Pharmaceutical Benefits Advisory Committee
Commonwealth Department of Health

1 June 2022

To whom it may concern,

Re: Review of discount rate in the PBAC guidelines - Phase 2 consultation

We thank the Pharmaceutical Benefits Advisory Committee (PBAC) for the opportunity to comment on the report "Review of the Discount Rate in the PBAC Guidelines" led by Professor Rosalie Viney from the University of Technology Sydney (UTS) Australia.

We commend the authors on summarising the theoretical literature, and the current and historical Australian and international guidelines regarding discount rates for health technology assessment (HTA). We strongly agree with the following point made in the UTS Report:

Discounting in health economic evaluation may be more robust by specifying:
- *a theoretical rationale for discounting costs and health benefits;*
- *a methodology for estimating the discount rate based on underlying parameters; and*
- *the process and timing of periodic reviews (p22).*

We would like to expand on the current theoretical literature regarding the choice of discount rate, which we believe may be of interest to the PBAC. This information was also included in Paulden et. al. (2016), a report for the Canadian Agency For Drugs And Technologies In Health (CADTH) on discount rates and was seminal to reducing the discount rate used by CADTH from 5% to the current 1.5% per annum.[1] We attached Paulden et. al. (2016) to our submission to Phase 1.

The following is structured as follows. First, we discuss the theoretical methodology for estimating the discount rate for costs and health benefits. This extends the discussion in the UTS report. Second, we propose what the PBAC may consider to be their perspective and whether the PBS budget is constrained, while acknowledging that the PBAC's opinion may differ on this matter. Finally, we propose a solution to what should be the magnitude of the discount rate in economic evaluations.

<u>The theoretical methodology for estimating the discount rate for costs and health benefits</u>

While there have been several articles contributing to the debate regarding the discount rate for economic evaluations, the two key groups were led by Werner Brouwer and Karl Claxton. These authors published a joint article in 2011 that sought

to provide a consensus of the appropriate approach to discounting (Claxton et. al. 2011).[1,2]

Claxton et al. (2011) argued that the appropriate discount rate depends on the perspective of the decision maker when evaluating a health technology (i.e. medicine, vaccine, medical service) for funding and whether the budget is constrained or unconstrained.[1,2] This argument is also referred to in Attema et. al. (2018), which was heavily cited in the UTS report.[3]

The two perspectives are[1,2]:
1. 'Social decision making'. This perspective assumes that the health care decision maker is charged by a socially legitimate higher authority [e.g. the Australian Government] to pursue an explicit policy objective (such as improving health outcomes). The higher authority allocates resources [e.g. funding for the Pharmaceutical Benefits Scheme, PBS] for the decision maker to use to achieve this objective. The decision maker seeks to maximise the objective given the available resources.
2. 'Welfarism' or 'extra-welfarism'. This perspective assumes that rational individuals seek to maximise their individual utility by ranking available options and then choosing between them based upon their preferences. Utility may be affected by a wide range of things, but is often considered to include both consumption and health. Only individuals can judge their utility maximising choices, and utility is the only outcome considered. Social welfare is simply an aggregation of individual utilities. In this case, the decision maker [i.e. the PBAC] aims to maximise social welfare. Extra-welfarism is very similar to welfarism – individual preferences remain paramount; however, the definition of social welfare is expanded to consider factors such as equity, individual characteristics and 'capabilities'.

Claxton et. al. (2011) then summarises the appropriate discount rates depending on the perspective and whether the budget is constrained. The theory is summarised in

Table 1 for convenience.

Table 1: Theoretical discount rates

Perspective	Budget	Costs		Health outcomes	
		Discount rate	**Justification**	**Discount rate**	**Justification**
Social decision making perspective	Constrained	STPR for health + growth rate of the ICER threshold	STPR for health = Society's willingness to trade current health for future health. As healthcare resources generate health and it is possible to trade healthcare resources over time (e.g. save or borrow money), and thus it is possible to trade health over time. Consequently, costs are effectively a proxy for health. Therefore, costs should be discounted at the same rate as health. Thus, the STPR for consumption = STPR for health. But if less cost-effective treatments (i.e. with higher ICERs) are funded over time, and the health budget is constrained, then the marginal ICER will increase. Consequently, future costs will be less important because they lead to less health foregone. Therefore, the discount rate should be adjusted by the growth rate of the ICER threshold (i.e. less weight should be placed on future costs, which is achieved by discounting them at a higher rate).	STPR for health	STPR for health = Society's willingness to trade current health for future health.
Welfarist or extra-welfarist perspective aiming to maximise the present	Constrained	STPR for consumption – growth in the consumption value	STPR for consumption = How much we value resources (e.g. money, clinician time, hospital beds etc) now versus later, or what is the rate of return (opportunity cost) if we	STPR for consumption – growth in the consumption	STPR for consumption = STPR for health for the same reason as above. But the discount rate

consumption value of population health		of health + growth in the cost-effectiveness threshold	invested (borrowed) resources (e.g. money) to pay for healthcare. In other words, society's willingness to trade current resources for future resources. As costs are a proxy for health, then future costs are a proxy for future health. So, if future health gains are valued more highly, then future costs must also be valued more highly as well. Consequently, the discount rate needs to be adjusted by the growth in the consumption value of health. But if less cost-effective treatments are funded over time, and the health budget is constrained, then the ICER will increase. Consequently, future costs will be less important because they lead to less health foregone. Consequently, the discount rate also needs to be adjusted by the growth in the cost-effectiveness threshold.	value of health	needs to be adjusted by how much society's consumption value of health changes over time (i.e. the growth in the consumption value of health or the willingness to pay for health).
Welfarist or extra-welfarist perspective aiming to maximise health and consumption	Unconstrained	STPR for consumption	As above. However, now the budget is unconstrained and the impact of funding more treatments will fall on wider consumption (no health is foregone and the ICER threshold is unchanged).	STPR for consumption – growth in the consumption value of health	As above

ICER: incremental cost-effectiveness ratio; STPR: Social time preference rate
References: [2]

PBAC's perspective and budget constraints

In order to apply the above theory, the PBAC's perspective and whether the PBS budget is constrained must be specified. The UTS report did not explicitly discuss the perspective of the PBAC or whether the PBS budget is constrained or unconstrained.

Under the National Health Act 1953 the PBAC's primary role is to recommend to the Minister for Health [the higher authority] which medicines should be subsidised under the PBS [resources] and the primary objective of the PBS is to improve health [policy objective].[4] Furthermore, the PBAC guidelines states that PBAC decision making is influenced by:

1. five quantitative factors (comparative health gain, comparative cost-effectiveness, patient affordability in the absence of PBS subsidy, predicted use in practice and financial implications for the PBS, and predicted use in practice and financial implications for the Australian Government health budget). and

2. some less-readily quantifiable factors (overall confidence in the evidence; and assumptions relied on in the submission, equity, presence of effective therapeutic alternatives, severity of the medical condition treated, ability to target therapy with the proposed medicine precisely and effectively to patients likely to benefit most, and public health issues).[5]

Finally, the PBAC guidelines state that a health care system perspective should be used for economic evaluations.[5] **Overall, this suggests that the PBAC takes a 'social decision making' perspective rather than aiming to maximise social welfare.**

In theory the PBS budget is uncapped – any claim for reimbursement by a pharmacy (and thus a patient) meeting any restrictions on prescription will be honoured and the PBAC does not explicitly consider whether there is enough money in the PBS budget to fund a new medicine. However, in practice the PBAC considers the financial implications for the Australian Government health budget[5], the Minister for Health and Cabinet have the right to not list new medicines on the PBS, and the PBS budget is managed closely with the total funding on the PBS remaining relatively stable over the past 10 years (see Figure 1). **This suggests the PBS budget is constrained.**

However, we note that this is a subjective decision and the PBAC may have a different opinion.

Figure 1: Total PBS expense between 2011/12 and 2020/21 (accrual accounting basis)
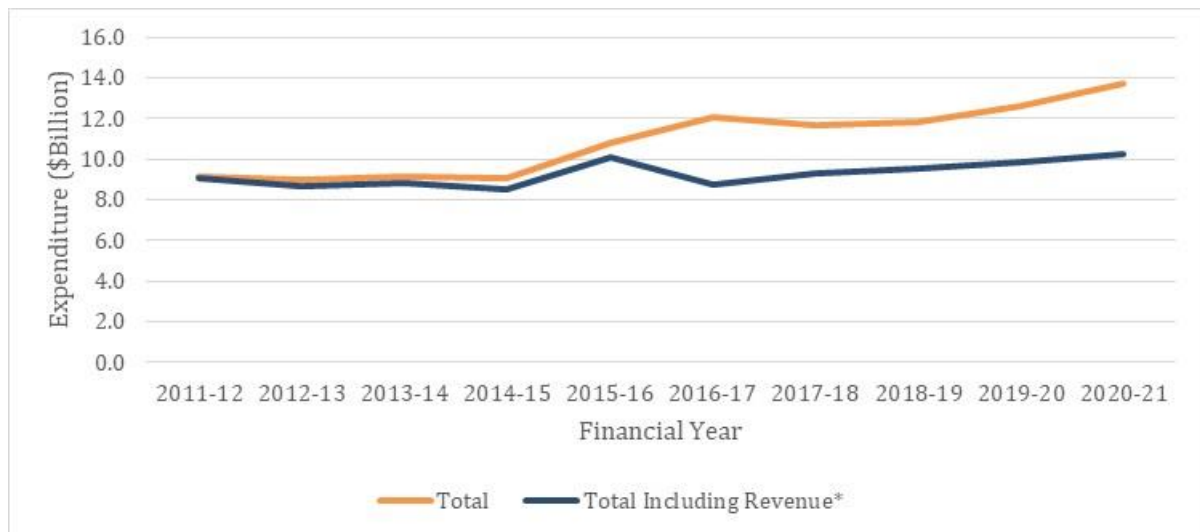
Source: PBS Expenditure and Prescriptions Reports 2012-2021[1]
PBS = Pharmaceutical Benefits Scheme
* Revenue includes expected rebates from medicines with special pricing arrangements

If it is accepted that the 'social decision making' perspective is most appropriate and the budget is constrained, this suggests that the appropriate discount rate for costs is equal to the social time preference rate (STPR) for health plus the rate of growth in the cost-effectiveness threshold (as per Table 1).

<u>The magnitude of the discount rate in economic evaluations</u>

Paulden and Claxton (2012) argue that **the discount rate for costs should be equal to the real rates of interest faced by governments who fund the public health care systems.**[6] Intuitively, imagine there are two hypothetical medicines with an identical time stream of health benefits but different time streams of costs. The only difference between the two medicines is the cost associated with borrowing or saving to shift the time stream of costs of one program to mimic the other. For example, imagine Program A costs $100 in year 1 only and Program B costs $104 in year 2 only, and the benefits of both are identical. If the real interest rate is 2%, then Program A would be preferred as the cost of program B ($104 in year 2) is equivalent to investing $101.96 in year 1, which is more than the cost of Program A ($100 in year 1).

Paulden and Claxton (2012) then derive the STPR for health for a decision maker maximising the present value of population health ('social decision making' perspective) with a constrained budget over subsequent time periods.[6] **They prove that the discount rate for health is equal to the real rates of interest faced by governments minus the growth rate of the cost-effectiveness threshold.**

[1] https://www.pbs.gov.au/info/statistics/expenditure-prescriptions/pbs-expenditure-and-prescriptions [accessed 30-May-2022]

PBS expenditure falls on the Australian Government budget, which is funded by either taxpayers or other sources of revenue, shifting money from other Government programs or increasing spending efficiencies, or borrowing money.

The real cost of borrowing to fund healthcare for the Australian Government is equal to the long-term Government bond rate minus the current inflation rate for health costs. The 10-year Australian Government Bond rate was 3.252% and the 30-year Australian Government Bond rate was 3.604% on the 27 May 2022[7]. The most recent estimate of growth in the total health price index in Australia is 1.9%[8].

Unfortunately, there is only one study estimating the cost-effectiveness threshold in Australia[9] and so the rate of growth is unable to be calculated. This suggests it may be appropriate to assume that growth is equal to nil as an interim measure.

Combining this together, the current appropriate discount rate should be 1.352% for costs and health outcomes.

The UTS report argues that:
> "With respect to observed lower discount rates internationally potentially reflecting governments' reduced costs of borrowing, it should be noted that tying the discount rate to a government's cost of debt implies that discounting reflects the social opportunity cost of investment (rather than social time preference) and the corollary that when capital market interest rates rise, so too should the discount rate. Insofar as interest rates fluctuate over time, pinning the discount rate to Government's cost of borrowing may exacerbate uncertainty in future costs to Government, as well as complicate the comparison of treatments' cost-effectiveness over time."

We acknowledge that this approach would mean that the discount rate would vary over time, and indeed interest rates are currently predicted to rise. However, a wide variety of inputs in economic evaluations also vary over time. Economic evaluations should be based on the latest data. It is relatively easy for applicants to apply the latest 30-year Government bond rate minus the growth in the total health price index from the Australian Institute of Health and Welfare in economic evaluations.

There is no reason why the PBAC needs to compare the cost-effectiveness of treatments over time in their decision making. Currently, the PBAC actively ignores changes in the cost-effectiveness of treatments for chronic conditions over time by not considering the potential for medicine prices to decrease in the future as they lose patent protection.

<u>Summary</u>
We believe that PBAC guidelines should stipulate that the discount rate should be calculated by using the 30-year Government bond rate minus the most recent estimate of health inflation from the Australian Institute of Health and Welfare, rather than stating a specific discount rate. Alternatively, the Department of

Health could provide an appropriate discount rate updated every three months. This is not without precedent. The Department already legislates and updates the maximum permissible interest rate (MPIR) within residential aged care every three months.

Thank you for considering this submission to Review of discount rate in the PBAC guidelines - Phase 2 consultation. Please do not hesitate to contact us if you have any further queries.

Yours sincerely,

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