wondered if appraisal committees could use previous decisions as a precedent, rather as happens in the legal system. We heard that to some extent this “case law” approach does operate, at least in NICE’s appeal system. But this must not over-ride the need to consider each application to an appraisal committee on its merits.

On the issue of drug company pricing we were told that NICE has no say. But it can discuss arrangements that reduce the cost to the NHS so long as the NHS price remains the same. The present arrangements will change anyway when value-based pricing is introduced into the NHS.

One of us asked how other health care systems around the world tackled discounting. But as most countries do not use cost-effectiveness to make decisions, the issue of discounting does not arise.

On the “catastrophe” discount rate one member asked if NICE knows what new treatment developments are in the pipeline, and might therefore be able to take account of them. The panel told us that NICE does sometimes know what developments are imminent - but committees can only take account of the evidence in front of them. NICE might of course wish to delay an appraisal if it knew that new and relevant evidence would become available in the very near future.

Finally we learned that while appraisal committees aim for a consensus, they may have to settle for a majority decision. The panel emphasised that the case we had discussed earlier in the morning was exceptional because it featured a rare disease of childhood, a curative drug with high upfront costs, benefits that accumulated over a long time period and, consequently, circumstances under which the discount rate played an unusually decisive role. This is not typical. But it did serve to emphasise the need to think about circumstances under which standard rates might be inappropriate - and indeed whether the whole issue of discount rate setting was ripe for reconsideration.

Final thoughts and conclusions

After lunch we separated once more into two smaller groups for further discussion, with a series of questions to guide our deliberations. By way of a tantalisingly different approach to the topic, we were also asked to give some thought to a PR or advertising campaign on discounting. Each campaign was to be in support of the viewpoint of a body representing a group of stakeholders: the elderly; a children’s health charity; a public health charity; and a taxpayers’ group.

Reconvening for a final feedback session we began to get a sense of our shared views. For some of the more straightforward questions one of the groups had organised a show of hands. On the question of whether NICE should be applying discount rates at all the group voted 19 to one that it should. The single “no” vote was prompted by the uncertainty implicit in setting the figures, particularly in the light of the current state of global markets. On the second question - whether costs and benefits should be

treated the same or differently - the vote was numerically identical at 19 to one, and in favour of treating them differently. While the group was content to see the rate for costs remaining constant, there was a desire to see sufficient flexibility to allow benefit discount rates to be altered according to circumstances. One objection to this was that appraisal committees might be tempted to “move the goalposts” at will. On a vote of 18 to two the group felt that all three key components of discounting (catastrophe risk, economic growth and time preference) are relevant to health. Once again the dissenting view was motivated principally by what was seen as the impossibility of predicting future growth in the economy.

A majority of the first group agreed that there are occasions when NICE should depart from its current discounting policy – but they were reluctant to start listing those factors. They took the view that when such factors arise committees “will know what they are”. The members’ view might fairly be summarised as favouring cautious flexibility.

As with the first group, a majority of the second was in favour of discounting in some form; but one member in particular was unhappy about the bias it seemed to create against long term preventive interventions. Most members felt that specific circumstances might justify departures from the standard rate. These included interventions of relevance to children, and those where costs were mostly up front and yielded a high QALY benefit or a total cure. There was some disagreement about whether children should be included in this list.

On the elements of discounting relevant to health the group was prepared to accept the Treasury figures for catastrophes and for time preference but not for economic growth - which was viewed as currently too chaotic to pin down.

One feature of what we had heard during the meeting that had surprised many of us was the extent to which discounting can disadvantage public health measures. We had also been told that in practice this is seldom a handicap because public health measures are so cost effective that they can nonetheless jump the hurdle. That said, should instances arise in which public health is seen to suffer through discounting, we hope that NICE would confront the issue head on, and take appropriate action.

Final conclusions

A majority agreed that discounting is a legitimate feature of the calculation of future costs and benefits.

Most of us accepted the relevance to health, in principle, of the three factors used to arrive at the discount rate (“catastrophe risk”, “economic growth” and “time preference”). But a good many of us had reservations about the suitability of the Treasury’s standard two per cent figure for economic growth, particularly in the light of the current state of global markets.

However, we also felt that there is a case for treating costs and benefits of health differently. With respect to benefits, most of us agreed that there are

occasions when NICE should depart from its current discounting policy - which is to apply a 3.5 per cent discount rate for costs and benefits in line with all public bodies. Although we were reluctant to compile a definitive list of the relevant factors, those that received a mention included interventions where costs were mostly up front but where benefits would be accrued over a long time in the future, those that yielded a very high QALY benefit or a total cure, and (rather less unanimously) those that involved the treatment of children. We felt that the question of which discount rate to use in which circumstances was beyond our competence, but that in practice it would be up to the committee to decide and as they would know when it is appropriate. We were also aware that there is a health economic argument that suggests that this approach would have implications for the threshold range.

One issue that surprised and puzzled us was the effect of discounting when the costs of an intervention are borne in its earliest stages, but the benefits accrue over many years or even decades: the case with most preventive and public health projects. We felt that the benefit of these interventions could be undervalued. We were told that, in practice, this is seldom an issue because most public health measures are so cheap and/or cost effective that the negative effects of discounting are only a minor influence on the final calculation. However, given that the saying "Prevention is better than cure" is a piece of folk wisdom acknowledged by public and professionals alike, it seems odd that health economists should employ a methodology offering such a paradoxical outcome where treatment is valued over prevention. Should circumstances arise in which a particular public health measure is disadvantaged by standard discounting, we would recommend that NICE's advisory bodies should take this issue into account when reaching their conclusion.

Finally, we thought creatively about how discounting might be seen by different age groups in society. It seemed that, depending on whether the discount rate used could potentially favour a given group rather than another, views on the usefulness of discounting were likely to change accordingly.

NATIONAL INSTITUTE FOR HEALTH AND CLINICAL EXCELLENCE

Research and Development

Citizens Council 3rd – 4th November 2011

How should NICE assess future costs and health benefits?

1 Background

- 1.1 One of NICE's key functions is to assess whether the NHS should provide new treatments based on the value for money that treatments provide for patients. In order to assess the value for money of a new treatment, such as a drug, NICE analyses both the **costs** and the health **benefits** of the new treatment compared with current practice in the NHS.
- 1.2 By doing this, NICE's estimate of 'value for money' of different treatments, or different ways of improving health, shows how much extra health benefit is provided for the extra cost of that treatment. This gives a fair way of looking at how much extra health benefit a treatment provides to patients, compared to how much extra the NHS is asked to pay for it. If a treatment or way of improving health is assessed as providing good extra health benefit for the extra cost, then it is said to be 'cost effective'.
- 1.3 We all make 'value for money' or 'cost-benefit decisions' in our day to day lives. For example, it might be whether to buy a supermarket's own brand of washing-up liquid or pay more for a

leading brand name instead, if we believe that the extra cost is justified by some extra benefit that the more expensive product provides.

- 1.4 People also tend to prefer to have the benefit of items as soon as possible. If we buy something we prefer to be able to use that item, or get the benefit from it, straight away. Or if we were lucky enough to be offered £100 today, most of us would prefer to take the £100 now compared to waiting for the same £100 in a year's time instead! However what would you do if you were offered a £100 today or £200 in a year's time. Some of us might prefer the £100 now while others would be willing to wait for the £200 in a year's time.
- 1.5 Equally if we were ill we would rather feel better again in 6 months time rather than wait for a year's time. This is all an example of what economists call **'time preference'** – a fundamental assumption about human nature.
- 1.6 The technical term for addressing how to incorporate time preference into an assessment of costs and benefits is called 'discounting.' For example say the main cost of a treatment occurs in the future, then we need to calculate how much the equivalent value is today. To do this we need to adjust it by a certain amount which is called the discount rate.
- 1.7 However, in terms of health benefits (as opposed to other types of benefit such as cash or consumer goods) it is questionable whether people value the same health benefit less if they receive it in the future than they do if they receive it now. For example, if we compared taking a headache tablet which cured a headache now with taking a headache tablet in a year's time, would we value this same pain relief any less for the future headache as the one now?

- 1.8 There are on-going differences of opinion (even among health economists) including:
- What discount rates should be used;
 - Whether costs and health benefits should be discounted at the same rates, as health benefits should be treated differently from other products;
 - Whether the same discount rates should apply over very long periods of time.
- 1.9 While health economists debate what the right discount rates should be and whether they should differ between costs and health benefits; there is a more fundamental perspective about how future health benefits and costs should be assessed. People can hold different views about how they value the future that are equally legitimate and there is no “correct answer”. However when these differing views are translated into discount rates, depending on the nature and timing of the costs and health benefits, different conclusions can be reached on whether a new treatment could be considered cost effective or not.
- 1.10 This is a particular issue which NICE has recently been re-examining:
- should the immediate costs and health benefits be treated differently from those that occur in the future?

How NICE works out if a treatment is cost effective:

- 1.11 NICE presents its estimate of value for money as the ratio of the increased costs to the increased benefits to give the so called incremental cost effectiveness ratio or ICER.
- 1.12 $ICER = \frac{\text{increased costs}}{\text{increased health benefits}}$

- 1.13 The larger this number is, the less likely the treatment is to be cost-effective, and vice versa. NICE normally measures health benefit as the increase in number of years of life a new treatment provides, adjusted for the quality of life during those years (for example is the person in pain or not). This is called the quality adjusted life year or QALY. So the final description of the value of a drug is presented as the cost per QALY, for example £30,000 per QALY.
- 1.14 While this concept is relatively straight forward there are a number of issues that need to be addressed in making the calculation, particularly the matter of discounting.
- 1.15 If a treatment costs £100 today, and the discount rate is 5%, then the treatment would be valued at £95 in a year's time. **Similarly, if the benefits of the new treatment was worth 10 QALYs today, at a discount rate of 5% the benefits would be worth 9.5 QALYs if they occurred in a year's time.** By discounting the health benefits it effectively means that the benefits gained in a year's time aren't valued as much as if they are gained now. This is based on the assumption that people would rather have benefits now, rather than at some point in the future.

1.16 Consider the table below

The effect on the Cost per QALY of applying different discount rates to the benefits of a new treatment when the costs are discounted at 3.5% a year over a time period of 60 years

Annual Discount rate applied to the benefits of the new treatment (%)	Increased cost when comparing new treatment with current NHS practice - 'Incremental cost' (£)	Increased benefit when comparing new treatment with current NHS practice - 'Incremental QALY gain'	Incremental cost effectiveness ratio (ICER) – calculated by dividing increased cost (column 2) by increased benefit (column 3) (£/QALY)
0.0	70,000	2.80	25,000
1.0	68,000	2.11	32,000
2.0	67,000	1.64	41,000
3.5	66,000	1.17	56,000

In this example the costs of the new treatment are discounted at 3.5% (ie the same for all examples). If the health benefits are also discounted at 3.5% (line 4) then the ICER is £56,000 per a QALY which is much higher than NICE’s threshold range of £20-30,000 per QALY and the treatment would not be considered cost effective. If however it was felt that future health benefits should be treated the same as current health benefits, this means there would be no discounting of benefits and, in this example, the treatment would be considered cost effective. This is represented by line 1 with an annual discount rate of zero, resulting in then the cost per QALY of £25,000 which would make this treatment cost-effective. The considerations represented by this example most particularly apply to childhood immunisation, screening for disease, and the use of treatments that are effectively “cures” in children and adolescents.

- 1.17 This meeting will address these issues in more detail and the Citizens Council will be asked to respond to the question:

What factors should NICE's advisory committees take into account when considering how to assess costs and health benefits that occur in the future .

Annex 2

Citizens Council Members

The following Citizens Council members were in attendance at the meeting:

Rebecca Adewale
Oyes Ahmed
Ray Allen
Alan Bacon
Betty Barnes
Trevor Betts
Ian Darracott
Steve Durrant
Arlette Fairclough
Sally Fitton
Ivan Gee
Hilary Rock Gormley
Gay Hamilton
Margaret Hunnam
Annette James
Ronald Jobling
Ernest Kemp
Annette Lewis
Marian Lord
Gary Mayall
Sarah Monks
Jake Newall
Lynn Norman
Ann Robinson
Jane Sabin
Philip Steele
Beverley Witheridge
Martin Woodward

Annex 3
'Valuing Future Benefits' questionnaire

VALUING FUTURE BENEFITS

Choices are continually being made about which investments or projects should be undertaken, and which should not. For example, should we spend more on treating existing patients, or in medical research? One way in which investments can differ from one another is in the timing of the benefits that they produce. Some (such as, expansion of existing services) may produce benefits quickly; others (such as, medical research) may produce benefits much further in the future. In order to assist those who make such choices, we need to know more about how people value future benefits. *Your responses to the following questions will provide information about how future benefits are valued by members of the citizen council.*

There are no right or wrong answers. Different people hold different views.
We are interested in these differing views.

THANK YOU VERY MUCH FOR YOUR CO-OPERATION.

SECTION 1

Imagine that you had a choice between two options:

Option A: receiving £500 in 1 year in the future

Option B: receiving some other sum of money 3 years in the future.

For **each** of the following 8 choices please indicate whether you prefer Option A or Option B by placing a tick next to your preferred option.

Please check one box for each of the 8 choices.

Choice	Option A	Option B
1	£500 received 1 year in the future <input type="checkbox"/>	£550 received 3 years in the future <input type="checkbox"/>
2	£500 received 1 year in the future <input type="checkbox"/>	£600 received 3 years in the future <input type="checkbox"/>
3	£500 received 1 year in the future <input type="checkbox"/>	£650 received 3 years in the future <input type="checkbox"/>
4	£500 received 1 year in the future <input type="checkbox"/>	£700 received 3 years in the future <input type="checkbox"/>
5	£500 received 1 year in the future <input type="checkbox"/>	£800 received 3 years in the future <input type="checkbox"/>
6	£500 received 1 year in the future <input type="checkbox"/>	£900 received 3 years in the future <input type="checkbox"/>
7	£500 received 1 year in the future <input type="checkbox"/>	£1000 received 3 years in the future <input type="checkbox"/>
8	£500 received 1 year in the future <input type="checkbox"/>	£1200 received 3 years in the future <input type="checkbox"/>

SECTION 2

Imagine that you had a choice between two options:

Option A: receiving £500 in 1 year in the future

Option B: receiving some other sum of money 9 years in the future.

For each of the following 8 choices please indicate whether you prefer Option A or Option B by placing a tick next to your preferred option.

Please check one box for each of the 8 choices.

Choice	Option A	Option B
1	£500 received 1 year in the future <input type="checkbox"/>	£550 received 9 years in the future <input type="checkbox"/>
2	£500 received 1 year in the future <input type="checkbox"/>	£650 received 9 years in the future <input type="checkbox"/>
3	£500 received 1 year in the future <input type="checkbox"/>	£800 received 9 years in the future <input type="checkbox"/>
4	£500 received 1 year in the future <input type="checkbox"/>	£1000 received 9 years in the future <input type="checkbox"/>
5	£500 received 1 year in the future <input type="checkbox"/>	£1300 received 9 years in the future <input type="checkbox"/>
6	£500 received 1 year in the future <input type="checkbox"/>	£2400 received 9 years in the future <input type="checkbox"/>
7	£500 received 1 year in the future <input type="checkbox"/>	£3500 received 9 years in the future <input type="checkbox"/>
8	£500 received 1 year in the future <input type="checkbox"/>	£4800 received 9 years in the future <input type="checkbox"/>

SECTION 3

Imagine you had a choice between programmes:

Programme A: would lead to 1000 QALYs gained 1 year in the future

Programme B: would lead to some other amount of QALYs gained 8 years in the future

The programmes cost exactly the same. Assume that nothing is known about the people who will receive the QALY gains. Each programme is a one-off, leading to a number of QALYs gained at a point in the future. Policy-makers face choices of this type, but not in such a simplified form.

For each of the following 8 choices please indicate whether you prefer Programme A or Programme B by placing a tick next to your preferred programme. Please check one box for each of the 8 choices.

Choice	Programme A	Programme B
1	1000 QALYs 1 year in the future <input type="checkbox"/>	1050 QALYs 8 years in the future <input type="checkbox"/>
2	1000 QALYs 1 year in the future <input type="checkbox"/>	1200 QALYs 8 years in the future <input type="checkbox"/>
3	1000 QALYs 1 year in the future <input type="checkbox"/>	1500 QALYs 8 years in the future <input type="checkbox"/>
4	1000 QALYs 1 year in the future <input type="checkbox"/>	1800 QALYs 8 years in the future <input type="checkbox"/>
5	1000 QALYs 1 year in the future <input type="checkbox"/>	2400 QALYs 8 years in the future <input type="checkbox"/>
6	1000 QALYs 1 year in the future <input type="checkbox"/>	4100 QALYs 8 years in the future <input type="checkbox"/>
7	1000 QALYs 1 year in the future <input type="checkbox"/>	5700 QALYs 8 years in the future <input type="checkbox"/>
8	1000 QALYs 1 year in the future <input type="checkbox"/>	7200 QALYs 8 years in the future <input type="checkbox"/>

SECTION 4

Imagine you had a choice between programmes:

Programme A: would lead to 1000 QALYs gained 1 year in the future

Programme B: would lead to some other amount of QALYs gained 17 years in the future

For each of the following 8 choices please indicate whether you prefer Programme A or Programme B by placing a tick next to your preferred programme. Please check one box for each of the 8 choices.

Choice	Programme A	Programme B
1	1000 QALYs 1 year in the future <input type="checkbox"/>	1050 QALYs 17 years in the future <input type="checkbox"/>
2	1000 QALYs 1 year in the future <input type="checkbox"/>	1400 QALYs 17 years in the future <input type="checkbox"/>
3	1000 QALYs 1 year in the future <input type="checkbox"/>	2000 QALYs 17 years in the future <input type="checkbox"/>
4	1000 QALYs 1 year in the future <input type="checkbox"/>	3000 QALYs 17 years in the future <input type="checkbox"/>
5	1000 QALYs 1 year in the future <input type="checkbox"/>	5000 QALYs 17 years in the future <input type="checkbox"/>
6	1000 QALYs 1 year in the future <input type="checkbox"/>	7500 QALYs 17 years in the future <input type="checkbox"/>
7	1000 QALYs 1 year in the future <input type="checkbox"/>	11000 QALYs 17 years in the future <input type="checkbox"/>
8	1000 QALYs 1 year in the future <input type="checkbox"/>	15000 QALYs 17 years in the future <input type="checkbox"/>

Annex 4 Agenda

Citizens Council Discounting Meeting

Agenda

DAY 1

10.00 – 1030 Welcome and discussion on format – Facilitators. Citizen Councillors will be invited to write down any queries about the question and the meeting .

10.30 -10.45 Brief introduction to question and why NICE wants the views of the Citizen Council (Professor Peter Littlejohns)

10.45 - 11.30 Explanation of the reasons for and against discounting from an ethical and social value perspective (Professor Albert Weale)

11.30 -11.45 Break

11.45 -12.45 Small group discussions on what the citizen councillors think of their exposure to “discounting” in their day to day lives and whether health should be treated differently

12.45 –1.00pm Feedback from small groups

1.00 – 1.15 Feedback on issues identified by councillors in 10am session

1.15 -2.-00 Lunch

2.00– 2:30 Citizen Counsellors undertake a their own time preference assessment (Dr Marjon van der Pol)

2.30 -3.45. Explanation of the reasons for discounting from a health economic perspective (Carl Klaxton and Joseph Lowe)

3.45 -4.00 Break

4.00- 4.30 Preliminary discussion on response to questions

4.30- 5pm – Feedback from Marjon van der Pol

5pm Any questions for NICE

5.30 Finish

DAY 2

9.30 - 09:45 Recap of yesterday and plan for the day (facilitators)

09:45 – 10:00 Summary of discussion so far by report writer Geoff Watts

10.00 -11-15 A mock appraisal to explore issues (Dr Jane Adam and Professor Peter Littlejohns) plus discussion of issues raised during a real appraisal (Dr Jane Adam)

11.15 – 11.45 Break

11.45 - 12.15 Discounting and public health interventions (Bhash Naidoo)

12.15 – 12.45 Any questions

12.45 - 1.45 Lunch

1.45 - 2.45 Small group work on answers.

2.45 - 3.30 Feedback from groups

3 -30 – 4.00 Break

4.00 – 4.45 Finalise and conclude