The need for economic evaluation in osteoarthritis

"...with regard to the medico–economic pressure, it is essential to develop effective treatments and also efficient strategies."

Aging HEALTH

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Osteoarthritis (OA) is the most common form of joint disease and the leading cause of pain and physical disability in older people. It is an important disease in our aging society and ranks among the top five causes of disability [1]. The condition is associated with a high health economic burden, especially with regard to direct and indirect costs, as well as loss of health-related quality of life [2,3].

The traditional management of OA is mainly symptomatic. At present, a lot of pharmacological, nonpharmacological or surgical treatments are available for patients with knee or hip OA [4–6]. Pharmacological treatments include acetaminophen, nonsteroidal anti-inflammatory drugs (NSAIDs; i.e., traditional NSAID or COX-II inhibitor), or symptomatic slow-acting drugs (e.g., glucosamine sulfate, chondroitin sulfate and hyaluronic acid). Nonpharmacological treatments include exercises, physiotherapy, patient education or weight loss. Surgery includes joint replacement and osteotomy.

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The direct cost of some of these treatments can be substantial [7]. However, other costs, including the cost for the prevention or the treatment of an adverse event could be quite expensive. For example, co-prescription of gastroprotective agents to prevent NSAID-related gastropathy is a common practice for patients requiring chronic treatment with nonselective NSAIDs [8]. Gastroprotective agents include proton pump inhibitors, histamine H2 receptor antagonists, misoprostol and, in some cases, antacids. The costs of treating or preventing nonselective NSAID-related gastropathy comprise not only the use of gastroprotective agents, but also hospitalizations and visits to emergency departments for gastrointestinal complications or visits to gastroenterologists and general practitioners. The costs of dealing with these adverse events are substantial; for example, the iatrogenic costs associated with NSAIDs have been estimated at between £32 and £70 (US $49.0 and $107.1) for each patient prescribed an NSAID in the UK, and the total effect on the NHS in the UK was estimated to be between £166 million (US $254.0 million) and £367 million (US $561.5 million) per year [9].

In most countries, it is presumed that good care is at least partly influenced by the funds available [10]. Deciding which health and public interventions should be funded is an important task for society. To make the best use of resources, some have argued that consistent decision rules based on a fixed cost for a given amount of benefit should be used [11]. Economic evaluation in OA could be of particular interest to help allocate scarce resources efficiently. Unfortunately, although health economic analyses have been widely used in other diseases, relatively few data are available for OA. The available economic evaluations are mainly pragmatic studies [12–17] or economic modeling studies (e.g., with the Markov model) [18–26]. On the other hand, these cost–effectiveness evaluations in OA using the Markov model (e.g., with anti-inflammatory drugs or with surgery) mainly take into account adverse events, assuming an equal symptomatic effect between treatments [18–26]. Economic evaluation taking into account the effectiveness of different strategies could then be of great interest. However, it should be acknowledged that the most important information for economic modeling (e.g., utility and quality-adjusted life years [QALYs]) has not frequently been collected in OA trials [27]. Consequently, we recommend assessing utility scores in all new clinical trials.

As a point of interest, a lot of trials investigating OA, have assessed health-related quality of life using specific instruments, such as the Women on the Move Against Cancer (WOMAC) or the Lequesne index. As is now recognized, these data cannot be used in cost–effectiveness analyses.

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However, some authors have developed and estimated a prediction model using linear regression to map the specific health-related quality of life instrument (i.e., the WOMAC) into health utility scores [28,29]. The methodology used to estimate utility from WOMAC has been proposed by Grootendorst in 2007 [29]; however, it should be noted that a recent paper seems to suggest that the actual QALYs could differ from those predicted on the basis of mapping (e.g., with the Grootendorst estimation) [30]. Utility estimates could be used to calculate QALY that could then be used in cost–effectiveness analysis to assess the Incremental Cost Effectiveness Ratio (ICER), which is a measure of the additional cost per unit of health gain. However, it should be acknowledged that such economic studies using utility assessment from specific instruments could only be considered as preliminary and that more sophisticated economic modeling should be developed that could also take into account data related to the natural history of OA.

In a cost–effectiveness analysis, the incremental cost and incremental effect could be represented visually using the incremental cost–effectiveness plane [31]. The horizontal axis divides the plane according to incremental cost (positive above, negative below) and the vertical axis divides the plane according to incremental effect (positive to the right, negative to the left). This divides the incremental cost–effectiveness plane into four quadrants (Figure 1). Each quadrant has a different implication for the decision. If the ICER fell in the southeast quadrant (more effective, less costly), the experimental intervention is always considered cost–effective and called dominant over the alternative. Interventions falling in the northwest (less effective, more costly) are never considered cost–effective, and are thus inferior. Finally, if the ICER fell in the northeast or the southwest quadrant, trade-offs between costs and effects would need to be considered. These two quadrants represent the situation where the experimental treatment or intervention may be cost effective compared with the control, depending upon the value at which the ICER is considered good value for money. For economic analyses the northeast quadrant and the southwest quadrant could be considered to be of equal value.

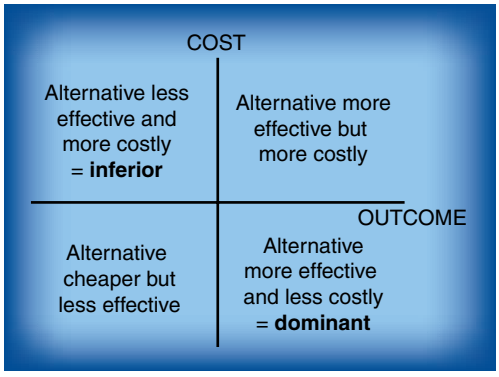

Figure 1. Cost–effectiveness plane.

> "However, it seems that the appropriate threshold for cost–effectiveness may be dependant on the context of a situation, including risk of morality, especially in OA."

The remaining question is the threshold below which the ICER could be considered as good value for money. Unfortunately, there is no clear answer. For many years, the figure of US $50,000 per QALY has been proposed as an acceptable cut-off [32]. Others proposed a graded approach to the adoption of interventions. Interventions that cost less than $20,000 per QALY were seen as having strong evidence for adoption, and those costing more than $100,000 per QALY having weak evidence for adoption [33]. However, it seems that the appropriate threshold for cost–effectiveness may be dependant on the context of a situation, including risk of morality, especially in OA [34].

In an OA economic model, the long-term structure-modifying effect of some products could be of major importance. Indeed, some treatments (e.g., glucosamine sulfate, chondroitin sulfate and diacerein) were suggested to reduce the structural progression of the joint, as assessed on a radiograph [35]. Since it has been shown that a highest decrease in joint space width or a greatest loss of cartilage over time is associated with an increased need for joint surgery [36,37], we believe that the structural effect of such products should be included as a long-term potential effect in OA economic models. Consequently, the Markov model should not only be restricted to the time of treatment but should also take into account the outcomes after treatment discontinuation.

In conclusion, with regard to the medico-economic pressure, it is essential to develop effective treatments and also efficient strategies. In OA, economic evaluations are likely to be of paramount importance for this purpose and, consequently, need to be developed.

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- •• of considerable interest

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