

Is there an optimal way to estimate healthcare resource use?

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Objective

The objective of this research was to identify common sources of data for healthcare resource use (HRU) estimation and to assess their strengths and weaknesses.

Methods

A targeted search of the MEDLINE database, databases for economic evaluations, and health technology assessment websites was conducted to identify articles reporting on sources of data for HRU estimation.

Research question

"What are the existing sources for HRU data and their strengths and weaknesses?"

The search was indication- and treatment-agnostic but filtered to English-language articles published from 2011–2021. Backward chaining was applied to high-value articles.

Results

Nine articles were included from the MEDLINE search and 11 from backward chaining. No additional articles were found via other searches.

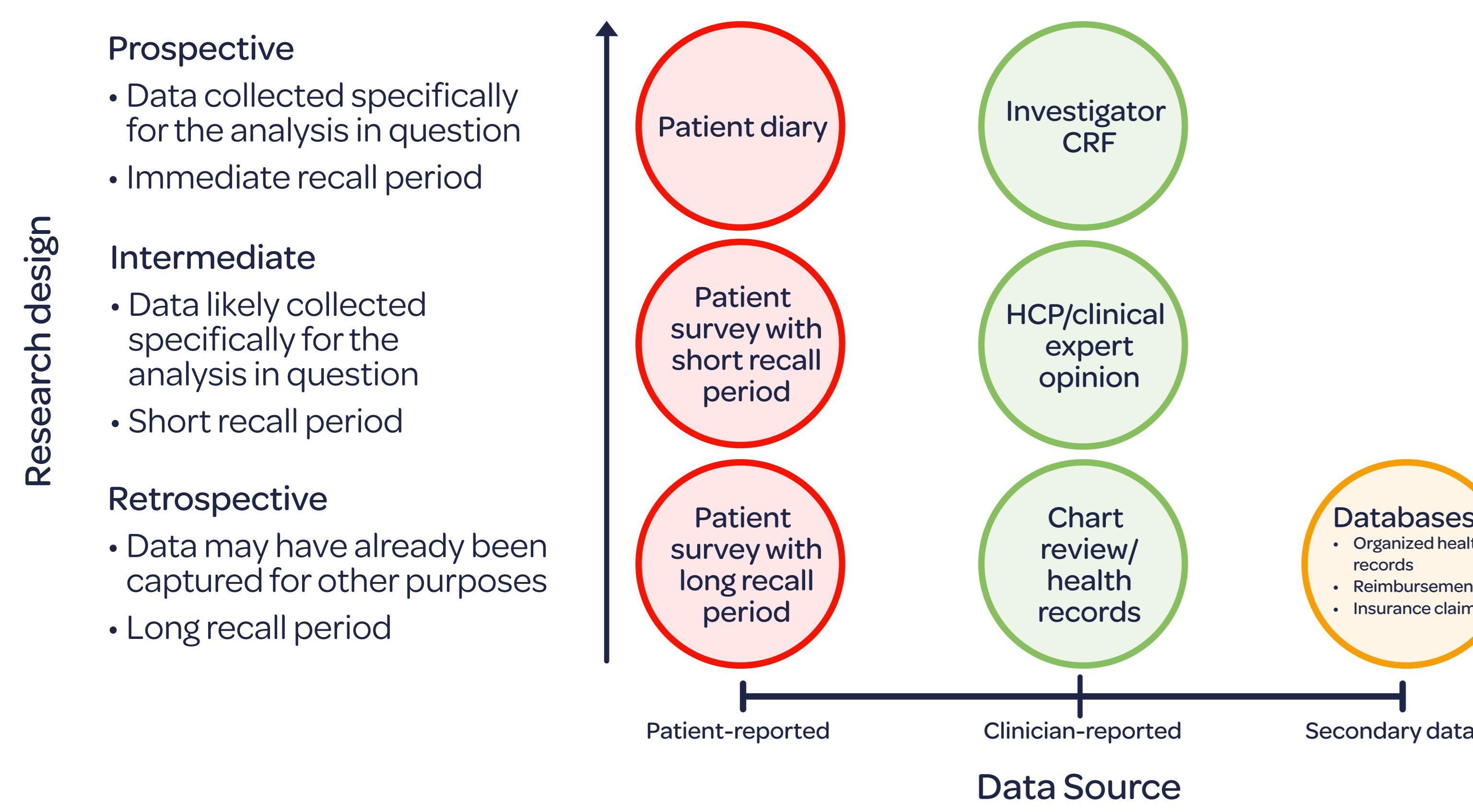
HRU data sources

Key sources of HRU data included the following:

- patient-reported data: surveys, diaries
- clinician-reported data: case report forms (CRFs), patient health records, expert opinion
- secondary datasets: organized health-record databases, medico-administrative databases (reimbursement, insurance claims).

Figure 1 provides an overview of the characteristics of each data source.

Figure 1: Overview of HRU data sources



CRF, case report form; HCP, healthcare professional.

Figure 2: Strengths and weaknesses of HRU data sources

| | Data source | | |
|--------------------|---|--|--|
| | Patient-reported | Clinician-reported | Secondary datasets |
| Speed | + Largely under researcher control – May require novel survey creation | + Expert opinion quick and easy – Time to negotiate access – Time to transform data for analysis | – Time to negotiate access – Time to define population and transform data for analysis |
| Cost | + Patients participate at no or low cost – Researcher time for survey design and data collection | + Expert opinion relatively inexpensive – Researcher time for data collection or processing | + No new data collection – Access fees |
| Response burden | + Often high | – Moderate | + None |
| Data access | + Can directly target patients of interest + Data governance relatively simple | + Some data may already be collected – May need site participation – Data protection complexity | + Data already collected and centralized – Data protection complexity – May not be able to access exact target population |
| Breadth of data | + Can be tailored to capture specific HRU of interest + Can capture data across settings, including outside formal healthcare system | + Expert opinion can capture rare events and under-represented sub-groups – Data limited to scope of site or clinician practice | + Large samples and longitudinal data – Data limited to provider settings in scope of dataset |
| Data quality | – Surveys often inadequately validated – Reporting biases (recall, evasive answers, poor comprehension) – Risk of missing data (selective non-response, declining engagement over time) – Insufficient patient knowledge of treatment/care | + Relatively accurate, reliable + Should reflect care actually received + Low attrition bias + Expert detail on treatment/care – Clinician/provider perspective only – Data entry errors – Incomplete records – Older records may not reflect current practices | + Relatively accurate, reliable + Large sample size + Low attrition bias + Data focus often aligned with cost impact – Provider/payer perspective only – Data entry errors – Bias from imprecise identification of target population – Changing data classification and entry standards over time |
| Data output format | + Can be tailored to requirements + Can collect same data across multiple settings – Non-standardized surveys limit comparability | + Often standardized – May require transformation for analysis | + Often standardized – May require transformation for analysis |

Legend: green, generally acknowledged by studies in literature review as a strength of this data source; orange, neither strength nor weakness, or status differs depending on exact circumstances; red, generally acknowledged as a weakness.

Strengths and weaknesses of HRU data sources

Patient-reported data permit efficient collection and analysis. Surveys can be tailored to capture a broad range of HRU, including social care and care paid out of pocket. Limitations include patient burden, risks of low data quality, technical detail, and completeness, and a lack of standardized, validated surveys.

Clinician-reported data are considered higher quality, but the range of information included and output format may not be optimal for costing analysis. Clinician burden and arranging data access for research can also present hurdles.

A strength of secondary datasets is the availability of preexisting organized data, of known accuracy and reliability, with no incremental burden for data collection. However, as with clinician-reported data, secondary datasets may capture a narrow range of HRU, and specific measures and data formats may not be optimal. Access can be costly and time-consuming to negotiate, and it may be challenging to identify the specific patient populations of interest within the constraints of a retrospective database.

Figure 2 provides a summary of the strengths and weaknesses of each data source.

Discussion & Conclusions

There is no gold-standard approach to HRU estimation; each data source has its own characteristics, strengths, and limitations.

Indeed, we believe it unhelpful to attempt to define a single optimum approach, as different HRU analyses will have correspondingly individual requirements.

Patient-reported data are likely to be best to capture resource use that spans a range of settings, particularly social and informal care, as well as treatments or care paid out of pocket. Clinician-reported data may yield the most accurate estimates of interactions with general practitioners, while well-structured secondary datasets used to record activity and inform reimbursement are likely to be the best source of data for secondary care.

To comprehensively capture the HRU associated with a disease it may also be necessary to combine different data sources.

References

References available upon request.