

# Sensitivity of a Search Filter Designed to Identify Studies Reporting Health State Utility Values

Mick Arber, Sonia Garcia, Thomas Veale, Mary Edwards, Alison Shaw, Julie Glanville

York Health Economics Consortium, Enterprise House, Innovation Way, University of York, UK

## Background & Objectives

The importance of quality-adjusted life years (QALYs) in healthcare decision-making and priority-setting means there is a need for methods which facilitate the effective and timely identification of studies reporting Health State Utility Values (HSUVs). We are unaware of any published, validated search filters designed for this purpose. A search filter would be a useful asset in HTA and economic model production. YHEC has developed three search filters for identifying studies reporting HSUVs in MEDLINE which aim to balance sensitivity and precision (with an increasing emphasis on precision from Filter 1 to Filter 3). The objective of this study was to use the relative recall (RR) method to test the sensitivity of the three search filters.

## Methods

The RR method required the identification of a sample of systematic reviews (SRs) of studies reporting HSUVs. These were identified by searching MEDLINE via Ovid (2004 to date) for SRs and by identifying 10 Manufacturers' Submissions (MSs) for NICE Single Technology Assessments which had conducted reviews of studies reporting HSUVs. The title and abstracts of records were screened by two researchers. Studies judged not to be systematic reviews or not to be reviews of studies reporting HSUVs were excluded. Full text documents were obtained. If the full text was not available free online or via local subscriptions the SR was excluded. RR gold standards are only as good as the searches conducted in the contributing reviews. The search methodology of each SR was quality assessed using a pragmatic checklist and SRs were rejected if they did not fulfil all the criteria. Disagreement over eligibility was resolved by discussion and/or the input of a third researcher.

From the selected SRs and MSs, citation details of the included studies reporting HSUVs were added to an EndNote library. Following de-duplication, these records formed the quasi-gold standard (QGS) set of studies reporting HSUVs. The PubMed record for each citation was sought and a search string was created using the PubMed id codes for identified records. This search was run and saved in Ovid MEDLINE. Each search filter was then also run, and the sensitivity of the filters calculated: number of QGS records retrieved by search filter / total number of QGS records indexed in Ovid MEDLINE. Precision was calculated to provide a comparison of number needed to read.

## Contact Us

mick.arber@york.ac.uk

Telephone: +44 1904 323620

Website: www.yhec.co.uk



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## Results

1,485 potential SRs were identified in MEDLINE. Full text documents were sought for 132 SRs. 88 SRs were obtained and 10 had search strategies which fulfilled the quality checklist criteria. From these 10 SRs and the 10 MSs, 346 citations for studies reporting HSUVs were extracted. After de-duplication 327 records formed the QGS set. 293 of these records could be identified in Ovid MEDLINE. Each of the search filters retrieved 267 of the 293 QGS records in MEDLINE, giving a RR of 0.91 for each (Table 1). The filter with the highest precision was Filter 3 (0.003) (Figure 1).

Table 1: Relative recall of 3 HSUVs search filters

HSUVs search filter	Total number of records retrieved by the filter	Number of records in the quasi gold standard set retrieved by the filter	Relative recall (number of QGS records retrieved by search filter / Total number of QGS records indexed in Ovid MEDLINE)
Filter 1	237053	267	0.91
Filter 2	147907	267	0.91
Filter 3	90585	267	0.91

## Discussion, Conclusions, Future plans

Three filters perform at over 90% sensitivity with varying precision. The 'real-life' precision of the most precise filter (Filter 3) when combined with a condition search remains to be tested. An assessment of the database records for the 26 studies missed by the filters indicates that they were missed because HSUVs are not explicitly referred to in the record. The search filters aimed to balance sensitivity and precision, and deliberately did not include broad, general search terms (e.g. quality of life) known to be useful for retrieval of HSUV studies since these tend to decrease already low precision (1,2,3). Inclusion of the 'Quality of Life' subject heading in Filter 3 would have retrieved 20 of the missing 26 studies increasing sensitivity to 98%, but would also have increased overall result totals by 116% from 90,585 to 195,507.

The robustness of RR research findings depends on the quality of the searches undertaken in the SRs. Despite passing the quality checklist, some included SRs had less than optimal search methods, which is a limitation of this study. However, some of the SRs did use supplementary search approaches which improves the opportunities for study identification. The QGS includes a broad range of healthcare topics.

High sensitivity search filters for HSUVs are available. Further analysis of the 26 records missed by the search filters is planned to see if it is possible to improve sensitivity without significant loss in precision. We also plan to test the filters using a larger QGS set and to review the search strategy checklist.

Figure 1: Most precise filter to identify HSUVs

1. Quality-Adjusted Life Years/ Value of Life/
2. (qaly\$ or qald\$ or qale\$ or qtime\$).ti,ab,kf.
3. (quality adjusted or adjusted life year\$).ti,ab,kf.
4. disability adjusted life.ti,ab,kf.
5. daly\$1.ti,ab,kf.
6. ((index adj3 wellbeing) or (quality adj3 wellbeing) or qwb).ti,ab,kf.
7. (multiattribute\$ or multi attribute\$).ti,ab,kf.
8. (utility adj3 (score\$1 or scoring or valu\$ or measur\$ or evaluat\$ or scale\$1 or instrument\$1 or weight or weights or weighting or information or data or unit or units or health\$ or life or estimat\$ or elicit\$ or disease\$ or mean or cost\$ or expenditure\$1 or gain or gains or loss or losses or lost or analysis or index\$ or indices or overall or reported or calculat\$ or range\$ or increment\$ or state or states or status)).ti,ab,kf.
9. utility.ab. /freq=2
10. utilities.ti,ab,kf.
11. disutili\$.ti,ab,kf.
12. (HSUV or HSUVs).ti,ab,kf.
13. health\$1 year\$1 equivalent\$1.ti,ab,kf.
14. (hye or hyes).ti,ab,kf.
15. (hui or hui1 or hui2 or hui3).ti,ab,kf.
16. (illness state\$1 or health state\$1).ti,ab,kf.
17. (euro qual or euro qual5d or euro qol5d or eq-5d or eq5-d or eq5d or euroqual or euroqol or euroqual5d or euroqol5d).ti,ab,kf.
18. (eq-sdq or eqsdq).ti,ab,kf.
19. (short form\$ or shortform\$).ti,ab,kf.
20. (sf36\$ or sf 36\$ or sf thirtysix or sf thirty six).ti,ab,kf.
21. (sf6 or sf 6 or sf6d or sf 6d or sf six or sfsix or sf8 or sf 8 or sf eight or sfeight).ti,ab,kf.
22. (sf12 or sf 12 or sf twelve or sftwelve).ti,ab,kf.
23. (sf16 or sf 16 or sf sixteen or sfsixteen).ti,ab,kf.
24. (sf20 or sf 20 or sf twenty or sftwenty).ti,ab,kf.
25. (15D or 15-D or 15 dimension).ti,ab,kf.
26. (standard gamble\$ or sg).ti,ab,kf.
27. (time trade off\$1 or time tradeoff\$1 or tto or timetradeoff\$1).ti,ab,kf.
28. or/1-28
- 29.

## References

1. Paisley S, Booth A, Mensinkai S. Health-Related Quality of Life Studies. Etext on Health Technology Assessment (HTA) Information Resources. Bethesda, MD US National Library of Medicine (NLM), National Information Center on Health Services Research and Healthcare Technology; 2005.
2. Papaioannou D, Brazier J, Paisley S. Value in Health 2013;16(4):686-695.
3. Papaioannou D, Brazier J, Paisley S. NICE DSU Technical Support Document 9. NICE DSU; 2010. Available from: [http://www.nicedsu.org.uk/Utilities-TSD-series\\_\(2391676\).htm](http://www.nicedsu.org.uk/Utilities-TSD-series_(2391676).htm) [Accessed May 22, 2015].

