



ELSEVIER

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/jval

ECONOMIC EVALUATION

A Comparison of Different Approaches for Costing Medication Use in an Economic Evaluation

Margaret Heslin, PhD^{1,*}, Oluwagbemisola Babalola, MSc¹, Fowzia Ibrahim, MSc², Dominic Stringer, MSc³, David Scott, MD², Anita Patel, PhD⁴¹King's Health Economics, King's College London, London, UK; ²Department of Rheumatology, King's College London, London, UK;³Biostatistics Department, Institute of Psychiatry, Psychology and Neuroscience, King's College London, London, UK; ⁴Centre for Primary Care and Public Health, Blizard Institute, Queen Mary University of London, London, UK

ABSTRACT

Background: Estimating individual-level medication costs in an economic evaluation can involve extensive data collection and handling. Implications of detailed versus general approaches are unclear. **Objectives:** To compare costing approaches in a trial-based economic evaluation. **Methods:** We applied four costing approaches to prescribed medication data from the Tumour necrosis factor inhibitors Against Combination Intensive Therapy randomized controlled trial. A detailed micro-costing approach was used as a base case, against which other approaches were compared: costing medications used by at least 1.5% of patients; costing medications on the basis of only chemical name; applying a generic prescription charge rather than a medication-specific cost. We quantitatively examined resulting estimates of prescribed medication and total care costs, and qualitatively examined trial conclusions. **Results:** Medication costs made up 6% of the total health and social care costs. There was good agreement in prescribed medication costs (concordance correlation coefficient [CCC] 0.815, 0.819, and 0.989) and excellent agreement in total costs

(CCC 0.990, 0.995, and 0.995) between approaches 1 and 2. Approaches 3 and 4 had poor agreement with approach 1 on prescribed medication costs (CCC 0.246–0.700 and 0.033–0.333, respectively), but agreement on total care costs remained good (CCC 0.778–0.993 and 0.729–0.986, respectively). **Conclusions:** Because medication costs comprised only a small proportion of total costs, the less resource-intensive approaches had substantial impacts on medication cost estimates, but had little impact on total care costs and did not significantly impact the trial's cost-effectiveness conclusions. There is room for research efficiencies without detriment to an evaluation in which medication costs are likely to form a small proportion of total costs.

Keywords: costs, economic, medication, trial.

Copyright © 2018, International Society for Pharmacoeconomics and Outcomes Research (ISPOR). Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Introduction

Central to conducting an economic evaluation is the identification, measurement, valuation, and comparison of the costs and consequences of the alternatives being considered [1]. Once resources have been identified and measured, valuation needs to be completed to provide a cost. Deciding on which costing approach to adopt in an economic evaluation is just as important as deciding what costs to include [1]. The aim of the study, type of patient group, disorder under investigation, treatment comparison, setting, and many more factors will contribute to decisions on how to approach unit costing. Costing medications in economic evaluations can take a considerable amount of time and effort [1]. Individual-level micro-costing (using all detailed information on the resources used) is the most accurate method with more macro-costing

approaches (using general or aggregate valuations) becoming progressively less accurate. The National Institute for Health and Care Excellence (NICE) guide to the methods of technology appraisal 2013 [2] provides methodological recommendations for economic evaluations and recommends that costs should be based on the drug tariffs for medications that are predominantly prescribed in primary care. The International Society for Pharmacoeconomics and Outcomes Research guidelines state that “[d]rug cost values and measurements should be transparent and made available to any reader or user of a CEA,” but do not recommend how costs should be applied to resource use data [3]. There is variation in approaches taken across economic evaluations, with consequent variations in research effort and resourcing. The value of detailed micro-costing, and consequences of less accurate approaches, for an evaluation is unclear.

* Address correspondence to: Margaret Heslin, King's Health Economics, Institute of Psychiatry, King's College London, The David Goldberg Centre, 16 De Crespigny Park, Denmark Hill, Box 024, London SE5 8AF, UK.

E-mail: margaret.heslin@kcl.ac.uk.

1098-3015/\$36.00 – see front matter Copyright © 2018, International Society for Pharmacoeconomics and Outcomes Research (ISPOR).

Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license

(<http://creativecommons.org/licenses/by-nc-nd/4.0/>).<http://dx.doi.org/10.1016/j.jval.2017.02.001>

Medication is an important factor in the context of overall care and care costs. For many health conditions, medications constitute a small fraction of the total health care cost. For example, the cost of medication in the treatment of schizophrenia has been estimated to account for 2% of direct costs [4]; in multiple sclerosis this is estimated as 8.1% of total costs [5], 13% in lower back pain [6], and less than one-quarter in inflammatory bowel disease [7]. For coronary heart disease, the leading single cause of death in the United Kingdom, the cost of medication has been estimated at only 32% of total health care costs [8].

In these circumstances, when medications represent a very small to moderate proportion of the total direct costs, it is easy to see why a more macro approach to medication costing might be taken, because the impact of imprecision will be minimal in the context of total costs. Nevertheless, when medication is the mainstay of treatment, for example, in chronic conditions without cure (e.g., in moderate to severe chronic psoriasis vulgaris in which medications make up 60% of direct costs [9]), or when medications are particularly expensive, they become a major cost driver in the context of total costs. There are also complications when valuing medications as compared with other types of resources in an economic evaluation because of issues around value and cost [10], but that is beyond the scope of this study.

Using data from a completed within-trial economic evaluation involving participants with rheumatoid arthritis [11,12]—care of which is heavily reliant on management by medication and associated with cost pressures arising from newer, more expensive medications—we applied a number of alternative approaches to costing medication. We then examined the impact of this on 1) total medication costs, 2) total health and social care costs, and 3) the conclusions of the trial.

Methods

Data Sources

We used data from the TACIT trial [11,12]. In brief, the Tumour necrosis factor inhibitors Against Combination Intensive Therapy (TACIT) trial was an open-label, multicenter, randomized controlled trial conducted over 12 months in the United Kingdom. Twenty-four clinics recruited patients with active rheumatoid arthritis who met UK criteria for accepting tumor necrosis factor inhibitors (TNFis). Patients were randomized to a treatment strategy of starting either TNFis or conventional disease-modifying antirheumatic drugs (cDMARDs). At 6 months, participants who had not responded adequately to the medication were switched either to another TNFi or, in the case of participants allocated to the cDMARDs arm, to their first TNFi.

The trial included a concurrent economic evaluation. It measured costs from health and social care as well as societal perspectives and linked them with Health Assessment Questionnaire (HAQ) scores and quality-adjusted life-years (QALYs) (on the basis of both the short form 36 health survey [SF-36] and the three-level EuroQol five-dimensional questionnaire [EQ-5D-3L]) at both 6 and 12 months. All resource use was collected using an adapted version of the Client Service Receipt Inventory (CSRI; collected at baseline, 6 months, and 12 months) retrospectively for 3-month periods and extrapolated up to 6-month periods, except trial medications. The CSRI included health and social care costs: inpatient services, outpatient services, primary care services, other community-based services, social services, and other prescribed nontrial medications. Trial medications were recorded separately and prospectively by clinical and research staff over the entire study period using a specifically designed proforma. Details of medication resource use included medication name, dose, frequency, and duration of use. For estimating

costs associated with medications, only generic medication names were taken into account to ensure cost estimations were conservative. All costs are reported in pounds sterling at 2010/2011 prices. Discounting was not necessary because all costs were related to a 1-year period.

In the further analyses reported here, we examine findings only in relation to the health and social care perspectives because the influence of medication costs on total costs would likely be more visible than when applying to more comprehensive perspectives. In addition, this is the perspective currently preferred by NICE in its decision making [2].

In this trial there were two sets of medication data collected: the medication given as part of the trial designated by intervention/control status and all other medications taken for reasons not linked to the trial. It is recommended that the intervention in an economic evaluation be always micro-costed [13]; therefore, we micro-costed the intervention medications as was done in the trial. This is included along with other components in the total health and social care costs. In the comparison of costing approaches, we focused solely on other medications that were prescribed independently from the trial. Because the trial medications were limited to a handful, these were less resource-intensive to value and cost compared with other prescribed medications. In the comparisons, all other cost components were held constant and only the nontrial prescribed medication costing approaches were varied as described herein.

Costing Approaches

The following four costing approaches were selected for comparison. These are summarized in Table 1.

Approach 1: Cost per milligram (base-case analysis)

This criterion standard micro-costing approach [1] was used for the economic evaluation in the TACIT trial [11,12]. A unit cost for each medication was calculated in the form of a cost per milligram. This was calculated on the basis of the most cost-efficient pack size, choosing maintenance prices over initial treatment prices and generic prices over branded ones to obtain conservative estimates. These were based on the recommended dose provided by the British National Formulary [14], which is a reference book that contains information and prices of medication available on the National Health Service. These unit costs were then applied to the data by multiplying the cost per milligram by the dose reported, the number of doses per day, and the number of days used. A series of rules were applied to address missing data in a standardized way. When medication name was missing but other information (e.g., dose) indicated some use, a standard charge based on the prescription cost analysis (PCA) was applied [15]. When a medication name was provided but unit quantity was missing, a cost based on the lowest cost chemical name for that medication from the PCA [15] (or based on the lowest cost individual preparation when chemical name was not available) was applied. When the number of days of use was missing, a PCA cost was used, and the patient was assumed to have received the item once in that period. If patients reported that the frequency of use was “as necessary,” it was assumed that the patient received one prescription during the time period.

Approach 2: 1.5% of medications

The second approach used the same micro-costing approach as approach 1 but with an emphasis on the more commonly used medications across the sample. This approach was used by McCrone et al. [16] as a practical approach, given that the service users for their study recorded approximately 1000 medication names. Only those medications that were used by at least 1.5% of

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات