Clinical review of area mental health services 1997-2004
Written by
Richard Osborne
Kerry Haynes
Catherine Jones
Peta Chubb
Debra Robbins
Stephen Graves

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Authorised by the Victorian Government, 50 Lonsdale Street, Melbourne.
Published on www.health.vic.gov.au/electivesurgery/pubs
July 2006 (060709)

Further information
Dr Richard Osborne, Centre for Rheumatic Diseases, University of Melbourne
Telephone +61 3 8344 3148  Email richardo@unimelb.edu.au
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Acknowledgements

Investigators
Professor Stephen Graves
Dr Richard H Osborne
Professor Ian Wicks
Dr Caroline Brand

Project staff
Vinita Chopra
Peta Chubb
Dr Jennifer Critchley
Lara Edbrooke
Tanja Farmer
Anjali Haikerwal
Kerry Haynes
Catherine Jones
Rosie Molloy
Barb Newell
Debra Robbins
Amanda Springer
Linda Wataszczuk

Site champions
Mr Ian Critchley
Mr Richard de Steiger
Mr Chris Haw
Mr Stan O’Loughlin
Mr Rob Pianta

Contributors
Ilana Ackerman
Professor Paul Dieppe
Associate Professor Gerald Elsworth
Professor Peter Fayers
Alan Heady
Jennifer Livingston
Professor Anthony Scott
Julia Witt

Victorian Department of Human Services
Maree Roberts
Jim Doumtses
Clayton Prentice

Working group members
Members of the working group who attended regular meetings throughout the project

Workshop attendees
Participants in the workshops staged at each site to assess the suitability of the proposed model of service delivery

Victorian orthopaedic surgeons
The Victorian branch of the Australian Orthopaedic Association and orthopaedic surgeons across Victoria who assisted in the concept mapping workshops and with MAPT weighting and validation

Participants
Consumers who participated in the project by visiting the musculoskeletal coordinator clinic, completing questionnaires and attending interviews and workshops

Other contributors
Christine O’Malley
Chris Gleeson
Andrea Vanderbeen
Executive summary

Background

The growth of joint replacement surgery in Australian public hospitals is well documented with current evidence indicating continued increases in demand for hip and knee joint replacement surgery. As a result of the high demand for services and referral of patients at different stages of disease progression, there is a need for hospitals to more effectively determine priority for surgery. Existing prioritisation methods are relatively insensitive to individual patient need and, as a result, high priority patients may not receive timely treatment.

An effective and equitable prioritisation system, which supports rational and efficient clinical decision making, is likely to result in better patient outcomes, improved health service planning and more targeted resource allocation. The Victorian Department of Human Service’s Statewide Elective Surgery Program recognised the need to improve prioritisation processes and in 2004 funded the Centre for Rheumatic Diseases to develop a system to prioritise and manage the care of patients waiting for hip or knee joint replacement surgery.

Long waiting times for surgery are associated with adverse impacts on health outcomes. While there is limited information about the optimal management of patients waiting for joint replacement surgery, available data suggests that patients are not using conservative treatment options while they wait.

The Orthopaedic Waiting List (OWL) Project has significant implications for elective surgery waiting list management policy.

Key project achievements

The OWL Project has resulted in a number of key achievements including: the Multi-attribute Arthritis Prioritisation Tool (MAPT) and the accompanying service delivery model for the management of patients while they wait for surgery.

Future strategic directions

The next phase of the project will include:

• the establishment of a change management strategy to enable wider implementation of the service delivery model. The change strategy will be piloted at four Victorian hospital sites, with a view to future implementation across the Victorian health care system
• strategic management of waiting lists through mathematical modelling
• translation and cultural adaptation of the MAPT into ten of the most common languages used in Victoria’s hospitals
• investigation of opportunities for further MAPT development for other procedures.
1 Introduction

1.1 Elective orthopaedic surgery in Australian public hospitals

It is anticipated that growth in demand for joint replacement surgery will continue over the coming years. In 2005 the National Joint Replacement Registry reported the number of hip and knee replacement procedures for the 12 months to 30 June 2004 increased by 5.8 per cent (to 59,064) compared with the same period in the previous year (National Joint Replacement Registry 2005).

The majority (around 90 per cent) of joint replacement surgery is performed as a result of joint failure caused by osteoarthritis. A continued increase in the demand for joint replacement surgery is anticipated as a result of an ageing population and an increase in osteoarthritis risk factors, such as obesity.

According to data collated by the Australian Institute of Health and Welfare, the median length of time a person waits for joint replacement surgery in the Australian public health system is 92 days for a total hip replacement (11.1 per cent wait more than a year) and 134 days for a total knee replacement (19.6 per cent wait more than a year) (Australian Institute of Health and Welfare 2005).

Given the high demand for services and that patient referrals occur at different stages of disease progression, there is a need for hospitals to be able to determine urgency for surgery (Gillet and Katauskas 1993). Waiting lists can be used to prioritise patients to ensure hospital resources are used efficiently and equitably.

Surgeons and their registrars determine the priority of patients according to a three-tiered system (urgent, semi-urgent and non-urgent) that is relatively unstructured and insensitive to individual patient need. While surgeons are clearly concerned with maximising health outcomes for their patients, using this approach to prioritise surgery has several shortcomings. Importantly, high priority patients may not receive timely surgery.

1.2 The need for an effective prioritisation system

Treating the right patients at the right time is a key priority for health services. Patients waiting for an appointment to see an orthopaedic specialist and those already waiting for surgery are not routinely reviewed and may experience physical deterioration while they wait for treatment.

People waiting for joint replacement surgery have been shown to have very poor health-related quality of life and high psychological distress (Ackerman et al 2005). An effective prioritisation system that regularly monitors patients’ health status ensures higher priority patients are treated when their treatment is required, regardless of their length of wait. The existing three-tiered system allows for the treatment of lower priority patients based solely on length of wait because evidence of disease burden is not available.

Providing timely access to joint replacement surgery for those with osteoarthritis and rheumatoid arthritis is a key priority for the Commonwealth and Victorian government (National Arthritis and Musculoskeletal Conditions Advisory Group 2004, Department of Human Services 2005). The Victorian Department of Human Services’ Elective Surgery Access Policy states that consistent, equitable and efficient elective surgery waiting list management is a key priority for the department and that patients on waiting lists should be prioritised according to their clinical needs and receive appropriate care within clinically desirable timeframes. In addition, health services are required to maintain clinical and administrative structures that effectively and actively manage waiting lists (Department of Human Services 2005).

There is a need for an effective and equitable prioritisation system that supports rational and efficient clinical decision-making, better delivery of health care, and improved health service planning and resource allocation.
2 Project overview and achievements

2.1 Project overview
The objectives of the OWL project were to develop a tool to prioritise people with hip or knee joint disease and to develop a system that facilitates the management of people who may require joint replacement surgery. The project methodology included:

- undertaking a literature review to describe current approaches in determining clinical need for joint replacement surgery, outline the waiting list system in Australia and identify current and previous attempts to construct prioritisation systems
- developing a prioritisation tool using current clinimetric and psychometric techniques with high level input from relevant clinical and hospital management groups, particularly orthopaedic surgeons
- developing a musculoskeletal coordinator role to facilitate the management of patients waiting for surgery
- establishing a project working group to provide project oversight.

2.2 Multi-attribute Arthritis Prioritisation Tool*
The Multi-attribute Arthritis Prioritisation Tool (MAPT) consists of 11 questions with corresponding statements reflecting increasing intensity of disease burden. The questions were specifically constructed to ensure important issues for patients and surgeons are considered when determining priority for surgery. The 11 questions reflect those often used by orthopaedic surgeons to assess a patient’s disease burden.

The MAPT is a simple tool to administer, requires minimal training, and can be easily ‘self-administered’ by patients at home or at the time of consultation with their general practitioner. The MAPT takes no longer than five minutes to complete and can be presented as a two page questionnaire.

The simplicity of the MAPT is reflected in clear patient acceptance of completing the tool and high compliance with repeat assessments.

The 11 questions contained in the MAPT are clinically and statistically reliable in determining priority for surgery. The tool correlates extremely well with other arthritis severity measures as well as quality of life assessment tools. It has been demonstrated to be effective even when completed on behalf of a patient by health professionals familiar with the patient’s condition.

Patients can be assessed three-monthly so that MAPT scores can be compared to identify any deterioration that may require medical review and reprioritisation.

While the tool was developed in English, each question was vetted to ensure potential cultural and linguistic difficulties were removed so that it was ready for translation into other common languages used by people attending Victorian Hospitals.

*See Appendix 1

2.3 Service Delivery Model
In addition to the MAPT, a service delivery model that facilitated the management of people who may require joint replacement surgery was also developed. The model incorporates a musculoskeletal coordinator whose principle roles were the validation of the MAPT and assessment and referral of patients with musculoskeletal disorders of the lower limb. The model is described in more detail in chapters six and seven.
2.4 Future directions

A new system for management of people requiring joint replacement surgery

The next phase of the project will pilot a change management strategy to enable wider implementation of the service delivery model within which the MAPT can be applied. A key feature of the service model will be the appointment of a musculoskeletal coordinator who will coordinate referral, triage and prioritisation of patients referred to orthopaedic outpatient clinics for assessment of hip or knee osteoarthritis. The change strategy will be piloted at four Victorian hospital sites, with a view to future implementation across the Victorian health care system.

Strategic management of waiting lists

A potential difficulty with prioritisation based only on patient urgency without consideration of time waited is that low priority patients may never receive surgery because patients with higher priority will always be entering the system. A system is required that considers long waiting patients as well as those who may have waited for a shorter period but have higher priority.

Dynamic modelling of the waiting list, as well as generating specific local hospital models based on the proportion of weekly operating lists dedicated to those with most severe disease and those who have waited the longest with mild or moderate disease, will address this.

The aim of modelling is to ensure the best mix of patients is operated on so that the total hospital burden is minimised in the most efficient and equitable manner.

Translation and cultural adaptation of the MAPT

In some public hospitals a large proportion of patients do not speak or read English. To be established as a comprehensive prioritisation tool, the MAPT requires translation and cultural adaptation to ensure patients from culturally and linguistically diverse groups are accurately prioritised for surgery.

The languages chosen will be based on a review of current Victorian population statistics, future demand for surgery by specific groups (based on age stratifications), and the characteristics of people attending public hospitals.
3 Background

3.1 Literature review

Indicators for joint replacement surgery

Joint replacement surgery aims to relieve pain and improve joint function. While indications for joint replacement surgery are broadly defined in the literature, in practice, many factors (physical, social, psychosocial, demographic and political) can influence the decision to perform joint replacement surgery.

A number of studies have found limited consensus on objective criteria that determine the need for surgery and variations can lead to inequities in the provision of care (Dreinhoefer et al 2006, Quintana et al 2000, Dolin et al 2003). It has been proposed that setting formal clinical criteria could assist medical decision making (Dolin et al 2003).

No validated and reliable means of assessing the relative priority of waiting patients was identified in the literature.

Orthopaedic waiting lists in Australia

The existence of long waiting times for elective orthopaedic surgery implies a demand that exceeds the capacity or willingness to supply. Capacity or willingness to supply, as well as the threshold of disease and clinical decisions that initiate referral, affect the number of patients waiting (Russell et al 2003).

Health services endeavour to provide timely treatment for their patients, but are affected by:

- difficulties in understanding who could benefit most from surgery
- problems in ensuring waiting lists are kept up to date and accurately reflect patients who are ready for and want treatment (Canadian Institute for Health Information 2006).

Australian clinical urgency criteria

In Australia, patients waiting for elective surgery are classified into three clinical urgency categories (see Table 1).

Table 1: Clinical urgency categories for elective surgery in Australia (Australian Institute of Health and Welfare 2002).

<table>
<thead>
<tr>
<th>Category</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1 (urgent)</td>
<td>Admission within 30 days is desirable because the condition may deteriorate quickly to a point requiring an emergency admission.</td>
</tr>
<tr>
<td>Category 2 (semi-urgent)</td>
<td>Admission within 90 days is desirable because the condition is causing some pain, dysfunction or disability but is not likely to deteriorate quickly or become an emergency.</td>
</tr>
<tr>
<td>Category 3 (non-urgent)</td>
<td>Admission at some time in the future is acceptable because the condition is causing minimal or no pain, dysfunction or disability, is unlikely to deteriorate quickly, and does not have the potential to become an emergency.</td>
</tr>
</tbody>
</table>

The clinical urgency category is assigned by the treating surgeon at the time of placement of the patient on the elective surgery waiting list. Clinical urgency categories are effective for the management of patients with life-threatening illnesses, such as malignancy and potentially fatal cardiac conditions, but are less effective for the prioritisation of chronic conditions, such as arthritis, because patients with these conditions are routinely classified as Category 2 or more commonly, Category 3.
Australian orthopaedic patients often experience waiting times that exceed the recommended treatment time for their clinical urgency category. In 2003–04, the Victorian median waiting time for a total hip replacement was 127 days and for a total knee replacement 152 days (Australian Institute of Health and Welfare 2005).

Of concern is the proportion of patients waiting 12 months or more for surgery. In 2003–04, 12.4 per cent (up from 8.2 per cent in 2000–01) of Victorian patients waited 12 months or more for a total hip replacement and 16.2 per cent (up from 10.5 per cent in 2000–01) waited this long for a total knee replacement (Australian Institute of Health and Welfare 2005) (see Table 2).

Table 2: Waiting times for patients admitted from waiting lists for total hip and total knee replacement, Victoria, 2003–04 (Australian Institute of Health and Welfare 2005)

<table>
<thead>
<tr>
<th></th>
<th>Total hip replacement</th>
<th>Total knee replacement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admissions (N)</td>
<td>1,694</td>
<td>1,647</td>
</tr>
<tr>
<td>Days waited at the 50th percentile</td>
<td>127</td>
<td>152</td>
</tr>
<tr>
<td>Days waited at the 90th percentile</td>
<td>402</td>
<td>448</td>
</tr>
<tr>
<td>Percentage waited more than 365 days</td>
<td>12.4</td>
<td>16.2</td>
</tr>
</tbody>
</table>

Reported waiting times do not include the time a patient may wait before they see an orthopaedic surgeon. Patients must see a surgeon prior to being placed on an elective surgery waiting list. The waiting time to see the surgeon, in some cases for the relief of symptoms, adds to total waiting time for surgery. Actual waiting times may therefore be considerably longer for many patients.

Does waiting for joint replacement surgery matter?

Waiting times matter when the timing of surgery adversely impacts medical outcomes and quality of life. Waiting list figures on their own may not reflect the actual waiting times for surgery and it is therefore important that surgery be scheduled according to clinical needs rather than reported waiting time. Hip and knee joint replacement surgery is a cost-effective operation that reduces pain and disability and improves health-related quality of life, however extensive delays for surgery can mitigate these benefits (Faulkner et al 1998, Fitzpatrick et al 1998, Fortin et al 1999).

The timing of surgery can significantly impact health outcomes in two ways:

1. Delaying surgery for extended periods can result in the deterioration of both physical function and overall wellbeing (Sanmartin et al 2004, Ostendorf 2004).
2. Outcomes of joint replacement surgery are significantly impaired if there are delays in surgery (Hajat et al 2002).

Methods for prioritising orthopaedic patients for surgery

Definition of priority systems

Priority systems are designed to rank patients along one or more dimensions ranging from the physical indications for surgery through to the economic and psychological impact of disease. The rank is then used to assign a queue position.

Priority systems aim to achieve greater efficiency (assess patients more rapidly and provide better short term management) and improved equity (Fraser et al 1993, Frizelle 2002, Gauld and Derrett 2000). Priority scoring systems incorporating both clinical and social factors have been developed in some international settings as an attempt to make prioritisation more consistent and reproducible. New Zealand (Fraser et al 1992, Hadorn and Holmes 1997), Canada (Arnett and Hadorn 2003, Hadorn 2000) and the United...
Kingdom (Woolhead et al 2002, Lack et al 2000) have developed prioritisation tools, and several published papers and reports are available for review. Evaluation of these tools indicates limited success (see the full report of the OWL Project for details on the development and evaluation of these tools at www.health.vic.gov.au/electivesurgery/pubs).

The observation that several national health services have developed priority-scoring systems suggests some commonality of problems with access to care in these countries.

The literature review identified several lessons for the development of priority systems:

• Priority criteria need to be based on high level input from orthopaedic surgeons and consultation with other stakeholders.

• The weighting of priority system components should be well grounded in both clinical care and empirical evidence.

3.2 Management of patients awaiting joint replacement surgery

The Department of Human Services’ Elective Surgery Access Policy outlines processes for managing elective surgery waiting lists in Victorian public hospitals (Department of Human Services 2005). Managing elective surgery waiting lists is a complex process and achieving consistency at a statewide level is challenging. Systematic differences across health services in the performance of hospital systems and local contextual issues are likely to impact the degree to which policies and procedures are consistently applied.

Best practice management of patients while they wait for joint replacement surgery is difficult to identify (having not been defined in the literature) and data about the management of patients on orthopaedic waiting lists are incomplete.

The goals of effective osteoarthritis management include pain control, maintaining and improving the movement and stability of affected joints, and reducing functional impairment (Granger and Cicuttini 2004). Management strategies can be broadly grouped into three categories: non-pharmacological (education, physiotherapy, occupational therapy), pharmacological (paracetamol, non-steroidal anti-inflammatory drugs), and surgical (joint replacement surgery) (American College of Rheumatology Subcommittee on Osteoarthritis Guidelines 2000).

Use of conservative treatments by people with end-stage osteoarthritis is thought to be low. Management by general practitioners seems to be the most commonly used option, while other options, such as physiotherapy or rheumatology, appear to be underutilised or not used at all.

In a study undertaken at Royal Melbourne Hospital between March and June 2003, 246 people placed on the orthopaedic waiting list were sent a questionnaire about their previous use of conservative management options for managing their osteoarthritis (Ackerman 2006). The uptake of conservative options, such as physiotherapy and rheumatology, was very low or non-existent. The reasons for this may include:

• lack of knowledge about services by gatekeepers (general practitioners)

• lack of uptake of services by patients for financial reasons or because of difficulty accessing services or competing priorities, such as caring responsibilities

• insufficient capacity to meet demand in community health settings.

A more equitable and clinically responsive system would ensure all conservative care options had been undertaken and those with the highest need (based on physical, functional, quality of life, economic and other issues) received prompt care.
4 Development of a prioritisation tool

An ideal orthopaedic waiting list prioritisation tool should:
1. provide accurate information on the urgency with which an individual might require surgery (ie. support ‘fast tracking’ for the highest priority patients)
2. be able to be regularly monitored to identify clinically and socially relevant deterioration
3. be highly respected and endorsed by clinical, administrative and government groups.

To meet these requirements, a systematic approach for developing the MAPT was undertaken involving:
1. concept mapping and item generation
2. construction
3. weighting of questionnaire items
4. validation against known standards.

4.1 Concept mapping workshops and item generation

Concept mapping workshops were undertaken to elicit from surgeons and patients the key issues relevant to prioritising surgery. The surgeon and patient workshops revealed similar prioritisation issues and these were grouped into the following six domains:
1. pain
2. limitations to daily activities
3. psychosocial health impact
4. economic impact
5. recent deterioration

Draft questionnaire items were generated from prioritisation issues identified within the six domains. The type of items generated were Guttman items which are questions with a descriptive stem followed by several defined health states of increasing severity. Guttman items were chosen above Likert items (items with a stem followed by indicators of level of agreement, such as strongly, moderately, weakly agree), because it was thought that Guttman items would be less prone to gaming and stoicism.

4.2 Construction phase

The construction phase involved field-testing the candidate items in the population in which the questionnaire was intended to be used. A 38-item questionnaire was mailed to 1,061 participants from five hospitals and returned by 606 individuals (57.1 per cent response rate).

A range of state-of-the-art techniques were employed to select the most concise set of items that captured the breadth of issues. The final questionnaire comprises 11 items.

1 ‘Items’ are the 11 questions with response statements that make up the MAPT.
4.3 Weighting MAPT items

Individual items on the MAPT were allocated specific weights to reflect clinical practice and enable an overall priority score to be obtained. Discrete choice experiments were used to determine individual item weights. Ninety-six Victorian orthopaedic surgeons were involved in the discrete choice experiments process. The data collected from the orthopaedic surgeons enabled each MAPT item to be allocated a specific weight, and an algorithm then generated an individual’s MAPT score.

4.4 MAPT validation

Once the weighting of MAPT items had been determined, a number of validation procedures were undertaken to verify the clinical value of the tool. These include:

- the co-administration of the MAPT with internationally recognised arthritis-specific questionnaires and questionnaires that specifically covered relevant aspects of quality of life (construct validity)
- comparison of patient MAPT scores with musculoskeletal coordinator-assessed MAPT scores and surgeons’ global rating (criterion validity)
- assessment of the stability of questionnaire when administered over two time points (reliability)
- verification that the MAPT could detect differences between groups and detect change over time (sensitivity and responsiveness).

Content validity is assumed as a result of the extensive clinical input throughout the design of items and dimensions and the rigorous clinimetric techniques used in selecting the final items.

In total, 1,790 questionnaires were mailed to participants from six hospitals: Austin Hospital (n=196), Dandenong Hospital (n=342), Geelong Hospital (n=120), Royal Melbourne Hospital (n=538, including participants on the Royal Melbourne Hospital rheumatology database n=118), Goulburn Valley Hospital (n=219), and Western Hospital (n=375). Nine hundred and fifty-four individuals completed and returned surveys (53.6 per cent response rate). To reduce respondent burden (because there were seven questionnaires plus a demographics section), three different questionnaire pack versions were created with a smaller number of questionnaires in each pack.

Construct validity was measured by comparing MAPT scores with other questionnaires used in orthopaedic research. The level of agreement between the MAPT and arthritis-specific questionnaires is remarkably high, given the small number of MAPT items and range of issues captured by the MAPT (see Table 3). The level of agreement between the MAPT and other questionnaires is also high, indicating that the MAPT captures the important dimension of quality of life, anxiety, depression and general health status.

Table 3: Correlation* between the MAPT and arthritis-specific questionnaires

<table>
<thead>
<tr>
<th></th>
<th>MAPT whole sample</th>
<th>MAPT hips only</th>
<th>MAPT knees only</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxford Hip</td>
<td>-</td>
<td>0.80</td>
<td>-</td>
</tr>
<tr>
<td>Oxford Knee</td>
<td>-</td>
<td>-</td>
<td>0.75</td>
</tr>
<tr>
<td>WOMAC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pain</td>
<td>0.75</td>
<td>0.87</td>
<td>0.62</td>
</tr>
<tr>
<td>Stiffness</td>
<td>0.66</td>
<td>0.70</td>
<td>0.68</td>
</tr>
<tr>
<td>Physical function</td>
<td>0.75</td>
<td>0.81</td>
<td>0.88</td>
</tr>
<tr>
<td>WOMAC total</td>
<td>0.78</td>
<td>0.84</td>
<td>0.92</td>
</tr>
</tbody>
</table>

* Pearson’s correlation coefficient
Criterion validity was measured by comparing patient MAPT scores with a MAPT completed by the musculoskeletal coordinator following a clinical assessment. The association between the two scores indicated a high level of agreement. The single measures intraclass correlation coefficient (ICC) was also high (0.740, p<0.001).

Criterion validity was also measured by comparing the surgeon’s global priority rating with MAPT scores. The results lend strong support for the MAPT being able to deliver clinically relevant scores and to place patients widely across the priority continuum.

The test–retest reliability was measured in a sub-sample of participants on the orthopaedic waiting list at the Austin Hospital (n=80; 63 per cent response rate). Participants completed the MAPT on two occasions with a two-week interval between administrations. The single measures ICC was 0.75 [95 per cent confidence interval 0.63 to 0.83, p<0.001] indicating very good test–retest reliability. Overall, the MAPT has very good reliability. Reliability is not expected to be extremely high (that is, ICC > 0.9) because arthritis (the most common reason for requiring a joint replacement) is a condition that fluctuates from week to week for many people.

Responsiveness and sensitivity to change were confirmed by comparing MAPT scores before and after surgery and by comparing MAPT scores for patients on the orthopaedic waiting list with those not on the orthopaedic waiting list.

Results reveal that a valid and reliable prioritisation tool has been developed with the extensive assistance of patients and orthopaedic surgeons.
5 Potential uses of the prioritisation tool

The main purpose of the MAPT is to enable evidence-based prioritisation of patients requiring joint replacement surgery. Following consultation with stakeholders, it became apparent that other applications of the MAPT may have potential to improve delivery of health care. These include:

- the specification of a range of MAPT scores that indicate the need for joint replacement surgery, which could contribute to medical decision making
- the use of the MAPT in general practice and by other referring physicians to identify patients who have high or low probability of requiring joint replacement surgery
- the use of the MAPT to prioritise and triage referral to orthopaedic outpatient clinics
- regular periodic completion of the MAPT by patients while on the orthopaedic waiting list, which could provide a simple method of identifying deterioration and facilitating timely surgery and also identifying patients who are no longer suitable for joint replacement surgery
- MAPT scores being used as a measure of disease burden associated with waiting lists for joint replacement surgery, which has important implications for planning and equitable allocation of resources to individual hospitals and health care regions
- MAPT scores being used to assess post operative outcomes from joint replacement surgery to examine the overall benefits of a new procedure or prosthesis.
A service delivery model incorporating a musculoskeletal coordinator using the MAPT to support clinical decision making was developed and evaluated. The model consisted of a musculoskeletal clinic established at each of the four main hospital sites (Royal Melbourne Hospital, Dandenong Hospital, Western Hospital and Goulburn Valley Hospital). The principal roles of the musculoskeletal coordinator were to assist with validation of the MAPT (see Section 4) and to provide assessment and referral for patients with musculoskeletal disorders of the lower limb.

To guide and standardise the musculoskeletal coordinator assessment, an assessment package and accompanying protocol were developed. The assessment consisted of an interview component, including questions on demographics, pain and mobility, medical and surgical history, social history and analgesia or arthritis medication, and an objective component, including assessment of range of motion. Other objective examinations were undertaken as required.

When the musculoskeletal coordinator identified conservative management gaps they made a referral to the appropriate service provider. Referral options included physiotherapy, hydrotherapy, occupational therapy, dietetics, and a review by a general practitioner or orthopaedic surgeon.

Participants were provided with a management plan which identified and described the services they were being referred to and how they could access them. A letter was sent to the patient’s nominated general practitioner to inform them of the outcome of the musculoskeletal coordinator’s assessment.

### Initial assessment

The musculoskeletal coordinator undertook initial assessments when the patient was placed on the orthopaedic waiting list or on first contact with the service; 272 assessments were undertaken. The referrals made by the musculoskeletal coordinators following patients’ initial assessments are outlined in Table 4.

### Table 4: Number of referrals made for further management at each site

<table>
<thead>
<tr>
<th>Service</th>
<th>Site</th>
<th>RMH n (108)</th>
<th>%</th>
<th>DH n (84)</th>
<th>%</th>
<th>WH n (40)</th>
<th>%</th>
<th>GWH n (40)</th>
<th>%</th>
<th>Total n (272)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physiotherapy</td>
<td>23</td>
<td>21.3</td>
<td>45</td>
<td>53.6</td>
<td>6</td>
<td>15.0</td>
<td>22</td>
<td>55.0</td>
<td>96</td>
<td>35.3</td>
<td></td>
</tr>
<tr>
<td>Hydrotherapy</td>
<td>26</td>
<td>24.1</td>
<td>30</td>
<td>35.7</td>
<td>9</td>
<td>22.5</td>
<td>5</td>
<td>12.5</td>
<td>70</td>
<td>25.7</td>
<td></td>
</tr>
<tr>
<td>Dietitian</td>
<td>5</td>
<td>4.6</td>
<td>22</td>
<td>26.2</td>
<td>0</td>
<td>0.0</td>
<td>1</td>
<td>2.5</td>
<td>28</td>
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<td>10.7</td>
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<td>0.0</td>
<td>8</td>
<td>20.0</td>
<td>17</td>
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<td>7</td>
<td>8.3</td>
<td>1</td>
<td>2.5</td>
<td>2</td>
<td>5.0</td>
<td>12</td>
<td>4.4</td>
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<tr>
<td>Falls prevention assessment</td>
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<td>0.0</td>
<td>9</td>
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<td>0</td>
<td>0.0</td>
<td>6</td>
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<tr>
<td>Rheumatologist</td>
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<td>0.0</td>
<td>5</td>
<td>6.0</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
<td>0.0</td>
<td>5</td>
<td>1.8</td>
<td></td>
</tr>
</tbody>
</table>

1 People could be referred to more than one service.
2 Home help, exercise class, podiatry, cardiologist/physician, psychological counselling
RMH = Royal Melbourne Hospital, DH = Dandenong Hospital, WH = Western Hospital, GVH = Goulburn Valley Hospital
Three-month review assessment

The musculoskeletal coordinators performed 85 three-month review assessments. There were fewer referrals at three months compared with the initial assessment because most referrals had been made at the initial assessment.

Five participants (5.9 per cent) were referred back to their orthopaedic surgeon. In one instance, a review by the orthopaedic surgeon was required because the participant was unable to work because of his condition and consequently suffering financially. In another instance, a review by the orthopaedic surgeon was required because the participant’s non-orthopaedic waiting list limb required assessment. Two participants were referred because the musculoskeletal coordinator detected deterioration and needed to highlight their high priority for surgery.

Evaluation

Use of services

A sub-group of participants (n=150) was purposefully selected and interviewed about their use of services. Physiotherapy and hydrotherapy referrals, primarily made to the participant’s local community health service, were the most common referrals. The main reason for non-uptake was lack of follow-up from the service, indicating that these services may struggle to manage the increased demand directed to them by the musculoskeletal coordinators.

Of those participants who received physiotherapy, most visited only once and were prescribed home exercises; a selection was referred to hydrotherapy. The project team received a mix of comments about physiotherapy. Patients responded well to their treatment and found physiotherapy assisted in maintaining mobility and reducing pain. Unfortunately physiotherapy was not suitable for all patients, particularly those with end-stage osteoarthritis, and others found the treatment painful or of limited benefit.

Patients also found hydrotherapy services to be beneficial in reducing the symptoms of arthritis. It was more common for participants to attend multiple hydrotherapy sessions. Referrals to dieticians also received positive responses, with patients expressing satisfaction based on assistance provided with losing weight. Most patients required only one dietician consultation.

Participant satisfaction

A purposeful selection of participants was interviewed about their experience with the orthopaedic waiting list model (n=58). Forty-one (71 per cent) felt there was some benefit in seeing the musculoskeletal coordinator, the most common reason being referral to allied health services, closely followed by having someone to talk to who had the time to listen and who understood their problem. Some respondents cited being given an exercise program as beneficial. Of those respondents who felt that seeing the musculoskeletal coordinator was of no benefit (26 per cent), the most commonly cited reason was that their condition was too severe to benefit from conservative intervention. All respondents stated they were happy to be sent the MAPT to monitor their condition.

Information about arthritis was provided to just over half the respondents (55 per cent). Some of this information was provided in the form of brochures from the Arthritis Foundation of Victoria and the remainder was provided verbally. While the majority of those who received information felt it was comprehensive and adequate (69 per cent), the remainder would have liked further updated information or even suggestions on other types of medication available. Of those who did not receive information, just under half (42 per cent) would have preferred that it was provided.

The musculoskeletal coordinator provided information about joint replacement surgery to just over a third (36 per cent) of respondents, some of this information was provided using brochures from the Arthritis Foundation of Victoria and the remainder verbally.
Of those who received information, the majority would have liked more detailed information (67 per cent), particularly about new procedures or trials, length of hospital stay, and rehabilitation procedures. Of those who did not receive information, just under half (41 per cent) would have preferred that it was provided.

It is evident the musculoskeletal coordinator provides an effective service for those in the early stages of osteoarthritis, and can present a good opportunity to provide information about, and referrals to, conservative treatment providers. The simple application of the MAPT contributes to high compliance with retest requirements.

**Views of community and hospital-based allied health staff**

The project team sought to determine the suitability of the service delivery model to community-based and hospital-based services. Results indicated:

- Physiotherapists made generally positive comments about the role of the musculoskeletal coordinator.
- There is currently a wide range of services available for people with arthritis.
- Waiting times for services varied from one to 12 weeks between sites.
- All respondents suggested their services could not currently deal with an increased number of referrals.

**Views of referring general practitioners**

The project team also sought to determine the suitability of the service delivery model to general practitioners and found:

- The majority of general practitioners reported they would appreciate short and concise letters.
- They thought a musculoskeletal coordinator would assist in the care of their patients through assessment and monitoring.

- The MAPT would be suitable for monitoring purposes.
- The majority of the general practitioners were willing to incorporate the MAPT into their referral system and supported the idea of an online process.

It is apparent that general practitioners are concerned with some aspects of the model of care the OWL Project proposes. This concern may be for a range of clinical and professional reasons. Successful implementation of the project will require further collaboration to enhance the interface between general practitioners and musculoskeletal coordinators.
7 Description of proposed service delivery models

Two conceptualisations for the proposed service delivery model have been developed based on information collected through the evaluation of the musculoskeletal coordinator service delivery model described in Section 6 and from consultation with stakeholders during workshops held at each of the four project sites.

7.1 Consultation process

Key stakeholders were invited to attend one of the workshops held at the four project sites. The purpose of the workshops was to determine how the MAPT and service delivery model could be integrated within existing hospital systems. The workshops found that one of the major barriers encountered within the current system were bottlenecks in patient flow through the system, which resulted in long waits for outpatient clinic appointments and surgery. There was overwhelming support at the workshops for using the MAPT to prioritise patients for outpatient appointments and surgery. Incorporating the MAPT into general practitioner referral letters to outpatient clinics was also raised and widely supported.

Improved information technology systems and increased clinic space were identified as resources that would assist with implementation of the model. Participants from all sites were supportive of having a musculoskeletal coordinator who could assess patients and refer them to conservative management providers.

7.2 Description of proposed service delivery models

The ideal service delivery model is designed to provide equitable access to surgical services based on a dynamic system that responds to clinical and social ‘need’ for surgery, including time waited for treatment. The proposed models of service delivery attempt to address patient waiting times at two points in their care path: the wait for an outpatient appointment and the wait for surgery.

The service delivery models are designed to enable the implementation of an osteoarthritis model of care for best practice management of osteoarthritis, with clinical decision making supported by the MAPT.

There are a number of potential options for service delivery. Two models are described here. Model 1 is an administrative model that enables data collection and waiting list prioritisation of patients through hospital administrative systems but does not enable the implementation of an osteoarthritis service delivery model (see Table 5).

Model 2 includes a musculoskeletal coordinator embedded in the administrative model who dynamically manages waiting list prioritisation of patients, as well as upstream triage of referrals from general practitioners and subsequent referral of patients to other services for the best practice management of osteoarthritis. This is the preferred model (see Figure 1).
Orthopaedic Waiting List Project: Summary report

20

General practitioner refers patient to hospital orthopaedic clinic for consultation about hip or knee joint replacement surgery (potentially using MAPT).

Patient is sent the MAPT (if not already completed as part of general practitioner referral).

The patient’s MAPT score is used to prioritise the patient for an outpatient appointment.

At regular intervals the MAPT is sent to patient to monitor their condition while they wait for an outpatient appointment. The timing of the interval may vary between hospitals depending on resources and clinical guidelines established by the hospital. It is our recommendation that this period be a minimum of three months and a maximum of six months.

Patient is re-prioritised if MAPT score indicates deterioration.

Patient completes the MAPT prior to surgeon consultation unless they have already completed it within the previous three months.

Patient sees surgeon. Surgeon undertakes a clinical assessment and reviews MAPT score.

If clinically appropriate, the patient is placed on the orthopaedic waiting list and prioritised according to MAPT score. Patients not placed on orthopaedic waiting list will be referred back to their general practitioner for ongoing management.

While on the orthopaedic waiting list, the patient is monitored using the MAPT at three to six-monthly intervals.

The patient is considered for re-prioritisation on the orthopaedic waiting list if MAPT score indicates substantial deterioration.

Patient has surgery, the timing of which is based on the MAPT score with a weighting for time waited on the waiting list and in certain circumstances also based on when the patient is available for surgery.

Table 5: Model 1: Administrative model with waiting list prioritisation restricted to hospital systems

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>General practitioner refers patient to hospital orthopaedic clinic for consultation about hip or knee joint replacement surgery (potentially using MAPT).</td>
</tr>
<tr>
<td>2</td>
<td>Patient is sent the MAPT (if not already completed as part of general practitioner referral).</td>
</tr>
<tr>
<td>3</td>
<td>The patient’s MAPT score is used to prioritise the patient for an outpatient appointment.</td>
</tr>
<tr>
<td>4</td>
<td>At regular intervals the MAPT is sent to patient to monitor their condition while they wait for an outpatient appointment. The timing of the interval may vary between hospitals depending on resources and clinical guidelines established by the hospital. It is our recommendation that this period be a minimum of three months and a maximum of six months.</td>
</tr>
<tr>
<td>5</td>
<td>Patient is re-prioritised if MAPT score indicates deterioration.</td>
</tr>
<tr>
<td>6</td>
<td>Patient completes the MAPT prior to surgeon consultation unless they have already completed it within the previous three months.</td>
</tr>
<tr>
<td>7</td>
<td>Patient sees surgeon. Surgeon undertakes a clinical assessment and reviews MAPT score.</td>
</tr>
<tr>
<td>8</td>
<td>If clinically appropriate, the patient is placed on the orthopaedic waiting list and prioritised according to MAPT score. Patients not placed on orthopaedic waiting list will be referred back to their general practitioner for ongoing management.</td>
</tr>
<tr>
<td>9</td>
<td>While on the orthopaedic waiting list, the patient is monitored using the MAPT at three to six-monthly intervals.</td>
</tr>
<tr>
<td>10</td>
<td>The patient is considered for re-prioritisation on the orthopaedic waiting list if MAPT score indicates substantial deterioration.</td>
</tr>
<tr>
<td>11</td>
<td>Patient has surgery, the timing of which is based on the MAPT score with a weighting for time waited on the waiting list and in certain circumstances also based on when the patient is available for surgery.</td>
</tr>
</tbody>
</table>
Figure 1: Model 2:  
Waiting list prioritisation plus triage of patients referred to orthopaedic outpatient clinics (musculoskeletal coordinator model)

- Patient sent MAPT if not already completed as part of referral. MAPT score used to prioritise patient for outpatient appointment.

- Patient assessed by musculoskeletal coordinator and referred to other services if appropriate. Patient MAPT score reviewed and used to prioritise patient for outpatient appointment if necessary.

- Patient sent MAPT every three to six months and reprioritised if MAPT score indicates deterioration.

- Patient completes MAPT prior to surgeon consultation if they have not already completed it in previous three months. Surgeon reviews MAPT score.

- Patient placed on orthopaedic waiting list is prioritised according to MAPT score.

- Patient sent MAPT every three months and reprioritised if MAPT score indicates deterioration.

- Conservative management
  - Osteoarthritis clinic
  - Sub-acute care
  - Community health
  - General practitioner
  - Other

- Surgeon for surgery?
  - Yes
  - No

- Orthopaedic waiting list

- Surgery

- Exit
**Musculoskeletal coordinator**

The musculoskeletal coordinator is a new role that was developed as part of the service model. The coordinator’s aim is to refer, triage and prioritise patients referred to orthopaedic outpatient clinics and to coordinate the monitoring and management of patients on the orthopaedic waiting list.

The musculoskeletal coordinator may be a physiotherapist, nurse or other allied health professional but must be competent in administering the standardised musculoskeletal assessment as this is the main competency required for the role. The training required to undertake this role will vary depending on the previous professional experience of the coordinator.

A standardised musculoskeletal coordinator assessment and assessment protocol have been developed that outline the main elements of the musculoskeletal coordinator assessment. The musculoskeletal coordinator assessment is outlined in detail in Appendix 12 and Appendix 13 of the full report available at www.health.vic.gov.au/electivesurgery/pubs.htm.

The main components of the assessment are clinical interview and examination, provision of information and referral. The level of expertise required may depend on the model adopted and the resources available at individual sites. Three broad options are presented in Table 6.

**Table 6: Options for musculoskeletal coordinator role**

<table>
<thead>
<tr>
<th>Option 1</th>
<th>Option 2</th>
<th>Option 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 2 physiotherapist</td>
<td>Nurse or physiotherapist with additional training OR nurse and physiotherapist working together</td>
<td>Nurse practitioner OR extended scope physiotherapist OR Option 2 plus general practitioner or rheumatologist</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Competencies</th>
<th>Competencies</th>
<th>Competencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment of osteoarthritis</td>
<td>Assessment of osteoarthritis</td>
<td>Assessment of osteoarthritis</td>
</tr>
<tr>
<td>Referral to osteoarthritis services</td>
<td>Referral to osteoarthritis services</td>
<td>Referral to osteoarthritis services</td>
</tr>
<tr>
<td>Home exercises</td>
<td>Home exercises</td>
<td>Home exercises</td>
</tr>
<tr>
<td>Education in osteoarthritis and joint replacement surgery</td>
<td>Education in osteoarthritis and joint replacement surgery</td>
<td>Education in osteoarthritis and joint replacement surgery</td>
</tr>
<tr>
<td>Monitoring of osteoarthritis</td>
<td>Monitoring of osteoarthritis</td>
<td>Monitoring of osteoarthritis</td>
</tr>
<tr>
<td>Resource for general practitioners</td>
<td>Resource for general practitioners</td>
<td>Resource for general practitioners</td>
</tr>
<tr>
<td>Resource for patients</td>
<td>Resource for patients</td>
<td>Resource for patients</td>
</tr>
<tr>
<td>Assessment of co-morbidities</td>
<td>Assessment of co-morbidities</td>
<td>Ordering and interpretation of diagnostic tests</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pharmacological pain management</td>
</tr>
</tbody>
</table>
7.3 Guiding principles for the OWL Project

The following principles of care and guidelines for implementation are provided as a guide only. Some of the guidelines relate to a particular model of service delivery. It is proposed that the next phase of the project trial the service delivery model and refine these guidelines for wider implementation based on information gathered during the trial phase.

Principles of care
- Treatment should be timely and appropriate.
- Provision of care should be equitable.
- Care should be based on best available evidence.
- Care should be consumer-focused and support self-management.
- Care should be multidisciplinary and support communication between care providers.
- Management of osteoarthritis should be undertaken early and include regular monitoring.

Guidelines for implementation

Engagement principles
- An executive sponsor is responsible for all orthopaedic waiting list and MAPT processes.
- An implementation group oversees the implementation and is committed to its success. The suggested composition of the implementation group includes representatives of the department of orthopaedics, ambulatory care (outpatient department), pre-admission clinic, general practice, rheumatology, physiotherapy, consumers, community health, theatre, information technology and administration. (The group’s composition does not have to be limited to these areas.)
- The department of orthopaedics is engaged and mandates that patients receive queue positions based on the MAPT and that outpatient appointments are prioritised according to the MAPT.
- The department of orthopaedics endorses musculoskeletal coordinator protocols for triage and works in partnership with the musculoskeletal coordinator in developing musculoskeletal coordinator protocols for triage.
- Each pilot site harmonises all developed protocols with other pilot sites to support the development of core protocols and, where necessary, site-specific protocols.
- The pilot sites fully engage with the orthopaedic waiting list coordinating team in any process evaluation, up-skilling workshops and outcome evaluation.

Infrastructure
- Space is made available for the musculoskeletal coordinator to run clinics (requires information on expected numbers of patients).

Personnel
Appropriately skilled staff are made available to operationalise all aspects of the pilot. This will include:
- collection and collation of MAPT data on all relevant patients referred to outpatients
- collection and collation of MAPT scores of all patients currently on the orthopaedic waiting list
- development of musculoskeletal coordinator protocols and policy
- triage by a musculoskeletal coordinator using MAPT scores for orthopaedic outpatient appointments
- orthopaedic waiting list queue position assignment based on MAPT
- provision of MAPT scores where required to all those involved in the care of relevant patients, including orthopaedic surgeons
- liaison across sectors, including (but not limited to) general practitioners, outpatients, orthopaedics, allied health, pre-admission and anaesthetics.
Process

- Mechanisms are developed to ensure the musculoskeletal coordinator can refer a patient for a review with the orthopaedic surgeon.
- Processes are developed so that the musculoskeletal coordinator can refer to conservative management options.
- There is open communication with patient’s general practitioner.
- Mechanisms are developed for the musculoskeletal coordinator to be able to influence, in partnership with orthopaedics, the reprioritising of patients on the orthopaedic waiting list.
- All musculoskeletal coordinator decisions are supported by the MAPT score.
- The musculoskeletal coordinator is accessible to general practitioners by telephone.
- The musculoskeletal coordinator has access to or develops a database of the range of services available for referral.
- The musculoskeletal coordinator role is undertaken by adequately qualified staff.
- Capacity is available for administrative support (that is, for sending out letters, data entry, and sending and receiving MAPTs).
- MAPTs are completed on referral, at three- to six-monthly intervals while waiting for an outpatient appointment, at least three months prior to surgeon appointment and at six-monthly intervals while on the orthopaedic waiting list.
- Mechanisms are developed to ensure the model, including MAPT scores, is understood by all involved.
- Information technology systems support MAPT application and data collection.

Target group

- The service is applied to all patients referred to orthopaedic outpatient clinics with an identified hip or knee problem.
- At present, the model has only been trialled on English speaking patients and patients requiring initial joint replacement surgery (not revision surgery).

Reporting

- Data collection and reporting are established such that program activity can be identified with accuracy.

Evaluation

The evaluation should include process and outcome measures and could include (but not be limited to):

- proportion of patients completing MAPTs
- proportion of patients assessed for suitability for conservative management
- proportion of patients at the time of surgery with high MAPT scores
- proportion of patients with marked decreases (that is, higher priority) in their MAPT scores who are re-assessed by the musculoskeletal coordinator
- number of patients whose place on the orthopaedic waiting list is adjusted based on MAPT review scores
- surgery conversion rates (number of orthopaedic surgeon consultations that are subsequently waitlisted for surgery).
8 Recommendations

The recommendations in Table 7 provide future directions for the implementation of the MAPT in the short, medium and long terms.

Table 7: Recommendations for future directions for the short, medium and long terms

<table>
<thead>
<tr>
<th>Short term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluate a trial implementation of the MAPT system at four hospital sites across Victoria.</td>
</tr>
<tr>
<td>Develop an implementation plan for roll out of the MAPT system across the Victorian health care system.</td>
</tr>
<tr>
<td>Develop sustainable hospital ambulatory care service delivery models (supported by MAPT) for referral, triage and prioritisation of patients with osteoarthritis referred to orthopaedic outpatient clinics.</td>
</tr>
<tr>
<td>Translate the MAPT into ten key language groups to facilitate equity of access.</td>
</tr>
<tr>
<td>Develop decision support processes for individual patient prioritisation to ensure time waited does not deleteriously disadvantage people with low to medium MAPT scores.</td>
</tr>
<tr>
<td>Identify and, where possible, develop information technology solutions to make the use of the MAPT system user-friendly, accurate, integrated and sustainable.</td>
</tr>
<tr>
<td>Begin planning for incorporation of the MAPT score into the Elective Surgery Information System.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Medium term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incorporate the MAPT into future development of general practitioner referral guidelines.</td>
</tr>
<tr>
<td>Develop options to redesign current outpatient funding to enable the best range of services to be applied at the right time.</td>
</tr>
<tr>
<td>Establish the MAPT score as a requirement for being placed on the waiting list.</td>
</tr>
<tr>
<td>Develop consumer information and multimedia resources and consider web-based applications for these resources.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Long term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assess the approach for application to other specialties and procedures and re-design care pathways for most common waiting list conditions.</td>
</tr>
<tr>
<td>Address capacity of community health centres and primary care practitioners (training in use of evidence-based osteoarthritis pathway).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ongoing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ensure ongoing MAPT application support, training and monitoring.</td>
</tr>
<tr>
<td>Disseminate information at conferences, meetings, and other professional forum.</td>
</tr>
</tbody>
</table>
9 Appendix 1: 
Multi-attribute Arthritis Prioritisation Tool (MAPT)

Instructions:
For the following questions, think about how your hip or knee has been affecting you over the last three months when taking your usual medication or using your usual aids (for example, walking stick, frame or handrails). Please tick one box only for each question.

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
</table>
| 1. Do you have hip or knee pain that does not get better even when you rest (for example, while sitting)?              | □ None or mild pain  
 □ Moderate pain  
 □ Severe pain  
 □ Extremely severe pain  
 □ The pain is so severe that I cannot bear it |
| 2. Do you have hip or knee pain when you first go to bed at night that stops you going to sleep?                       | □ No or rarely  
 □ I have pain that sometimes stops me going to sleep  
 □ I have pain that often stops me going to sleep  
 □ I have pain that stops me going to sleep most of the time  
 □ I have pain that stops me going to sleep all the time |
| 3. Do you have hip or knee pain that limits your walking?                                                                           | □ My walking is not limited by hip or knee pain  
 □ I can walk for at least 30 minutes before pain stops me  
 □ I can walk for about ten to 15 minutes before pain stops me  
 □ I can only walk for a short time (such as walking from one room to another room)  
 □ I am not able to walk at all because of my hip or knee pain |
| 4. Does your hip or knee make it difficult for you to look after yourself (such as washing yourself, getting dressed, going to the toilet)? | □ No, I can look after myself Go to Question 6 (over the page)  
 □ There are some things I cannot do for myself  
 □ There are many things I cannot do for myself  
 □ I cannot do most things for myself  
 □ I cannot look after myself because of my hip or knee |
| 5. Do you get enough help with looking after yourself (such as washing yourself, getting dressed, going to the toilet)? | □ I get as much help as I need  
 □ Most of the time I get enough help  
 □ Some of the time I get enough help  
 □ I rarely get enough help  
 □ I do not get enough help with looking after myself |

Please answer the questions over the page.
6. Does your hip or knee affect your enjoyment of life?
- No, or only a little
- It makes it moderately difficult for me to enjoy my life
- It makes it very difficult for me to enjoy my life
- It makes it extremely difficult for me to enjoy my life
- I cannot enjoy my life at all because of my hip or knee

7. Does your hip or knee cause difficulties with your relationships with people close to you (such as wife, husband, children and close friends)?
- No, it does not cause difficulties with my relationships
- It sometimes causes difficulties with my relationships
- It often causes difficulties with my relationships
- Most of the time it causes difficulties with my relationships
- All of the time my hip or knee causes difficulties with my relationships

8. Does your hip or knee make it difficult for your household (yourself, family and others) to manage financially?
- No, it does not affect my household finances
- It makes it slightly difficult to manage financially
- It makes it moderately difficult to manage financially
- It makes it extremely difficult to manage financially
- My household cannot manage financially at all because of my hip or knee

9. Have you been in paid work in the last six months?
- No
- Yes, my hip or knee does not make it difficult for me to work
- Yes, but it is moderately difficult for me to continue to work because of my hip or knee
- Yes, but it is very difficult for me to continue to work because of my hip or knee
- Yes, but I have had to stop work because of my hip or knee
- Yes, but working is difficult for me for other reasons

10. Do you need to look after people who require your care (such as a sick or disabled partner or family member)?
- No
- Yes, my hip or knee does not make it difficult for me to look after them
- Yes, but it is moderately difficult for me to look after them because of my hip or knee
- Yes, but it is very difficult for me to look after them because of my hip or knee
- Yes, but I am unable to care for them because of my hip or knee
- Yes, but it is difficult for me to look after them for other reasons

11. Overall, is your hip or knee problem different now compared with how it was six months ago?
- It is better now
- It is about the same now
- It is a little worse now
- It is moderately worse now
- It is very much worse now

Thank you for taking the time to answer these questions.
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10 References


