

# Arthritis Patient Education: How Economic Evaluations Can Inform Health Policy

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## RÉSUMÉ

Dans le cadre de la lutte des responsables de l'élaboration des politiques de santé pour endiguer les coûts tout en maintenant la qualité, on promouvoit l'éducation des patients comme moyen d'amélioration de la santé et de recours plus dosé aux soins de santé. L'évaluation des interventions psychopédagogiques en place s'est concentrée sur l'amélioration des connaissances, la modification du comportement et l'état de santé mais les résultats économiques n'ont pas été explorés. Étant donné que ces programmes pourraient être efficaces mais coûteux, il est essentiel d'en faire l'évaluation économique pour mieux convaincre les responsables de l'élaboration des politiques pour qui les coûts constituent un élément important. Ce document présente une évaluation du Arthritis Self-Management Program (ASMP) que j'effectue avec mes collaborateurs en randomisant les participants qui ont ajouté l'ASMP aux soins habituels par comparaison à l'utilisation stricte des soins de santé habituels. Les coûts directs et indirects sont vérifiés par auto-évaluation de l'utilisation des services de santé ainsi qu'en fonction d'une diminution de la productivité et l'efficacité est établie par une échelle analogue visuelle et le SF-36. Les résultats obtenus, si l'on souhaite qu'ils influencent les politiques de santé, doivent être diffusés aux services de santé publique, aux assureurs privés, aux patients et aux organismes professionnels de santé, ce qui a pour effet de favoriser le financement, d'augmenter la sensibilisation et de promouvoir la participation.

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Mots clés: Arthrite, éducation des patients, rapport coût-efficacité, qualité de vie, coûts des soins de santé.

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## ABSTRACT

As Canadian health policy-makers struggle to contain costs while maintaining quality, patient education is promoted as making patients more effective producers of health and consumers of health care. Assessment of existing psychoeducational interventions has concentrated on knowledge enhancement, behaviour modification, and health status while economic outcomes have remained unexplored. Given that such programs are likely to be effective, but costly, economic appraisals are necessary to convince cost-conscious policy-makers. This manuscript describes a cost-effectiveness evaluation of the Arthritis Self-Management Program (ASMP) that I and my collaborators are conducting by randomizing participants to the ASMP as an adjunct to usual medical care versus usual medical care. Direct and indirect costs are evaluated through self-reporting of health services utilization and diminished productivity and effectiveness through a visual analogue scale and the SF-36. To influence health policy, the results must be disseminated to public health authorities, private insurers, and patient and health professional organizations, thereby encouraging funding, increasing awareness, and promoting participation.

## 1 Introduction

As the Canadian population ages, chronic rheumatic illnesses consume an ever-increasing portion of the health care dollar.<sup>1-5</sup> In 1992, in the United States, musculoskeletal and associated conditions were estimated to cost \$149 billion (\$221 billion in 1995 Canadian dollars) or 2.5 per cent of the Gross National Product (GNP),<sup>6</sup> 50 per cent due to lost wages. A decade prior, these costs were estimated at \$21 billion (\$53 billion in 1995 Canadian dollars) or 1 per cent of GNP.<sup>7</sup> In Canada, in 1986, the cost of these conditions was approximated at \$8.2 billion (\$11 billion in 1995 Canadian dollars), representing 2 per cent of GNP and 10 per cent of all health care expenditures.<sup>1</sup> Lessening the impact of musculoskeletal conditions could improve the health and reduce health care costs in the entire population and the aged in particular.<sup>2</sup> However, it is currently unknown which strategies will have the greatest impact on outcome and accordingly, how health care resources can be optimally allocated. Although several studies have documented the cost of these conditions, few have evaluated if treatment costs are commensurate with benefits.

## 2 Health Promotion Is a Key Policy Issue for Canadian Seniors: The Need for Arthritis Patient Education

Given that Canadian per capita health care expenditure is surpassed only by the United States and has escalated more rapidly than that of most other developed countries,<sup>8</sup> Canadian health policy-makers are struggling to contain costs without compromising quality. Provincial commissions have re-examined their systems of health care delivery and identified several policy areas which merit attention.<sup>9</sup> These include health promotion, community-based care, and increased participation between service providers and patients. Within this context, patient education, with its potential to encourage health-promoting behaviours, enhance the patient/provider re-

lationship, and make patients more effective users of health services, emerges as an important policy option.

For those with musculoskeletal conditions, arthritis patient education represents an important policy issue. Conventional therapies for these patients have focussed on alleviating the associated discomfort and disability primarily through medications, surgery, and physical therapy. However, chronic illnesses involve a complex interplay of physical and psychological factors and management strategies should therefore reflect this, incorporating not only conventional medical and surgical treatments, but also psychoeducational interventions. Recent studies have shown that those patients with not only the greatest impairment in physical, but also in psychological functioning, incur the highest health care costs.<sup>10-12</sup> Therefore, adjunctive therapies aimed at reducing psychosocial distress may enable patients to cope better with chronic illness and become more effective users of health care resources and more productive in labour and non-labour force activities. I will term such therapies as "health education," i.e. any combination of learning experiences designed to facilitate voluntary adaptation of behaviour conducive to health, and include approaches variably labelled as educational, psychoeducational, and behavioural.<sup>13</sup> Given that prevention and cure are not possible for most chronic rheumatic conditions, and that patient response to conventional interventions is often partial, seldom absolute, patients frequently become dissatisfied, some abandoning all usual therapies and others using resources excessively and inefficiently. Through a variety of mechanisms, health education should promote the development of patient skills that will make them better managers of their health care and facilitate the evolution of the patient/provider relationship from one of dependency into partnership. Patient and provider expectations will become more realistic, potentially leading to more efficient use of health care resources, enhanced patient productivity, and decreased health care costs.

Assessment of arthritis health education had concentrated primarily on intermediate outcomes such as enhancement of knowledge and improvement in health producing behaviours. Increasingly, studies have demonstrated improvement in primary outcomes such as disability, depression, and pain.<sup>14-18</sup> Yet, economic outcomes including health service utilization and labour force and non-labour force productivity remain largely unexplored.<sup>19-21</sup> In the only published economic appraisal of the Arthritis Self-Management Program, Lorig et al. showed in a non-randomized study evaluating only physician utilization, that four years after participation in the six-week program, there was a 43 per cent decline in physician visits, leading to an estimated net cost saving of between \$200 and \$600 per person.<sup>20</sup> Given the anticipated benefit of these health education programs, their low cost of implementation and negligible adverse effects compared to the substantial cost and adverse effects for many conventional medical and surgical therapies, can it be assumed that these programs offer good value for the money? Are economic appraisals of such interventions merely a

statement of the obvious? It is believed such studies of health education programs are warranted. I am currently collaborating in such an evaluation of the Arthritis Self-Management Program and this article discusses how this study can motivate the development and implementation of policies which promote patient education and potentially make patients more effective consumers of health services.

### **3 Translating Research on Patient Education into Health Policy: The Need for Economic Appraisals of Arthritis Patient Education Programs**

To convince cost-conscious health policy-makers of the merits of novel rheumatic disease interventions, economic analyses are indicated when the interventions are likely to be effective, yet costly per case or in the aggregate.<sup>22</sup> Most of the few existing cost-effectiveness analyses of rheumatic disease interventions evaluate conventional medical or surgical treatments.<sup>23,24</sup> However, economic appraisals of patient education programs are also required. Given that arthritis education programs are defined to encompass a spectrum ranging from self-management programs taught by lay persons to intensive individual psychotherapy offered by highly trained professionals, the costs are not uniformly trivial. Although the costs associated with the Arthritis Self-Management Program have been estimated at less than \$60 per participant,<sup>20</sup> those associated with individual psychotherapy may be many times higher. In addition, although the associated costs may be substantially less than for conventional medical therapy, musculoskeletal conditions have a high prevalence and therefore, the large number of patients who are potential candidates for health education may make the total cost considerable.

To influence health policy, the results of economic appraisals of the arthritis patient education program must be disseminated to numerous audiences, including federal, provincial, and regional health authorities, as well as to private insurers, patient organizations such as the Arthritis Society of Canada and its provincial branches, and health professional societies such as the Canadian Rheumatology Association and its provincial equivalents. A favourable appraisal of health education would potentially encourage public funding for the nation-wide development and implementation of such programs. Private insurers, viewing such interventions as a means to promote health and decrease health service utilization, may also support their implementation financially and encourage client participation. Patient and health professional organizations would facilitate implementation by increasing patient awareness and promoting participation.

### **4 Economic Appraisal of Health Care Interventions**

To explain the type of economic appraisal chosen for the Arthritis Self-Management Program, a brief discussion of economic evaluations is provided.

Economic evaluations assess the costs and outcomes of an intervention relative to the existing alternative. They are generally divided into four types, cost minimization, cost-effectiveness, cost-utility, and cost-benefit.<sup>25-30</sup> All types value the cost of both alternatives, but they differ in the way the outcomes are expressed.

A *cost minimization* analysis does not consider outcomes and is performed only when the outcomes of both alternatives are known to be identical. This is seldom the case as a new therapy frequently confers additional benefits, but at greater cost. To determine if the incremental benefits are commensurate with the incremental costs, other types of economic evaluation are more appropriate.

A *cost-effectiveness* analysis expresses consequences as a single outcome relevant to the health state under study. For example, in evaluating a new cancer chemotherapy, years of life saved may be a relevant outcome, whereas in evaluating a new anti-rheumatic agent, tender joint count or duration of early morning stiffness are more appropriate measures. However, for chronic disease therapies which affect more the quality than the duration of life, unidimensional outcomes cannot adequately capture the therapeutic effects. Furthermore, the same physical outcome may impact the quality of life of two patients quite differently and this type of analysis is unable to incorporate individual preferences or valuations for health states. Instruments, such as the Medical Outcomes Study SF-36,<sup>31</sup> have been developed which evaluate multiple domains of health-related quality of life. Although such instruments can yield a global score,<sup>32,33</sup> they characterize general health states and do not yield preferences for the health state.

A *cost-utility* analysis (sometimes considered as a type of cost-effectiveness analysis) incorporates both changes in quality and length of life by expressing the outcome as quality adjusted life years (QALYs) in which the time in a health state is weighted by the utility or the strength of an individual's preference for that outcome. Utility measurement is designed to provide a common metric to enable the comparison of competing interventions across disease states. To aid health policy-makers in using this information to optimize health resource allocation, league or ranking tables have been developed which rank competing interventions in terms of the cost per quality adjusted life year. Interventions with a cost-utility ratio exceeding a certain threshold would not be implemented.

Quality weights for cost utility analysis have been generated by several techniques including generic health state classification instruments<sup>34</sup> as well as explicit assessment, but there is no consensus on which method is preferable. Health state classification instruments include the McMaster Health Utilities Index, the Quality of Well-Being Scale, and the Sickness Impact Profile.<sup>34</sup> They describe a variety of potential health attributes within several domains (e.g., social, emotional, and physical functioning) and assign a preference weighting to each condition. An individual with an observed health state is then mapped to the most appropriate description.

The commonest approaches to explicit assessment of preferences include the visual analogue scale, the standard gamble, and the time trade-off. Discussions of the theoretical underpinnings, implementation, and advantages and disadvantages of each method exist.<sup>35-42</sup>

Although utility measurement may be theoretically appealing, none of the existing methods has been found to be both practical and valid. Furthermore, the unthinking use of league tables can be hazardous.<sup>43</sup> The choice of the method to assess utility as well as the range of costs and consequences considered and the identification of a comparison program may invalidate the construct of cost-utility as a common metric. Further refinement of cost and utility assessment is required before league tables can guide resource allocation.

A *cost-benefit* analysis expresses the outcomes in monetary terms derived either by eliciting willingness-to-pay for a probability of an improved health state or estimating medical costs averted and income gain from increased labour force productivity, i.e. the human capital approach. Both approaches are problematic. The former has theoretical advantages as it potentially can provide a more comprehensive valuation of outcomes, assuming that the respondent considers the physical, monetary, and psychological burden imposed by the disease in developing his value. However, its implementation is difficult because respondents often behave irrationally and inconsistently towards probabilities and are heavily influenced by their income and wealth.<sup>26,44</sup> On the other hand, strict application of the latter approach (as discussed in more detail later) provides an incomplete valuation of the benefits of the intervention, omitting any consideration of non-labour force activity and quality of life effects.

## **5 Designing an Economic Evaluation of the Arthritis Self-Management Program**

As is apparent from the preceding section, in developing an economic evaluation of the Arthritis Self-Management Program, there were numerous methodological and practical considerations. Given the anticipated incremental benefit and cost of the Arthritis Self-Management Program as an adjunct to usual care compared to the alternative of usual care alone, a cost minimization study is likely to be insufficient. The lack of patient acceptability and methodological problems, including the requirement for a laborious interview, associated with the explicit elicitation of utilities through the standard gamble and time trade-off as well as with the willingness-to-pay approach make these unattractive. It has therefore been decided to conduct a cost-effectiveness analysis, using outcome measures which capture the multidimensional effect of the Arthritis Self-Management Program on quality of life.

In order for economic evaluations to inform health policy for the older adult, they must incorporate costs and outcomes, such as non-labour force productivity and quality of life, which are likely to be favourably influenced

in this population by educational interventions. Considering their advanced age, most participants in the arthritis education program will not be participating in labour force activities and will not incur income loss because of their disability. The Canadian Survey on Ageing and Independence showed that among the age group 45–49 years, 93 per cent of men and 77 per cent of women are in the labour force, compared to only 16 per cent of men and 5 per cent of women in the age group 65–69 years.<sup>45</sup> Furthermore, national American survey data for those with a musculoskeletal condition indicate that although labour force income losses exceeded medical resource costs almost three-fold for those aged 45–64 years, for those over 65 years, the converse is true, medical resource costs exceeding income loss by almost three-fold.<sup>6</sup> In order to avoid under-estimation of the program's anticipated potential to enhance productivity, it is critical that the days the participants are unable to perform their activities of daily living be considered and an implied monetary value for these activities be incorporated in the analyses. Furthermore, given that it is anticipated that the intervention will influence more the quality than the duration of life, it is necessary to utilize an effectiveness measure which assesses the physical, psychological, and social domains of health-related quality of life.

A poorly designed cost-effectiveness evaluation can inappropriately threaten the implementation of an intervention. However, if properly conducted, it is believed that a cost-effectiveness evaluation is warranted for health education programs and the results can appropriately influence health policy-makers.

### *1 A Cost-Effectiveness Evaluation of the Arthritis Self-Management Program*

The cost-effectiveness ratio refers to a comparison of incremental costs and benefits. It is evaluated using the following formula:

$$\Delta \text{Cost}_{\text{treatment}} - \Delta \text{Cost}_{\text{control}} / \Delta \text{Effect}_{\text{treatment}} - \Delta \text{Effect}_{\text{control}}$$

where  $\Delta \text{Cost}_{\text{treatment}}$  represents the difference in pre- and post-intervention costs for patients receiving the Arthritis Self-Management Program, i.e. the within patient differences in costs;  $\Delta \text{Cost}_{\text{control}}$  represents corresponding costs for the control group;  $\Delta \text{Effect}_{\text{treatment}}$  represents pre- and post-intervention change in the effectiveness measure;  $\Delta \text{Effect}_{\text{control}}$  represents the corresponding change in the control group.

To assess the cost-effectiveness of the Arthritis Self-Management Program as an adjunct to usual medical care versus usual medical care in the older population, the program is being implemented in a population of older adults in five communities outside Vancouver, British Columbia. Five hundred individuals are currently being randomized to either the treatment or wait-listed to the control group. The control group will receive the intervention in one year. Both groups complete self-report questionnaires on health status, health services utilization, and diminished labour force

and non-labour force productivity at study entry and after six and twelve months.

Costs and consequences are assessed from a societal perspective, incorporating those incurred by the patient, health care provider, and health care payer. The direct and indirect costs incurred by the study participants are being documented using a costing methodology which I and my colleagues have previously applied to rheumatic diseases.<sup>46,47</sup> Direct costs refer to health services utilized and indirect costs to diminished productivity represented by income loss or the implied value for services of non-labour force participants if the services were priced in the marketplace.<sup>44</sup> The primary measure of effectiveness is quality of life as expressed by a visual analogue scale and the health dimensions captured in the Medical Outcomes Study SF-36.<sup>31</sup> Although a monetary value is not being explicitly assigned to the third cost component, psychosocial costs, i.e. the costs associated with the pain and anxiety imposed by the disease, these are at least partially subsumed in the evaluation of quality of life.

It should be noted that some researchers exclude indirect costs from the numerator of the cost-effectiveness ratio.<sup>27-29</sup> They argue that since indirect costs reflect changes in productivity, they are incorporated in the effectiveness measure. Including them in the numerator would therefore lead to double counting of the benefits. Others reason that productivity changes contribute both on the effectiveness side (to changes in quality of life) and on the cost side. Therefore, including them in both the numerator and denominator “does not represent double counting but appropriate counting of different impacts of the treatment”.<sup>26</sup> For this study, the cost-effectiveness ratio will be generated in both ways.

## 2 Assessing Direct Costs

To assess direct costs, participants are queried about the utilization of all health care services over the preceding six months which could potentially be consumed in the management of arthritis, including outpatient visits to physicians and non-physician health care professionals, laboratory/radiological tests, emergency room stays, outpatient surgeries, prescribed and non-prescribed medication, and stays in acute and non-acute care facilities. Subjects record all medical utilization and do not attempt to identify that which is directly related to arthritis. The disease and its treatment can potentially cause such a broad scope of problems that it would be difficult for either the patient or treating physician to distinguish the resource consumption directly attributable to arthritis. The direct costs incurred by each patient are derived by multiplying each patient reported unit of resource utilization by its corresponding Canadian price. Although these prices may bear little resemblance to true economic costs, i.e. the value of consumed resources,<sup>48</sup> they do reflect the costs borne by the government and taxpayers and therefore are of greatest relevance for health policy decisions.

The cost of physician services is assigned according to the physician/pro-



vincial government negotiated fee schedule.

To generate estimates for the technical component of outpatient laboratory and radiological tests, physical and occupational therapy, and emergency room visits, two approaches are used: (1) fully allocated costs are calculated using the simultaneous equation allocation method<sup>25</sup> and (2) provincial reimbursement data. Professional reimbursement for test interpretation is incorporated where applicable. Patients report the number of venipunctures and urinalyses performed and not the specific analyses ordered for each. A series of analyses is assumed, representing the usual practice of care.

Estimates of prescription and non-prescription medication costs are calculated as the product of the weighted average cost per milligram, total daily dose, and therapy duration. All prescription data are obtained from Intercontinental Medical Statistics (IMS) Compuscript Audit and cost data from the IMS Canadian Drugstore and Hospital Audit.

Hospital costs are estimated according to the Canadian Institute for Health Information (CIHI). Hospital stays are categorized into a Case Mixed Group (CMG) which is the analogue of the US Diagnosis Related Group (DRG) and are assigned a cost based on intensity of resource use for that CMG. Outpatient surgery is costed in a similar manner by assigning each procedure to a Day Procedure Group (DPG), a classification system also derived by CIHI. Inpatient physician charges are also included and are derived from the physician/provincial government negotiated fee schedule.

The cost of non-acute care facilities is based on Statistics Canada data on average per diem cost.<sup>49,50</sup> The intensity of resource use and hence the per diem cost differs significantly for each of these institutions. Given that the patients report only the length of stay in a non-acute care facility, but do not specify the type of facility in which they resided, a weighted per diem cost is developed based on the proportion of patient days spent in each type of facility in Canada.

A telephone survey of providers of visiting care, community support services, alternative care (i.e. homeopathy, chiropractors, etc), and assistive devices (i.e. cane, crutches, etc.) establishes the average payment rate of such care.

Total direct costs are then estimated by multiplying the unit cost of each service and the number of units of each service and summing the multipliers.

### *3 Assessing Indirect Costs*

To generate indirect cost estimates, the human capital approach is being used. This approach values individuals according to their productivity and assumes that this productivity is reflected in labour force earnings.<sup>44</sup> Diminished productivity is assessed by querying subjects on time spent receiving health care, including travel, waiting room, and physician contact time, as well as time and earnings sacrificed by caregivers. Subjects are also questioned on their employment history over the preceding six months,

annual income, days lost from work or performance of usual household activities, and need for domestic help.

This approach can be ethically troublesome. "Although this may be analytically correct, it may be politically and ethically contrary to society's values".<sup>51</sup> Incorporating differential earning levels for labour participants, the aged, and homemakers results in valuing one group of individuals more than another. However, "the justification for the human capital approach is not that it measures the value of life, but that it does provide a measure of a cost of (the morbidity) of disease".<sup>44</sup> Nevertheless, even if one accepts the premise of valuing an individual in terms of labour force productivity as reflected by income, wages may not accurately represent productivity. Despite its shortcomings, the human capital approach is chosen because its only alternative, the willingness-to-pay approach, remains prohibitively difficult to implement.<sup>52</sup> Fifteen years earlier, it was stated that: "the value-of-life figures produced so far by willingness-to-pay studies are better described as illustrations of methodology than as serious attempts to derive representative values".<sup>44</sup> Unfortunately, its application to health is still regarded as experimental.

In applying the human capital approach, measures, described below, have been implemented to overcome its shortcomings. Four mutually exclusive groups of patients are identified: (1) labour force participants, (2) disabled persons, (3) retirees, and (4) homemakers. Labour force participants are requested to state their employment income. For those failing to do so, as well as for the disabled and retirees, the average employment income accruing to an average man and woman for a given occupation at a given age is calculated given the average employment income of full and part-time working men and women stratified by age and their detailed participation rates.<sup>53-55</sup>

For labour force participants, indirect costs are the product of self-reported work-loss days and their stated wage or, if unavailable, their average employment income for a given age, sex, and occupation, derived as discussed above. Extra time the patient stated they would be working if they did not have arthritis or anticipated lack of career advancement due to arthritis is also incorporated into the calculation. Thus, the income foregone represents the proxy for productivity losses due to arthritis.

For disabled persons, indirect costs are the opportunity cost of remaining outside the labour force for the entire six-month study period. These implicit income losses, i.e. the incomes these patients would have earned had they been able to remain within the labour force, are based on their stated former or anticipated occupation if in the labour force, by imputing their age, sex, and occupation-matched employment income loss.

For retirees, indirect costs are the product of self-reported days the individual was unable to attend to activities of daily living and the age- and sex-matched employment income loss. Since employment incomes and participation rates decrease rapidly after age 65, the implicit income loss is relatively small.

For homemakers, indirect costs are the product of the number of disabled days and the sex-matched imputed value of unpaid work for those not employed.<sup>56</sup>

For all patient groups, the income loss of caregivers and the cost of domestic help is also incorporated in the indirect cost estimates.

Despite efforts to overcome the shortcomings of the human capital approach, it is anticipated that this methodology will lead to some underestimation of indirect costs. Relying on self-reported days of activity limitation may underestimate impaired productivity for the retirees and homemakers because those who are out of the labour force may report few days of activity limitation because such measures capture variance from the norm and the norm here is some level of disability. Furthermore, the methodology does not assign a value to leisure and volunteer activities, possibly leading to an underestimation of the benefits afforded by the Arthritis Self-Management Program. However, enhancement in the performance of these activities should be at least partially incorporated in the effectiveness measure.

#### *4 Assessing Effectiveness*

Our primary measure of effectiveness is quality of life assessed through: (1) a visual analogue scale and (2) the health status dimensions of the Medical Outcomes Study SF-36.<sup>31</sup> The visual analogue scale generates utilities or quality weights, facilitating calculation of a QALY. When the denominator of the cost-effectiveness ratio is expressed in terms of QALYs, this analysis is more precisely termed a cost-utility analysis. It is advocated by some as the only acceptable type of cost-effectiveness analysis as it yields a common metric which facilitates the comparison of competing interventions across a variety of conditions.<sup>27-29</sup> However, the SF-36 is a widely used, valid, reliable, easily comprehensible instrument which has been applied to numerous health states. It characterizes the domains of physical functioning, bodily pain, general health, vitality, social functioning, and mental health and these subscales can be collapsed into physical and mental component summary scores.<sup>33</sup> Increasingly, the SF-36 is receiving acceptance as a generic quality of life assessment measure and developing cost-effectiveness ratios using these scores should also be informative in guiding resource allocation.

Although the SF-36 has not been used in previous appraisals of arthritis patient education programs,<sup>15</sup> it is felt to be an appropriate outcome measure. Using various other measurement tools, primarily arthritis specific instruments such as the Arthritis Impact Measurement Scales<sup>57</sup> and Health Assessment Questionnaire,<sup>58</sup> studies evaluating arthritis patient education programs have demonstrated improvement in physical and psychological functioning, fatigue, pain, anxiety, and global health.<sup>15</sup> These health status dimensions are incorporated in the SF-36 and it is anticipated that such changes would also be captured by the SF-36. Furthermore, the SF-36 has been used in assessing other rheumatic disease interventions and has been responsive to change.<sup>59</sup> In contrast to the SF-36, the visual

analogue scale for pain and global health has already been used in evaluating arthritis education programs. In most cases, it has demonstrated improvement.<sup>20,60-62</sup>

It should be noted that this economic appraisal of the Arthritis Self-Management Program also includes other generic and arthritis specific instruments such as self efficacy scales<sup>63</sup> and the disability portion of the Health Assessment Questionnaire.<sup>58</sup> These evaluative measures should facilitate enhanced understanding of the mechanisms underlying the anticipated enhancement in physical and psychological outcomes. However, they are not particularly meaningful for a cost-effectiveness ratio and therefore will not be considered in generating the effectiveness portion of the ratio.

## 6 Conclusion

As Canadian health policy-makers strive to contain costs and maintain quality, health promotion is emerging as a key policy. For those with musculoskeletal conditions, arthritis patient education represents an important policy option. Conventional therapies for arthritis have included medical and surgical treatments, but increasingly psychoeducational interventions are being incorporated. Studies have documented the capacity for such programs to enhance knowledge and more importantly to lessen disability, depression, and pain. However, few have considered both costs and outcomes. Given that such interventions as an adjunct to usual care are likely to increase treatment costs, but produce additional benefit, they warrant economic appraisal to convince cost-conscious health policy-makers of their merits. Our project represents one of the first economic appraisals within the Canadian health care system of an intervention designed to improve outcome and reduce costs by promoting patient empowerment. Cost-effectiveness studies which incorporate costs and benefits sensitive to the effects of the intervention, such as non-labour force productivity and psychosocial well-being, can guide more efficient health resource allocation. It is anticipated that arthritis patient education programs will be cost-effective, promoting evolution of the patient/health care provider relationship from dependency into partnership and leading to more efficient use of health care resources. Widespread dissemination of these results to federal, provincial, and regional health authorities and private insurers as well as to patient and professional societies is critical to ensure that this research is then eventually translated into health policy.

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