A Systematic Review of Breast Cancer Utility Weights

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OBJECTIVES

- Health state valuations (utilities) are an essential component of cost-utility analyses; the quality of utility data applied in these analyses is critical to market access decisions in a growing number of countries.
- The National Institute for Health and Clinical Excellence (NICE) in the UK stipulates that utilities should be measured in patients using a generic and validated classification system for which reliable UK population preference values, elicited using a choice-based method such as the time trade-off (TTO) or standard gamble (SG) (but not rating scale), are available.1
- The aim of this review was to systematically identify utility weights for specified health states in breast cancer and to assess their methodological compliance with the NICE reference case.

METHODS

A systematic review of studies in English language journals reporting health-state utility values for breast cancer was completed. Searches of the following sources were performed:

- Electronic databases (PubMed, EMBASE, Cochrane Library, including Database of Abstracts of Reviews of Effectiveness, National Health Service Economic Evaluation Database, and Health Technology Assessment database) 1980 to date
- Internet resources
- Reference lists of relevant articles and reviews

Inclusion/exclusion of studies was performed by two people. Databases were searched using a combination of MeSH and free-text terms. MeSH headings included:

- “Quality of life”
- “Economics”
- Non-MeSH terms included “Breast neoplasms”
- “Standard gamble”
- “Time trade-off”
- “Cost-effectiveness analysis”

Studied reporting utility weights relevant to the following health states were included:

- Remission
- First locoregional recurrence, on treatment
- First locoregional recurrence, after treatment
- Second locoregional recurrence
- Distant disease
- Terminal disease
- Data extracted included characteristics of the sample population, health state descriptions, method of elicitation, and utility estimates.

Searches and reviews of secondary data reported previously were excluded, and data reported within them were traced to original reports. Utility estimates elicited from patients or the general public using SG, TTO, SG, or other choice-based methods were included. Estimates elicited from health professionals or using rating scales or other non-choice-based methods were excluded.

RESULTS

- Fifty-nine studies were identified as potentially reporting utility weights for breast cancer health states.
- These studies were assessed for relevance to the health state definitions and for methodological compliance with the NICE reference case.
- Fifty studies were excluded (Table 1).
- Details of the nine included studies are presented in Figure 1.

DISCUSSION

- The variability and inconsistency of reported utility estimates for breast cancer health states present a problem for researchers performing cost-utility analyses.
- In the absence of accepted methods for the formal synthesis of utility estimates, the range of available estimates should be explored. However, the degree of variability introduces substantial uncertainty into cost-utility estimates for breast cancer interventions.
- The reason for the discrepancies between studies and the inconsistencies within studies is unclear, and authors have not often commented on the variability.
- The new NICE method guideline currently under review is likely to explicitly recommend that utility estimates be elicited from patients within trials using the EQ-5D, with an acknowledgement that this may not be appropriate in all cases. In the context of early breast cancer trials, the number of relapse events is relatively low, and most patients are in remission for the duration of the trial. Therefore, the amount of information about post-relapse health states that can be collected with the EQ-5D is limited.
- Important information about the impact of adverse events could be collected within trials. However, care should be taken in scheduling utility assessments in relation to the administration of each chemotherapy cycle. Most adverse events are transient and are resolved before the next cycle of chemotherapy is administered. If the patient is still suffering from an adverse event, the cycle is likely to be postponed until they have recovered. Collecting utility information only at the time of each chemotherapy administration will therefore underestimate the impact of adverse events on quality of life. Additional assessments should be scheduled to coincide with the period of maximum impact of adverse events.

CONCLUSIONS

- This review of utility weights for breast cancer health states revealed a high level of uncertainty about the evidence base that informs cost-utility analyses in this disease area.
- Despite the quantity of information available, there is no universally accepted set of health states covering the whole disease pathway from diagnosis of early breast cancer to death; numerous utility estimates for numerously health states have been reported.
- Rigorous research is required to address the need for high-quality and precise utility estimates for an accepted set of breast cancer health states.

REFERENCES


CONTACT INFORMATION

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Table 1: Study Inclusion/Exclusion

<table>
<thead>
<tr>
<th>Reference</th>
<th>NICE Guideline Reference</th>
<th>Study Reporting Utility Estimates for Breast Cancer</th>
<th>Number of Studies Extracted</th>
</tr>
</thead>
<tbody>
<tr>
<td>to date</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internet</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reference</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 1: Utility Estimates Identified for Specified Breast Cancer Health States

<table>
<thead>
<tr>
<th>Health State</th>
<th>Utility Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remission</td>
<td>0.80</td>
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<tr>
<td>First LRR</td>
<td>0.75</td>
</tr>
<tr>
<td>Distant</td>
<td>0.65</td>
</tr>
<tr>
<td>Terminal</td>
<td>0.50</td>
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</tbody>
</table>

Table 2: Details of Included Studies

<table>
<thead>
<tr>
<th>Reference</th>
<th>Methodology</th>
<th>Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Early breast cancer patients</td>
</tr>
<tr>
<td>to date</td>
<td></td>
<td>929 patients</td>
</tr>
<tr>
<td>Internet</td>
<td></td>
<td>68 early breast cancer patients</td>
</tr>
<tr>
<td>Reference</td>
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<td>156 members of the public</td>
</tr>
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<td>345 early breast cancer patients</td>
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<td>to date</td>
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<td>26 early and advanced breast cancer patients</td>
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<tr>
<td>Internet</td>
<td></td>
<td>100 members of the public</td>
</tr>
<tr>
<td>Reference</td>
<td></td>
<td>54 members of the public</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6 early breast cancer patients</td>
</tr>
</tbody>
</table>

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