8 Discounting

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Key Recommendations: Costs and benefits included in cost-utility analyses (CUAs) should be discounted at a rate of 3.5%. Rates of 0% and 5% should be used in sensitivity analyses.

Discounting is used to compare treatments that have costs and benefits that occur at different times.

The extent to which future benefits and costs are discounted in comparison with the present is reflected in the discount rate. As the discount rate increases, future benefits and costs become less important when compared with benefits and costs occurring in the present.

PHARMAC recommends that both costs and benefits be discounted at the same rate. The rationale is outlined in Appendix 2.

8.1 Approaches to Determining the Discount Rate

The appropriate rate of discount is controversial, and no precise gold standard exists. Most countries base their discount rate on the long-term rate of government bonds or a rate recommended by other countries in order to allow comparisons in the results of analyses.

There are six key approaches to determining a discount rate:

- The rate used in other countries.
- The social rate of time preference.
- The social opportunity cost.
- A weighted average social discount rate.
- The shadow price of capital.
- A ‘bottom-up’ approach.

Each is further discussed in Appendix 2.

8.2 Recommended Discount Rate

PHARMAC considers that the social rate of time preference is the most relevant approach for PHARMAC to use when determining the discount rate, as it reflects society preferences. This requires the use of the long-term government bond rate. The following issues also need to be considered.

8.2.1 Should the Risk-Free or Risk-Adjusted Rate Be Used?

The risk-free rate of return is the rate at which the New Zealand Government can borrow (government bond rate). However, some argue that this rate should be adjusted for the risk of the investment and the compensation for covering this risk (eg risk of uncertain future). Others argue that this risk could be taken into account by including higher costs and/or lower benefits in the sensitivity analysis, and that it is inappropriate to use the discount rate to compensate for this risk.

PHARMAC does not incorporate risk into the discount rate for cost-utility analyses. Discounting represents an individual’s time preference and any risk (or future uncertainty) is taken into account elsewhere in the model (eg in the extrapolation of benefits).

8.2.2 Should the Discount Rate Be Adjusted for Inflation?

In order to ensure consistency, the use of a real or nominal discount rate should depend on whether costs included in the analysis have been adjusted for inflation. In general it is simpler to adjust the discount rate. As PHARMAC uses real costs, the long-term cost of capital rate should be adjusted for inflation. See Appendix 2 for the appropriate formula to adjust for inflation.

8.2.3 Should Long-Term or Short-Term Government Bond Rates Be Used?

As it is preferable to use a stable long-term government bond rate, the rate used should be long enough to avoid fluctuations (eg five years).

8.2.4 Recommendations

All costs and benefits in CUAs should be discounted at 3.5%. This is based on the five-year average real risk-free long-term government bond rate.

Rates of 0% and 5% must be included (without exception) in sensitivity analyses.

8.3 Discount Rate for Budget Impact Analysis

The discount rate above does not apply when undertaking budget impact analysis (BIA), which serves a very different purpose. BIA focuses on the financial aspects of proposals within a limited timeframe (usually 1-5 years) and is used to determine if PHARMAC can afford to fund a treatment given the current budget. Investment decisions are often associated with substantial uncertainty even in the short term – within the next few years pharmaceutical prices may decrease, or PHARMAC's budget may change. With an uncertain future (and the associated risks), therefore, it is reasonable to use a higher discount rate. This is particularly the case when forecasts indicate that PHARMAC has very tight budget constraints.

Cost-utility analysis differs in that it is not used to make an investment decision, but rather to help determine the relative ranking of pharmaceuticals. Therefore, it is not considered necessary to capture the budget risk in the discount rate. In addition, CUA is not purely a financial analysis, but also involves the quantification of health benefits. In some cases, significant health benefits occur in the far future (eg with childhood immunisation), in which case a lower discount rate ensures that they are valued.

Equally, while CUA evaluates real costs and benefits, BIA focuses on actual (nominal) expenditure. In practice, this would mean that, while the investment ranking would be decided by a discount rate of 3.5%, the impact on the budget would be evaluated using a discount rate of 8%. Assuming that no other factors for consideration were relevant, this method would ensure that the investments that offer the highest health gain within the available funding path would then be funded.

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