RAPID COST-EFFECTIVENESS CALCULATOR

You can use this calculator to rapidly estimate the cost-effectiveness of a health intervention that improves survival of a given cancer, in the New Zealand setting.

The white cells are the input cells, where you enter some basic information about the specific intervention and cancer you're interested in, and for whom. The yellow cells are the results cells: these show the health gains, costs, and cost-effectiveness of the intervention, calculated using your inputs and BODE^3 data in the background.

Even if you do not have precise information, you can enter in different values and play around to get a sense of the cost-effectiveness for different scenarios. For more information on this calculator or if you have any questions, please email: giorgi.kvizhinadze@otago.ac.nz

BASELINE PARAMETERS

These cells cover basic information about the particular type of cancer you're considering, *before* any intervention has been applied.

Input Parameter	Definition	Units and Bounds
5-year RSR	The 5-year relative survival ratio is the ratio of observed survival (in people who have that cancer) to expected survival (in people of the same age and sex in the general population who don't have that cancer), at five years after diagnosis.	A percentage, should be between 0 and 100. 100% means no difference in 5-year survival. 50% means expected survival is halved due to that cancer.
Disease costs	Estimated annual health system costs (inpatient, outpatient, general practice, labs, pharmaceuticals) of treating the cancer in the first year of diagnosis, the last year of life, and in remission. *In the background, we automatically also add average routine (non-cancer) health system costs by the age and sex you specify under the Heterogeneity section.*	NZ $
Disability? Quality of life lost?	Assume people without the cancer have perfect (100%) health. What proportion of this is lost due to the cancer during the first year of diagnosis, the last year of life, and in remission? *In the background, we automatically also add average quality of life lost due to other common diseases and due to simply getting older, by the age and sex you specify under the Heterogeneity section.*	A proportion between 0 and 1. 0 means no quality of life lost due to having the cancer, 0.3 means 30% of 'full health' lost due to cancer.

HETEROGENEITY

The cost-effectiveness of an intervention can vary by different ages, or between males and females. Use the drop-down box to enter the age (five-year age groups) and sex (male or female) of the population you're interested in.

MODEL STRUCTURE

Behind this calculator is a model which contains several assumptions. Here you can vary these assumptions according to your preferences.

Input Parameter	Definition	Units and Bounds
Discount rate	A benefit or cost in future years has a lower present-day value (along the lines of "a bird in the hand is worth two in the bush"). We need to discount future benefits and costs to the present. The rate at which this is done is called the discount rate.	A percentage. Common discount rates are 0%, 3% and 6%.
Cost-effectiveness threshold	The cost-effectiveness threshold is how much government or society is willing to pay to gain 1 quality-adjusted life-year (QALY), or one year of life in full health. If the incremental cost-effectiveness ratio (ICER) of your intervention is less than the cost-effectiveness threshold, the intervention is cost-effective. If the ICER of the intervention is greater than this threshold, than it is not cost-effective.	NZ $ per QALY *By World Health Organization guidance, an acceptable threshold for NZ would be around NZ$45,000 per QALY. You may like to start with this.*

INTERVENTION

These cells cover basic information about the intervention you're interested in. Each input here is relative to something you're comparing the intervention to (which may be nothing, status quo, or the next best alternative.

Input Parameter	Definition	Units and Bounds
Effect size	The effect of the intervention on mortality from the cancer *compared to the comparator.*	Should be less than 1. A hazard ratio (HR) of 1 means no cancer mortality benefit, a HR of 0.7 means the intervention reduces cancer mortality by 30%.
Intervention costs	The annual health system cost of providing the intervention itself (e.g. the drug or the service) in the first year and the second year, *each compared to the comparator.*	NZ $

RESULTS

The yellow cells show the results. Incremental QALY refers to the amount of extra health gain (in QALYs per person) that your intervention delivers, over and above its comparator. Incremental costs refer to how much extra your intervention costs over its comparator. ICER is the incremental cost-effectiveness ratio: this is how much more cost-effective your intervention is than its comparator, expressed in NZ$ per QALY.

GRAPH

The graph is a cost-effectiveness plane, a common way of presenting cost-effectiveness results. The solid yellow line represents the ICER of your intervention, calculated from the inputs you have entered and BODE^3 data in the background. The dotted line represents the cost-effectiveness threshold you have chosen. If the yellow line lies above the dotted line, your intervention is not cost-effective. If the yellow line lies below the dotted line, your intervention is cost-effective.