Health economic data collection tools for health care research and practice: Protocol for a systematic scoping review

Authors: Zoe Szewczyk[1,2,3,5], Nicola Creagh[2,4], Emile Belarmoul[2,4], Ben Smith[1,3,5], Philayrath Phongsavan[1,5], Mitchell Sarkies[2,4,6].

Affiliations:

1. Sydney School of Public Health, Faculty of Medicine and Health, The University of Sydney, Sydney, NSW, Australia.
2. Implementation Science Academy, Sydney Health Partners, The University of Sydney.
3. Western Sydney Local Health District.
4. School of Health Sciences, Faculty of Medicine and Health, The University of Sydney, Sydney, NSW, Australia.
5. Charles Perkins Centre, The University of Sydney, Sydney, NSW, Australia
6. Westmead Applied Research Centre, The University of Sydney, Sydney, NSW, Australia.

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Background:

Reliable cost and resource use data (hereafter referred to as cost data) forms the foundation of all economic evaluations and is essential for informing the implementation and scale-up of interventions found to be effective and efficient. [1] Despite their importance, health intervention cost estimates are often missing, their methods of collection lack sufficient detail required for replication, and the quality of the tools used is seldom addressed in the literature. [1] There are frequently cited barriers to collecting rigorous cost data in health services and population health research including, a shortage of health economists available to collaborate on costing studies, [2] uncertainty regarding what cost data to collect, [3] and lack of transparent reporting of how to develop a bespoke and robust data collection tool. [1] Little is known also about the relative accuracy of alternative cost data collection methods. [4] To address these barriers, cost data collection tools have been developed for a variety of contexts and study designs, however, none are widely adopted in practice. The range of cost data collection tools, their benefits and constraints, available for health economic evaluation in research and healthcare is unknown.

A 2019 scoping review by Chapel et al. [1] identified costing methods in public health and preventive interventions and discussed their practical applications, including their potential strengths and weaknesses. This review identified 93 studies published between 2008 and 2018 that focused on measuring intervention costs in sufficient detail. The review summarised findings thematically according to their method of economic data collection, for example, use of standard comprehensive templates, targeted questionnaires, activity logs, direct observation, databases/records. Commonly used methods of cost data collection include time driven activity based costing [5], use of diary records [1], and resource use questionnaires [4]. Despite the importance of cost data for economic evaluation and the range of data collection methods available, implementing these methods into practice remains challenging for clinicians and researchers without expertise in health economics. This review identified no free, flexible tools for economic data collection in health services and prevention research. A list of costs data collection tools, their proposed use cases, and summary of strengths and limitations would benefit researchers and clinicians looking to collect cost data, but uncertainty remains on how to implement best practice methods.

We propose to undertake a systematic scoping review of scientific and grey literature to identify cost data collection tools for health services and public health research. We aim to identify 'off-the-shelf' cost data collection tools available for use in health services and population health research, describe their features, strengths and limitations. Here we provide a protocol that describes our rationale and methods, using the methods proposed by Godin et al [6] for a systematic search and review of grey literature.

Methods

Study design

A systematic scoping review of scientific (peer reviewed) literature and a scoping review of grey literature will be conducted in parallel, as per the method proposed by Godin et al for a systematic scoping review [6]. Both searches will be limited to tools available in English between January 2015 and December 2025. This time frame was considered appropriate to ensure relevance to the current healthcare context and technologies used to deliver interventions. Given the diversity

of literature, studies from any geographic region, study design, or participant cohort will be included.

The search strategies for both scientific and grey literature were adapted from the review conducted by Chapel et al. [1] and will include the following groups of themes: (1) cost and economic; (2) health services and population health research; (3) tools and/or instruments. Search terms are listed in Appendix 1. Scientific and grey literature must report the development, or description of a tool that has the capacity to be applied in health services and prevention research. The tools must be publicly available (both free and for fee) for immediate use (requiring minimal adaptation). A PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) flow chart 2020 [9] will report the sources of all identified texts, and their reason for exclusion.

Systematic scoping review of scientific literature

The systematic scoping review will be conducted in databases relevant to the subject matter, Medline, EMBASE and Scopus. As per Godin's method, the terms will be used as keyword fields in all database searches. The results will be exported to Covidence where duplicates will be removed, and the title, abstract and full text screen will be completed by two individuals. All disagreements will be reviewed by a third reviewer. The inclusion and exclusion criteria are described in Table 1.

Table 1. Systematic Scoping Review Inclusion and Exclusion Criteria

Inclusion	• Published in English. • Published between January 2015 and May 2025.[1] • Peer-reviewed literature available online via Medline, EMBASE and/or Scopus. • Reports the development, or description of, a cost data collection tool that has the capacity to be applied in health services and prevention research. • The data collection tools must be publicly available (both free and for fee) for immediate use (requiring minimal adaptation). • Any geographic region. • Any population or participant group. • Any study design.
Exclusion	• Report the development or use of bespoke or customised economic data collection tools. • Literature reviews, commentaries or protocols. • Not available in English language. • Trial based or modelled economic evaluations that include description of primary data collection using a bespoke tool will be excluded.

Scoping review of grey literature

There is much useful guidance available on grey literature evidence searching and synthesis, however, one size rarely fits all.[7] The search strategy by Godin et al. was loosely adapted in consultation with a librarian.[6] A grey literature search plan was developed to incorporate three searching strategies:

(1) Searching relevant repositories,

(2) Targeted web searching, and
(3) Consultation with content experts.

The inclusion and exclusion criteria are described in Table 2.

Table 2. Grey Literature Review Inclusion and Exclusion Criteria	
Inclusion	• Published in English. • Published between January 2015 and May 2025.[1] • Grey literature available online. • Reports the development, or description of, a cost data collection tool that has the capacity to be applied in health services and prevention research. • The data collection tools must be publicly available (both free and for fee) for immediate use (requiring minimal adaptation). • Any geographic region. • Any population or participant group. • Any study design.
Exclusion	• Report the development or use of bespoke or customised economic data collection tools. • Literature reviews, commentaries or protocols. • Not available in English language. • Trial based or modelled economic evaluations that include description of primary data collection using a bespoke tool will be excluded.

[1] This time frame was considered appropriate to ensure relevance to the current healthcare context and technologies used to deliver interventions.

For the first grey literature search strategy (searching relevant repositories), we will apply the search criteria to Overton, the world's largest policy and grey literature database.[8] The results of the Overton database search will be exported into Excel, where two individuals will independently screen titles of grey literature for relevance to this review. Any disagreements of the peer and grey literature at the title and abstract review stage will be reviewed by a third reviewer.

The second searching strategy, targeted web searching for grey literature published on the Internet, will use the Google search engine in incognito mode to clear cache and browser history. As per the Godin et al. proposed method, five unique search strategies (listed in Appendix 2.) will be applied to Google and the first ten pages of each search's hits (representing 100 results) will be reviewed by two reviewers independently, using the title and short text underneath. This number of pages was chosen to capture many of the most relevant hits while still being a feasible amount to screen. Potentially relevant records will be 'bookmarked' in the web browser used at the time of searching and listed in an Excel spreadsheet indicating the specific search strategy by which it was identified. Filing bookmarks this way enables the reviewers to access the bookmarked websites via the browser's Bookmark Manager and see which websites will be identified through which search terms and engine. Bookmarking potentially relevant articles at the time of screening will also prevent the same record from being identified repeatedly throughout this search strategy, since the URL of previously bookmarked pages are starred, therefore easily identifiable when viewing the page. This feature also allows reviewers to track new records identified through each search. Titles that will be identified as potentially relevant will be retained for further screening. Since the Godin et al. review Google no longer lists the

count of hits identified for a particular search, as such we are unable to list the number of results retrieved for each Google search. [6] Duplicates will be removed using Microsoft Excel's built-in remove duplicate's function, and full texts will be reviewed by two independent reviewers, and disagreements will be reviewed by a third reviewer.

For the third searching strategy, experts in the field to be consulted for recommended grey literature publications for potential inclusion. Individuals that are well-versed in the topic of the research synthesis and likely to be aware of relevant documents will be considered content experts. For this review, health economists, statisticians, clinical trial specialists, and implementation scientists working in health services and population health will be contacted. As per Godin et al. method, if a content expert does not reply to the initial inquiry within a 7-day period, a reminder email will be sent. There will be no further attempts to contact non-responders beyond this second email. [6] A snowballing search strategy of references lists and citations will be applied to all peer-reviewed costing tools identified for inclusion.

Data Extraction and Analysis

The Authority, Accuracy, Coverage, Objectivity, Date, Significance (ACCODS) checklist will be used by two authors, independently, to critically appraise the quality of grey literature sources. [10] The ACCODS Checklist not intended as an elimination criterion, but rather as a means of providing additional context and considerations when interpreting the evidence.

Following the quality appraisal, the authors will undertake qualitative thematic analysis of extracted data elements to identify common concepts and themes. The data extraction table will be loosely based on the extraction tool used by Chapel et al in their 2019 review of cost data collection methods, including *Table 1. Summary of Cost Data Collection Tool Setting, Jurisdiction, Authors*; and *Table 2: Cost Data Collection Tools*. Finally, an additional *Table 3: Summary of Common Features, Benefits, and Constraints* will summarise these key features of the tools. For this review we define features as the properties used within a tool to complete a set of tasks or actions [11, 12], we define benefits as attributes that translate features into real-world advantages/strengths [11] (akin to implementation strategies), and constraints as features or functionality that inhibit the use of the tool.

Table 1. Summary of Cost Data Collection Tool Setting, Jurisdiction, Authors							
#	**Primary Author**	**Year**	**Tool name**	**Dissemination method**	**Article Title**	**Jurisdiction**	**Ref**
1							
2							
3							
4							

Table 2. Cost Data Collection Tools						
#	**Data collected**	**Mode of use**	**Method of data collection**	**Level of data collection**	**Access**	**Cost**
	Intervention, implementation intervention, both. Prospective or retrospective	*Computer based, telephone, in-person, website-based, email*	*Manually entered, extracted from diaries, observation*	*Aggregate (district, hospital, centre), service (clinician, service), individual (participant, carer)*	*How is the tool acquired/accessed?*	*Of accessing/using the tool?*
1						
2						
3						
4						
5						

Table 3. Summary of Common Features, Benefits, and Constraints						
#	**Feature**	**Description**	**Benefits**	**Description**	**Constraints**	**Description**
1						
2						
3						
4						
5						

Evidence Synthesis

The broad inclusion criteria and health economic content exclude the possibility of quantitative synthesis. The results will be summarised as a narrative synthesis of quantitative studies.

Discussion

The findings of this scoping review will provide researchers and health service staff cost data collection tools available for immediate use. This information is also intended to inform the development of future tools for cost data collection in health services and prevention research. Such a tool will facilitate collection of urgently needed cost and resource use data to inform investment decision making, policy and practice in health services and population health care.

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References

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Supplementary files

Supplementary File 1: Scoping Review Search Terms, by Source	
Source	**Search Terms**
Medline; EMBASE; Scopus.	cost.m_titl. OR economic.m_titl. OR value.m_titl. AND tool.m_titl. OR method.m_titl. OR instrument.m_titl. OR software.m_titl. OR platform.m_titl. OR product.m_titl. OR solution.m_titl. AND health.m_titl. OR "implement*".m_titl. or "implement*".mp. OR "evaluat*".m_titl. AND english language AND humans
Overton	("economic tool" OR "costing tool" OR "cost tool") AND (health OR implementation OR evaluation) + limitations
Google	Economic AND tool AND health; Costs AND tool AND health; Economic AND instrument AND implementation; Costs AND instrument AND implementation; Costs AND instrument AND evaluation