Introduction to

Costing for Health Economic Evaluation

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NSW Regional Health Partners

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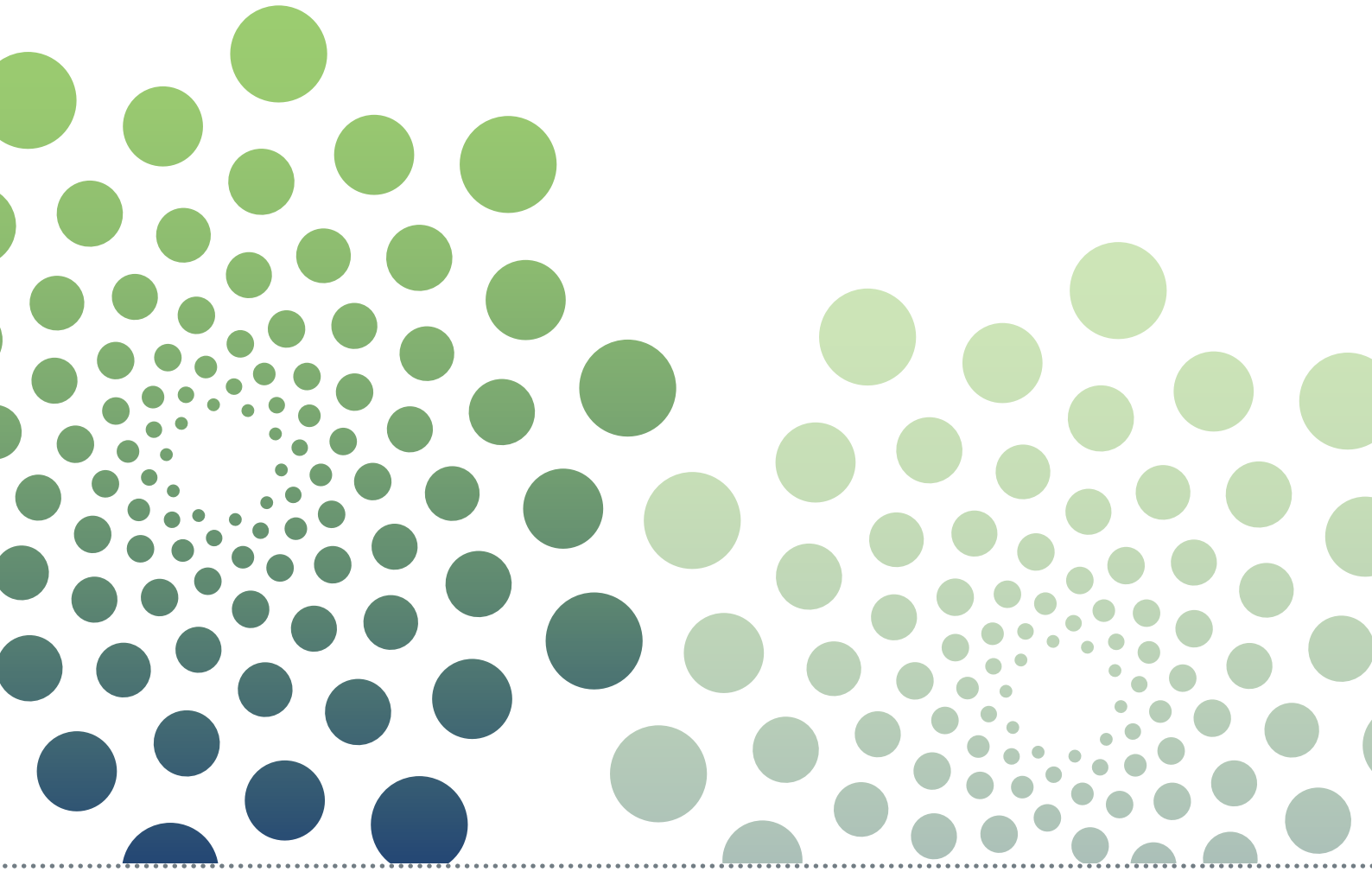

1. Introduction to costing in health economics

This document is our second resource for healthcare professionals interested in health economic evaluation. It builds on the foundational concepts introduced in *Introduction to Health Economics*.

This document steps through the principles and processes of costing the resources needed to deliver a Model of Care, to provide the evidence needed to support its implementation.

If you're planning to evaluate a Model of Care, we recommend you consult a health economist early in your study design phase to ensure that economic evaluation is appropriately integrated.

Throughout this document we use the term "Model of Care" to describe the 'thing' being evaluated. That is, the intervention, technology, resources or procedures. Even if your study does not relate to a clinical service, the "Model of Care" will be whatever it is you are studying, what is different from the existing way of doing things.

Introductory Reading

Several respected sources were used to help develop this document.
If you want to read more about health economic evaluations, these are a great place to start.

Methods for the Economic Evaluation of Health Care Programmes - A key textbook for health economics.[1]

NSW Ministry of Health guide - ***Commissioning Economic Evaluations: A Guide***. While the document is specifically about 'commissioning' economic evaluations, the information will help you decide if an economic evaluation is right for your project and what type of evaluation will suit your project.[2]

NSW Health ***Evaluation Planning Checklist***. This will help with your evaluation planning.[3]

Reviewing Economic Evaluations: A Checklist. This is designed as a checklist for reviewing the quality and relevance of economic evaluations but can be used as a planning guide.[4]

The ***CHEERS checklist*** for reporting health economic evaluations for publication. This is also a good resource for planning evaluations. It lists all the information needed to satisfy reporting standards.[5]

The Local Level Evaluation of Healthcare in Australia. A 2019 report on health care evaluation in local contexts by NSW Regional Health Partners and the Australian Health Research Alliance.[6]

In health economics, costing is the process of figuring out how much a healthcare service, treatment, or program actually costs. It's a key step in evaluating whether a Model of Care is value for money. Costing gives you the numbers you need to conduct any type of health economic evaluation.

Health economists determine which costs to include in an evaluation by carefully considering the purpose of the evaluation, and several key parameters which are discussed below.

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1. Drummond MF, Sculpher MJ, Torrance GW, et al. *Methods for the Economic Evaluation of Health Care Programmes*, Oxford University Press, 2015.

2. Centre for Epidemiology and Evidence. *Commissioning Economic Evaluations: A Guide*. Evidence and Evaluation Guidance Series, Population and Public Health Division. Sydney: NSW Ministry of Health, 2017.

3. Centre for Epidemiology and Evidence. *Planning Economic Evaluations: A Checklist.* Evidence and Evaluation Guidance Series, Population and Public Health Division. Sydney: NSW Ministry of Health; 2023.

4. Centre for Epidemiology and Evidence. *Reviewing Economic Evaluations: A Checklist*. Evidence and Evaluation Guidance Series, Population and Public Health Division. Sydney: NSW Ministry of Health; 2023.

5. Husereau, D., Drummond, M., Augustovski, F. et al. *Consolidated Health Economic Evaluation Reporting Standards 2022 (CHEERS 2022) statement: updated reporting guidance for health economic evaluations.* BMC Med 20, 23 (2022).

6. Searles A, Gleeson M, Reeves P, Jorm C, Leeder S, Karnon J, Hiscock H, Skouteris H, Daly M, NSW Regional Health Partners. *The Local Level Evaluation of Healthcare in Australia: Health Systems Improvement and Sustainability (HSIS) National Initiative.* Australian Health Research Alliance; 2019.

1.1 Evaluation parameters

When planning an economic evaluation, it's important to first define its scope by identifying which costs and outcomes are relevant. In health economics, the key parameters that shape these boundaries are:

- Time horizon
- Perspective
- Comparator(s)

Time horizon

The time horizon is the period of time over which resource use and outcomes are tracked for inclusion in the evaluation. The time horizon of the evaluation should capture the full period when costs and benefits related to the Model of Care and the health condition of interest are likely to accrue or be incurred. This includes all activities associated with the Model of Care, and its consequences. It could be a very short time span such as seven days for symptoms of an infection to resolve, or a longer period of time over which chronic disease symptoms are expected to improve.

Perspective

The perspective of an economic evaluation is the point of view through which costs and outcomes are examined. Often the perspective is driven by the entity that has commissioned the evaluation as they are interested in the costs and outcomes that are within their remit. The most common perspectives are:

- Societal
- Healthcare sector/system
- Individual payer

The societal perspective

This is the most comprehensive viewpoint, capturing all costs and benefits that affect society as a whole. It considers outcomes beyond healthcare, such as impacts on productivity, education and informal caregiving. Hence, a societal perspective includes all the outcomes and costs related to delivering the Model of Care as well as societal outcomes like time off work. Although the societal perspective is often regarded as the gold standard in economic evaluation, it requires extensive data collection and careful planning, which can make it both costly and time-consuming. In many cases, the value of a Model of Care can still be demonstrated using a narrower perspective. For these reasons, it is not often used.

Healthcare sector perspective

This is a narrower perspective that measures only those costs incurred by the healthcare sector. It includes the direct medical costs incurred in delivering the Model of Care to the patient but does not include any out-of-pocket costs incurred by the patient and it does not include broader societal outcomes such as productivity. Most large health economic evaluations use a healthcare sector perspective.

Individual payer perspective

An even narrower perspective is that of an individual payer. This perspective focuses solely on the costs and outcomes from the viewpoint of a specific stakeholder. For example, a private health insurance company or a government department such as NSW Health.

Choice of comparator(s)

Just as a comparator is needed to show whether a new intervention is more effective, estimating the cost of a new Model of Care is most useful when compared to an existing approach. In most cases the comparator will be the current or existing Model of Care.

The current or existing Model of Care should be described in sufficient detail to enable proper comparison, and any differences should be identified.

If there is no existing Model of Care ('usual care') then 'do nothing' can be used, but only if it is an acceptable or common way of managing the condition of interest. Regardless of the comparator, the same economic data need to be collected for both.

1.2 Identifying, measuring and valuing resource use

Conducting a costing in health economics involves a structured process to ensure that all relevant costs are identified, measured, and valued accurately.

These steps are needed to determine what data must be collected during the study. After defining the scope of the evaluation, a health economist will identify, measure and value the resources used for the Model of Care and the comparator.

In health economics, 'resources' refers to all the inputs used to produce health-related goods and services. Resources can include people's time, office space, equipment, or a database for information.

The following sections explain how to identify, measure and value resources.

Identify

Identifying resource use is the process of figuring out what resources are used when delivering a healthcare service or intervention. This step is important because it lays the foundation for calculating costs. Think of it like making a shopping list for a recipe - you need to know everything that goes into the dish before you can figure out how much it costs.

Resources can be broken down into three main categories:

- People
  - Who is involved in the provision of care?
  - Consider all types of labour - nurses, doctors, allied health professionals, support workers, administrative support.
- Things
  - What tools or equipment are involved in delivering the Model of Care?
    - Digital platforms, other technology, drugs, devices, transport, consumables.
- Space
  - Where is the Model of Care provided? What facilities are involved/required?
    - Tertiary hospital, community medical centre, private consulting room

Categorising resources makes it easier to see what is being measured and compared. It also highlights which types of costs contribute most to the overall expenditure. This allows discussion to focus on areas with the greatest economic impact.

Things that might be assumed to be part of someone's existing role also need to be included. Does the Model of Care mean that people are asked to do extra, or does the Model of Care replace something? The reason for this is if people are delivering the new Model of Care, there will be something else they can't do.

The process starts by generating a list of activities and resources in a table. There is no single standard template to use.

The costing template ***Cost-IS instrument*** is a good example. Note that this template was developed for implementation studies, so some things might not be relevant to your evaluation.

- Include everything.

Begin by listing all activities and resources involved in the Model of Care and the comparator. It's easier to remove items than to add them later.

- Focus on what is different.

The key elements to highlight are those that are different between the new Model of Care and the comparator. These differences will drive the cost and outcome variations.

- Recognise what's the same.

Activities or resources that are identical in both pathways will cancel each other out in the cost comparison. While they should be noted initially, they won't influence the final cost difference.

Study phases and resource use

Once all the resources involved in the study have been identified, the next step is to determine which are relevant to the planned evaluation.

One way to do this is to sort the resources into groups that represent different stages or aspects of evaluating Models of Care. Think of these as different buckets. Once sorted, it is easier to determine what data to collect and what can be excluded.

Development

Development costs include the expenses incurred in the creation and development of a new Model of Care. These costs will be incurred regardless of whether the Model of Care is adopted as usual care. Some costs will be intangible, like the time taken to create content for manuals or educational materials.

Implementation

These are the activities (and costs) specifically needed to implement and embed the Model of Care. They are the activities and costs required to achieve a change in policy or practice so that the Model of Care becomes usual practice. Examples include staff training, promotion of the Model of Care, and updating policies. Not every study will include implementation activities.

Intervention

These are the activities and resources that would be required each and every time the Model of Care is delivered. The intervention costs of both the Model of Care to be assessed and the comparator(s) need to be determined. Examples include clinician/staff time, equipment and clinic space – things that are specific to the site or the occasion of care.

Research

These are the activities that occur only for the purposes of the research project. These are things that would not be part of the Model of Care when used in practice but are carried out to analyse the outcomes and share the findings about the Model of Care. This includes data collection, ethics applications, and project administration.

What costs to include

It may seem like a lot of data, but it is unlikely that all the categories will be needed for an evaluation. Which costs are included depends on the purpose of your evaluation.

- Development costs – these are typically excluded as they are considered “sunk costs”. The cost has already been incurred and will remain the same regardless of any future decisions about the Model of Care.
- Implementation costs – in the past these have tended to be excluded, but are increasingly being included so that decision-makers know the costs of embedding changes to practice.
- Intervention costs – these are always included.
- Research costs –these are generally excluded as they are not relevant to the ongoing delivery of the Model of Care.

The economic evaluation will look at where the resource use varies between the Model of Care and the comparator. Capturing the differences in how resources are utilised in different situations is what provides the economic evidence for decision makers.

Measure

To estimate the cost of a Model of Care, it’s necessary to quantify the amount of each resource used. This involves establishing a method for tracking resource use throughout the study period, using standardised units (e.g. hours, doses, or visits). Consistent processes are needed to ensure reliable data collection over the study’s time horizon.

Just as careful planning is required for collecting health outcome data, the collection of economic data must also be planned and standardised within the study to ensure accuracy and comparability.

Each study needs a predetermined way of tracking resource use. This is done by developing a resource data collection instrument - a tool to record all the instances of resource use – to be used throughout the study.

There are several options for collecting resource use data. Examples include:

- Patient surveys
- Reviews of medical records (chart audits)
- Extracts from administrative databases
- Direct observation
- Bespoke tools to enable tracking each instance of resource use for the resources you have identified.

A health economist can help determine the optimal way to collect and measure resource use data.

Value

The next step is to assign monetary values to the resources measured. This can be done in a few different ways: market prices, standardised cost lists, or specific costing studies. This can be done at the end of the study when collating data for the economic analysis, but it is recommended to add monetary values to the variables as the study progresses.

Examples of market prices:

- Labour costs: an hour of staff time would be valued using the relevant award wage or enterprise agreement. This will likely need to include on-costs in addition to the award wage. On-costs are additional expenses incurred by organisations when employing staff, such as superannuation contributions and payroll tax.
- Consumables: the cost of purchasing the items (e.g. as recorded on an invoice).

Knowing the data you need to collect and having a standardised method of collection will set you up for an effective economic evaluation. And this will help you show the value of your research findings.

1.3 Summary and next steps

This guide provides an overview of the key elements in costing for economic evaluation. Determining the resources used in delivering a Model of Care, and their cost, is the first step of any economic evaluation. The next step is to collate the data and compare the cost of the new Model of Care to usual care or the other thing being evaluated.

This information will help clarify if a new Model of Care would lead to better outcomes for patients or staff at a similar or lower cost, or if it would offer better value for money. This is the evidence decision makers will need to approve any changes to current practices.

The worked example below puts the concepts discussed in this document into practice.

We encourage you to reach out to a health economist for more specific advice and to help you plan your economic evaluation. Health economists can be hard to find so feel free to contact NSW Regional Health Partners for assistance.

2. Worked example

Below is a hypothetical trial with example responses to the concepts discussed in this document.

2.1 **The trial**

A community-based health intervention aimed at improving type 2 diabetes management in adults in a rural area. The program provides diabetes education, regular health check-ups, and support for lifestyle changes. Nurses, diabetes educators, and endocrinologists conduct home visits and group sessions to educate participants on diabetes management.

Study design: A non-randomised, pre-post feasibility and acceptability study. 100 people with type 2 diabetes will be recruited from the community using social media advertising and posters/flyers at GP clinics. Once screened and enrolled, participants will be invited to one hour group sessions, fortnightly for six sessions. The intervention lasts for 11 weeks. Participant outcomes will be measured at the start (baseline), then at 12 weeks and again at six months after the conclusion of the intervention, so a follow up period of six months. Group sessions will consist of education on management including monitoring and medication, as well as health risk behaviours. In addition to the group sessions, nurses, nurse educators, and endocrinologists will conduct up to three home visits per participant.

Outcomes:

- Improvement in diabetes management indicators (e.g., HbA1c levels, blood pressure).
- Participant satisfaction and adherence to the intervention.
- Cost per participant and cost per unit improvement in health outcomes.

2.2 **Time horizon**

The follow up period in the study was likely chosen because it is relevant to the disease and the effect that the Model of Care may have on that disease. The intervention runs for 11 weeks and has a follow up period of six months. So, a time horizon of nine months (11-week intervention plus six month follow up) would capture the costs and outcomes of the intervention.

2.3 **Perspective**

The example study takes place using staff and other resources from the Local Health District, so to support future funder investment decisions, an evaluator could take the perspective of the Local Health District, including only costs that would be incurred by the Local Health District.

2.4. **Identify, measure and value resource use**

There are two main activities for patients in the study, the six group sessions held fortnightly and three home visits. Table 2-1 lists the activities in the trial and the resources needed to carry out the activities.

This is just an example of how to start identifying the resources. Each study needs a predetermined way of tracking resource use. This is done by developing a resource data collection tool to record all the instances of resource use. It should be completed as the study progresses.

Table 2-1 **Identifying resources**

Activity name	Cost items
Recruitment	Staff time to recruit Participant information statements and consent forms
Baseline appointment	Staff time to organise and conduct appointments Data collection forms Staff time to manage data
Group session	Workbooks – writing content Educational material – writing content Workbooks – printing Educational material – printing Staff time to prepare and conduct group sessions Equipment used in the sessions Space to hold the session Refreshments for participants Data collection forms Staff time to manage data
Home visits	Staff time to prepare and conduct Staff time to organise Equipment – weight scales, blood pressure monitors, blood glucose meter and test strips Data collection forms - printing Staff time to manage data Travel to and from

Study phases and resource categories

Some activities take place before the intervention starts (development), some activities are parts of the Model of Care (intervention), and some activities are needed for data to be collected for the evaluation (research). Table 2-2 shows how these resources can be sorted by study phase and resource category.

Depending on the type of economic evaluation that is planned, not ALL the resources in all study phases listed will be included.

Table 2-2 **Categorising resources**

Activity name	**Cost items**	**Phase** Research, Development, implementation intervention	**Category** People, things, space
Recruitment	Staff time to recruit	Research	People
	Participant information statements and consent forms	Research	Things
Baseline appointment	Staff time to organise and conduct appointments	Intervention	People
	Data collection forms	Research 50% Intervention 50%	Things
	Staff time to manage data	Research 50% Intervention 50%	People
Group session	Workbooks – writing content	Development	People
	Educational material – writing content	Development	People
	Workbooks – printing	Intervention	Things
	Educational material – printing	Intervention	Things
	Staff time to prepare and conduct group sessions	Intervention	People
	Equipment used in the sessions	Intervention	Things
	Space to hold the session	Intervention	Space
	Refreshments for participants	Intervention	Other
	Data collection forms	Research 50% Intervention 50%	Things
	Staff time to manage data	Research 50% Intervention 50%	People
Home visits	Staff time to prepare and conduct	Intervention	People
	Staff time to organise	Intervention	People
	Travel to and from	Intervention	Other
	Equipment – weight scales, blood pressure monitors, blood glucose meter and test strips	Intervention	Things
	Data collection forms - printing	Research 50% Intervention 50%	Things
	Staff time to manage data	Research 50% Intervention 50%	People

Measure and Value

There are quite a few different resources in the example study. However, only the cost of the intervention is being evaluated. So, costs that are in the development, research, or implementation categories don't need to be collected. Table 2-3 is an excerpt of a data collection table and shows some of the intervention costs of people (staff time), things and space for the home visits. To keep the example concise, Table 2-3 doesn't list all the resources needed. In a true evaluation, however, you would need to include all the resources required for the evaluation.

Table 2-3 Example data collection table for intervention activities only

Activity name	Resource	Cost unit	Date	Count	Category	Source for $ value	Data source
Baseline appointment	Staff time - organise	Hours	09/12/2024	.25	People	*Health Professionals Salaries (State) Award 2024*	RedCap Project log
	Staff time - conduct	Hours	16/12/2024	1	People	*Health Professionals Salaries (State) Award 2024*	RedCap Project log
Group sessions	Workbooks – printing 20 workbooks, 30 pages per book	Pages	12/12/2024	600	Things	Market value	Invoice from printer 12/12/24
	Educational material – printing	Pages	12/12/2024	60	Things	Market value	Invoice from printer 12/12/24
	Staff time - Preparation	Hours	03/02/2025	1	People	*Health Professionals Salaries (State) Award 2024*	RedCap Project log
	Staff time - conduct	Hours	06/02/2025	1	People	*Health Professionals Salaries (State) Award 2024*	RedCap Project log
	Weighing scales	Each	10/12/2025	1	Things	Market value	Invoice from supplier 12/12/24
	Room booking	Hours	14/01/2025	2	Space	LHD Finance dept	Invoice 31/01/25
	Room booking	Hours	28/01/2025	2	Space	LHD Finance dept	Invoice 28/02/25
	Refreshments for participants	Per person	06/02/2025	10	Things	Market value	Invoice from supplier 06/02/2025
	Data collection forms	Pages	12/12/2024	50	Things	Market value	Invoice from printer 12/12/24
	Staff time to manage data	Hours	07/02/2025	1	People	*Health Professionals Salaries (State) Award 2024*	RedCap Project log

Table 2-3 **Example data collection table for intervention activities only (cont.)**

Activity name	Resource	Cost unit	Date	Count	Category	Source for $ value	Data source
Home visits	Staff time - Preparation	Hours	02/01/2025	2	People	*Health Professionals Salaries (State) Award 2024*	RedCap Project log
	Staff time - Home visit	Hours	03/01/2025	1	People	*Health Professionals Salaries (State) Award 2024*	RedCap Project log
	Staff time - Travel	Hours	03/01/2025	0.5	People	*Health Professionals Salaries (State) Award 2024*	RedCap Project log
	Staff time - Home visit	Hours	04/01/2025	1	People	*Health Professionals Salaries (State) Award 2024*	RedCap Project log
	Staff time - Travel	Hours	04/01/2025	0.5	People	*Health Professionals Salaries (State) Award 2024*	RedCap Project log
	Staff time - organise	Hours	04/01/2025	0.5	People	*Health Professionals Salaries (State) Award 2024*	RedCap Project log
	Portable Weighing scales	Each	10/12/2025	5	Things	Market value	Invoice from supplier 12/12/24
	Blood glucose meter	Each	10/12/2025	3	Things	Market value	chemistwarehouse.com.au
	Test strips	Box /100	10/12/2025	5	Things	Market value	chemistwarehouse.com.au
	Data collection forms	Pages	12/12/2024	50	Things	Market value	Invoice from printer 12/12/24
	Staff time to manage data	Hours	28/02/2025	2	People	*Health Professionals Salaries (State) Award 2024*	RedCap Project log

This worked example demonstrates how the steps of costing discussed throughout this document come together in practice.

We recognise that you will need assistance from a health economist to complete a health economic evaluation, but we hope this gives you more understanding of costing and how it would benefit your research.

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