I nsthuo clinical practice i s evidence based and patient centred. Routine practice in the UK has tended to evolve in a piecemeal fashion in response to local external pressures. Improving specialist care depends on identifying the main gaps between optimal and routine practice, identifying strategies to bridge these gaps, and developing policies to implement these strategies in a rapid and cost-effective manner.

This report was facilitated by the Department of Health as part of its clinical effectiveness programme to improve clinical practice. It was initiated by discussions between Dr Ann Dawson (representing the NHS Executive of the Department of Health) and the Chairman of the RCP Rheumatology Committee and the President of the BSR. It culminated in a 2-day workshop funded by the NHS Executive and attended by a multi-disciplinary and multi-professional group (see Appendix for membership). A small working group followed it up with a more extensive review and has produced this report. It is envisaged that the report will support the Department of Health’s efforts at improving the management of rheumatoid arthritis (RA) and osteoarthritis (OA). It focuses on RA and OA because these are the major chronic arthropathies in the UK. Although the report focuses on the UK, the involvement of continental European experts has provided a broader framework.

The main focus of the report is: (1) to identify optimal evidence-based and effective clinical management; (2) to review current routine clinical management; (3) to assess means of bridging the gap between the two.

THE DISEASE BURDEN

Musculoskeletal diseases

Initial work outlined the burden of musculoskeletal diseases within the UK, which number more than 200. Musculoskeletal disorders are the commonest cause of long-standing illness, sickness absence from work and lead to the greatest number of work-limiting health problems (Table 1). The high morbidity and considerable socio-economic impact of these diseases is best shown in studies of specific arthropathies, such as RA [1–3].

The medical costs of musculoskeletal diseases are high and account for nearly 8% of Health Service and related expenditure (Table II) [4]. Despite this expenditure, a recent large survey of people with arthritis shows that they continue to have considerable concerns about the level and nature of service provision [5].

Rheumatoid arthritis

This is the commonest inflammatory arthropathy. In adults, the incidence of new cases is 50/100 000/year [6], the disease is long lasting with a course which often exceeds 20 yr and the prevalence of established cases is between 500–600/100 000 (0.5–1.0%) [7]. It has a peak age of onset in the sixth decade and is three times commoner in females. In childhood, RA is rare and overlaps with other forms of chronic arthritis; it has a low incidence of 5/100 000 children/year [8] and the prevalence of established disease is equally low.

RA is a major cause of disability and accounts for a high proportion of specialist rheumatology follow-up care. Current estimates suggest that a district general hospital servicing a population of 250 000 would see 80–100 new cases of RA each year [6], and there would be 1200–1500 cases with established RA, most of whom need annual specialist review [9].

The costs of managing RA are high. RA patients in the community have direct medical costs of up to £6000/case/year. An independent economic review suggested that annual inclusive medical costs exceed £600m [10]; this was calculated by studying a small group of RA patients in detail and applying these results to the estimated total number of UK patients with RA. However, based on an analysis of expenditure, a report prepared by the NHS Executive calculates UK medical care for RA costs at £240m [4]. It is likely that the costs fall between these two estimates. Work disability involves 50–75% of adults of working age at an annual cost of £650m [9]. Over 7000 severely disabled RA patients live in residential/nursing homes at a total annual cost of £130m. Thus, the overall annual cost of RA in the UK lies between £0.8 and £1.3 billion. Additionally, a recent study claimed that RA costs the individual with the disease an average of £4000 p.a. [11].

Osteoarthritis

Although OA is generally more benign than RA, it remains a major health problem in the elderly. It is more common in women than men. In a population of 250 000, there are likely to be 500–600 new cases of OA each year, 10–20% of which will require a specialist opinion. Clinical OA of the hips and knees affects 10–20% of the over-65s [12]. The incidence of new
# Socio-economic impact of musculoskeletal disease in under-65 yr olds

<table>
<thead>
<tr>
<th>Area</th>
<th>Survey</th>
<th>Disease group</th>
<th>Rank</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Days of certified incapacity</td>
<td>Department of Social Security, 1990-1</td>
<td>Musculoskeletal diseases</td>
<td>1</td>
<td>28%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mental disorders</td>
<td>2</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Heart and circulatory system</td>
<td>3</td>
<td>17%</td>
</tr>
<tr>
<td>Health problems limiting work</td>
<td>Labour Force Survey, 1991</td>
<td>Limbs, back or neck</td>
<td>1</td>
<td>43%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chest/breathing</td>
<td>2</td>
<td>15%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Heart or blood</td>
<td>3</td>
<td>11%</td>
</tr>
<tr>
<td>Long-standing illness</td>
<td>General Household Survey, 1989</td>
<td>Musculoskeletal diseases</td>
<td>1</td>
<td>116/1000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Heart and circulatory system</td>
<td>2</td>
<td>73/1000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Respiratory system</td>
<td>3</td>
<td>67/1000</td>
</tr>
</tbody>
</table>

# NHS and personal social services expenditure on diseases of the musculoskeletal system

<table>
<thead>
<tr>
<th>NHS hospital expenditure</th>
<th>NHS primary care</th>
<th>NHS community and personal social services</th>
<th>All NHS and personal social services</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>5.7</td>
<td>6</td>
<td>6.2</td>
<td>6</td>
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</tbody>
</table>

## Evidence-based management of arthritis

*Delivering a high-quality service for people with arthritis*

OA and RA are chronic and incurable. Nevertheless, both diseases respond well to intervention. Moreover, studies by Lorig and her colleagues [15] suggest that increased patient involvement in the management of the disease, through improved education, self-management programmes and support networks, has a positive effect on outcomes. For these reasons, it is essential that service providers and purchasers, support groups, policy-makers, and patients and carers themselves work together to develop a structured programme of care for managing OA and RA.

This framework, which will be related to the long-term objectives of the NHS, should take account of the ageing population, the chronicity of rheumatic disorders and the changing environment for the delivery of health care. The following key requirements should be considered.

(a) *A well-informed public.* The public needs to know how to stay healthy in order to reduce, where possible, the risk of developing disease; this may include adopting a healthier lifestyle through diet and exercise. The public also needs to know how to access help when symptoms of arthritis develop.
After diagnosis, the individual with arthritis should be involved in decisions about treatment for which she or he will need full and frank information about the implications of having the disease and the treatment options available.

(b) A highly trained and skilled workforce. There is a need for high levels of knowledge of arthritis and its management in medical staff and other health care workers to improve patient care. Collaboration between primary and secondary care should be encouraged and developed. The importance of multi-disciplinary working should be underlined through education and training of NHS staff. Emphasis should also be placed on the need to work with patients and carers to ensure they play a role in decision-making.

(c) Knowledge-based decision-making. Rheumatological care should concentrate on areas of clinical and cost effectiveness through the development of evidence-based practice. There should be involvement in testing and evaluating new and existing therapies, and health care professionals should routinely review their performance and bring the most effective practice into general use. This can be effected through a commitment to audit and continuing medical education.

(d) A responsive service, sensitive to differing needs. Arthritis and musculoskeletal disorders are common problems, but they cause varying types and degree of disability within different populations. There are, therefore, differences in the type of services needed in varying urban and rural environments.

(e) A seamless service working across boundaries. Arthritis needs long-term management, best achieved through shared care between primary and secondary sectors. It should involve multi-disciplinary teams, which requires continuity and seamless care between the different components of the NHS.

A MODEL FOR EVIDENCE-BASED MANAGEMENT OF RHEUMATOID ARTHRITIS

This chronic, unpredictable and variable disease results in persistent joint pain and inflammation, increasing joint damage, and frequent extra-articular complications. It often leads to considerable long-term disability.

Aims of management

The disease is not curable, but treatments are available which reduce patients’ pain and joint inflammation, and alter the course of the disease by decreasing the progression of joint damage. The management targets are to control symptoms of joint pain and inflammation, to minimize loss of function, and keep patients mobile and independent, to reduce the progression of joint damage, to deal with any extra-articular complications, and to have well-informed and satisfied patients and carers.

Primary, secondary and tertiary prevention

There is increasing evidence for a genetic predisposition to RA, but at present there is no evidence that primary prevention has a major public health role. There is evidence that secondary prevention of disability is beneficial [16]. Early referral for specialist advice, early treatment with anti-rheumatic drugs and access to multi-disciplinary hospital-based care can all reduce the disability of RA [17], limit the progressive joint destruction which characterizes the disease and improve quality of life when end-stage damage has occurred. There is also evidence that tertiary prevention is advantageous and surgical replacement of destroyed joints is highly effective in controlling pain and improving function.

Management strategies

Treatment options are complex and should be tailored to the individual patient. Treatment will frequently include one or more of the following measures:

- Randomized controlled trials show that simple analgesics reduce joint pain [18].
- Randomized controlled trials show that non-steroidal anti-inflammatory drugs (NSAIDs) reduce symptoms such as joint pain, joint tenderness and morning stiffness and inflammation [19]. In elderly patients, the use of NSAIDs should be minimized due to the risks of adverse reactions [20]. NSAIDs with a high propensity for causing gastrointestinal ulceration should be avoided and in patients at high risk of such side-effects preventive strategies and co-prescribing of gastroprotection such as prostaglandin analogues should be considered [21].
- Local steroid injections, including peri-articular and intra-articular steroid injections, can decrease the local symptoms of inflammatory synovitis in the short term [22].
- Randomized controlled trials and meta-analysis of controlled trials show that slow-acting anti-rheumatic drugs such as gold, methotrexate, sulphasalazine, penicillamine, cyclosporin and antimalarials (hydroxychloroquine and chloroquine) reduce symptoms of inflammatory synovitis, such as the numbers of swollen and tender joints [23, 24].
- Randomized controlled trials show that some slow-
Aims of management

The primary aim of management of OA is to control symptoms, especially joint pain, to minimize disability, to reduce the progression of joint damage, and to enable patients to continue their lives with minimal functional and social handicaps.

Primary, secondary and tertiary prevention

There is increasing evidence that avoiding obesity by dietary control, the use of appropriate footwear such as trainers and avoiding heavy lifting may prevent the development of OA [42]. Keeping fit and active is also important [43]. There is some evidence that maintaining muscle strength and reducing excess weight are effective [44]. Promulgating these general health measures may be advantageous in preventing OA. Drugs which modify the course of OA by reducing the progression of joint damage are still at a stage of research and development. Physical therapies and symptomatic control by analgesic drugs can significantly improve the quality of life. Surgical replacement for end-stage joint failure of the knee and hip is highly effective in controlling pain and improving function [45].

Management strategies

A spectrum of non-pharmacological and pharmacological measures are available:

- All patients should be fully informed about their disease, its management and likely outcome, and educated on the best policies to maintain function and reduce pain. The benefits of such educational advice have been shown in randomized controlled trials [46].
- Patients should be encouraged to maintain and promote function via exercise programmes supervised by physiotherapists [47, 48].
- Weight loss may improve symptoms, although the evidence for this is incomplete [49, 50].
- The provision of footwear and walking aids, other aids and appliances has been shown to be effective in increasing function and decreasing pain [51, 52].
- Randomized controlled trials show that analgesics reduce joint pain [53, 54].
- There is evidence from randomized controlled trials that NSAIDs improve symptoms such as joint pain and stiffness [55]. The available literature in this area is complex and at times conflicting [56, 57]: these drugs, when judiciously used, can control symptoms, although it is important that they are neither over-used nor used for prolonged periods of time, especially in the over-65s and in patients at risk of developing gastrointestinal adverse effects. In many instances, they should be given for short periods of time and to overcome acute flares in symptoms [58]. NSAIDs with a high propensity for causing gastrointestinal ulceration should be avoided, and in patients at high risk of such side-effects, preventative strategies, and co-prescribing of H2-receptor blockers or prostaglandin analogues, should be considered.
- Randomized controlled trials show that local inflammation within or around joints can be reduced by intra-articular and peri-articular steroid injections [59, 60].
● Local treatment with rubifacients and topical NSAIDs can alleviate some symptoms such as pain in selected cases [61].

● Surgical replacement of the knee and hip joints, and other surgical interventions, are effective [62]; there should be referral to orthopaedic surgeons when the need arises.

Outcome
There is relatively little information on the outcome of OA. Although it is a common cause of musculoskeletal pain and disability, it does not always progress and many patients have a benign self-limiting disease [63, 64]. When joint damage progresses in OA, joint replacement surgery is effective in reducing pain, increasing mobility and decreasing disability, even in the very old. There is less evidence that OA shortens life or is associated with significant co-morbidities; both of these are in contradistinction to RA. However, some recent evidence suggests that generalized OA may reduce life expectancy [65] and its morbidity may be greater than anticipated.

A MODEL OF HIGH-QUALITY SERVICES FOR PEOPLE WITH ARTHRITIS

A strategy for disease management in RA
Care should be individualized for patients’ personal circumstances in a seamless service which extends across primary and secondary health care.

GP should form a team with practice nurses, therapists and other health care professionals. They should identify patients likely to have RA and arrange specialist referral to confirm the diagnosis. They should secure an annual review with a specialist for all RA patients, and participate in shared care schemes with the rheumatology unit.

The rheumatology unit has a continuing longer-term responsibility for all patients with RA. Rheumatologists should work as members of a multidisciplinary team with specialist nurses, physiotherapists and occupational therapists. They should see newly diagnosed patients within 4–6 weeks of diagnosis and recommend a programme of therapy to be implemented collaboratively with both the secondary and primary care team. Rheumatologists should plan to review each patient at least once per year, and should look for extra-articular complications and co-morbidity. Where appropriate, they should involve other specialist groups, such as orthopaedic surgeons.

Specialist rheumatologists in a secondary care setting should plan therapy. The delivery of continuing care should be shared between primary and secondary sectors.

Many patients take slow-acting anti-rheumatic drugs which require regular monitoring for the development of drug-related toxicity [66]. The timing and nature of monitoring vary between drugs [67]. Monitoring should be shared between specialist rheumatology units and primary care. The exact arrangements need to be agreed locally and shared care schemes should be established at all centres under the leadership of specialist rheumatologists. The use of shared care cards to record safety monitoring and ensure good communication between specialist rheumatologists and general practitioners should be encouraged.

Patients should participate in the planning and implementation of their own treatment programmes whenever possible; full discussions with carers will also be valuable.

A strategy for disease management in OA
As with RA, care should be individualized for patients’ personal circumstances in a seamless service across primary and secondary health care.

OA should mainly be treated in primary care. It should involve a multi-disciplinary team of physiotherapists and nurses as well as GPs. Management should be initiated and maintained in primary care for the majority of patients with OA; a single hospital consultation will be adequate in most cases.

There is often no need for drug or surgical treatment: education about the disease and advice about its likely course may be all that is needed. If this is insufficient, symptoms such as joint pain should be controlled by simple analgesics and, if necessary, NSAIDs. Local steroid injections are best used in patients with acute flares in individual joints. There is no need for special monitoring policies to detect the side-effects of therapy in OA. However, treatment may require review when intensive therapy has been employed.

Above all, therapy is symptomatic and tailored to the needs of individual patients.

Patients with OA do not usually need to be referred for specialist advice. Reasons for referral include diagnostic uncertainty, persistent pain or other symptoms, functional decline (when it cannot be treated within a primary care setting), the presence of synovial effusion or where local intra-articular steroids may be needed. When a referral is made, the rheumatologist should be responsible for resolving diagnostic or management problems, arranging orthopaedic referral (e.g. joint replacement surgery) and recommending a long-term management plan to the GP. This should be undertaken in collaboration with the primary care team, and patients consulted and informed about the nature of treatment at every stage.
Patient education remains the most effective therapy for OA. It is vital that GPs and other health professionals (including rheumatologists) promote self-care for patients with OA, including advice on lifestyle changes, avoiding obesity and keeping fit. Patients should be encouraged to take control of their own symptom management.

The gaps between optimal treatment and routine practice

Services for people with arthritis are relatively good, and in some areas excellent. Nevertheless, a recent survey of patients pointed to shortcomings in service provision [5], and the consensus among those working in the field is that there remain significant weaknesses in current strategies for managing the disease:

(a) Insufficient public knowledge about primary and secondary prevention of joint failure. The public knows surprising little about the causes, symptoms and therapies of OA and RA; consequently, not only are those at risk unable to take basic steps towards prevention and/or relief, they are also likely to delay consulting their GP. Lack of appropriate information disempowers those diagnosed with the diseases, leaving them dependent on carers and health care professionals, and unable to take part in the decision-making process.

(b) Insufficient knowledge base among the primary health care team. Although arthritis is a common cause for consulting a GP, many GPs and their teams have had only limited training in rheumatology, which is often omitted from training rotations and is poorly represented in undergraduate medical training. A proportion of patients with RA are still referred late to the rheumatologist, while some patients with OA may be referred unnecessarily. The primary care team is often limited in its ability to educate and inform patients.

(c) Inadequate specialist care. Poor resourcing of secondary care for OA and RA has led to a fall in standards of treatment in many cases: incomplete teams are unable to make sufficient use of exercise programmes and simple mechanical aids or footwear; there is limited education and advice for patients; excessive delays before patients are first seen limit the opportunity for early therapy in RA. Resources are wasted on unnecessary follow-up of patients with OA. There is also too much emphasis on in-patient care and excessive use of NSAIDs.

(d) Lack of integration between primary and secondary care. The links between primary and secondary care for the management of arthritis are often tenuous. There is no forum for exchange between rheumatologists and GPs; at best, informal educational arrangements substitute for clinical effectiveness-based management plans and treatment protocols. Late and/or inappropriate referrals are therefore common, with some patients sent back and forth between the primary and secondary sectors. The lack of integration between primary and secondary care is in part caused by the way in which health care is costed, and in which secondary care is funded, i.e. on a case-by-case basis with specialists paid only for the patients they see; there is no provision for rheumatologists to train GPs and their teams, nor to devote time to the development of management plans and protocols.

(e) Lack of knowledge about new and developing treatments. For many years, there have been insufficient ‘hypothesis driven’, large, randomized controlled trials of rheumatological treatments. As a consequence, the best treatments for RA and OA are uncertain, and their outcomes remain poor.

An action plan for bridging the gaps

A commitment to continuing education—for specialist, primary care team and patient—is the foundation for bridging the gap between current and optimal service, and for addressing the problems mentioned above. This must be undertaken at several levels concurrently, including the public, the primary health care team and specialist rheumatologists. The main issues comprise:

(a) Educating the public about arthritis. The general public will benefit by being informed about arthritis: what they can do for themselves and how they can prevent the development of arthritis, limit joint failure and retain good function. These strategies should be simple and include: maintaining good health and fitness, and seeing their GP early if they have joint pain or stiffness; research should be conducted to establish the best format for information.

(b) Educating patients. The educated patient can participate in treatment planning, and is likely to enjoy higher levels of independence and mobility. There must be a commitment on the part of all involved in the treatment of arthritis to keeping the patient informed about the effects of the disease and the types of treatment available.

(c) Engaging the primary health care team. The primary health care team should be educated and motivated about treating arthritis. This necessitates a long-term education programme, reinforced by guidelines and treatment protocols. An on-line information service provided by specialists would be a valuable resource. There is an associated need to raise awareness of arthritis through undergraduate teaching of medicine. Crucially, they should be aware of the differing management needs of OA and RA, as described above.

(d) Refocusing specialist services. There must be a long-term commitment to providing a quality service for people with arthritis, reflected in adequate resources, which recognizes the need for adequate specialist advice and support in a secondary care setting. This should be at a realistic level with ease of access for disabled patients; it should be out-patient based and have the use of in-patient
beds and facilities. It should involve the complete multi-disciplinary team of clinicians, including surgeons and therapists.

Rheumatologists have a number of specific responsibilities in the management of arthritis, in particular for the setting and maintenance of standards of care across both primary and secondary care sectors, and for representing the needs of their patients to both purchasers and providers. They also have a key role as educators of both primary care practitioners and patients, ensuring that those delivering care are kept up to date with developments in available treatments; this requires a commitment to their own continuing medical education.

(e) Defining effective care. The speciality must commit to defining effective care. There should be a policy of ongoing evidence-based reviews to define those current and new treatments which are most effective, a programme of ‘hypothesis driven’ randomized controlled trials to answer important clinical questions, and continuing workshops and publications to ensure that the provision of rheumatology care meets the needs and aspirations of patients in a timely and cost-effective manner.

(f) Linking primary and secondary care. Communication between the sectors must be encouraged and funding patterns altered to effect this. Dialogue should be established to facilitate locally agreed protocols for disease management based on national guidelines—including algorithms for treatment and referral; these should be separate for OA and RA. There must be a commitment to an ongoing educational programme for primary care workers; rheumatologists should take responsibility for the design and delivery of such a programme, and should be remunerated accordingly. Specialists and GPs should collaborate in treatment.

CONCLUSION

Arthritis is a debilitating disease; OA and RA affect the lives of millions of people in the UK. Commissioners, general practitioners/fundholders, trusts and policy-makers should show their commitment to the provision of a high-quality service for those with arthritis; specialists should show their commitment by developing clinically effective treatment which is also cost effective.

Treatment should be symptomatic and individualized, and it must be recognized that OA and RA require different management plans, as outlined. Provided the primary care team is educated and has access to adequate support (be it in the form of protocols and guidelines or an on-line information service), the majority of patients with OA will not need referral to a rheumatologist. This frees resources to manage RA, which remains the longer-term responsibility of the rheumatologist, working in collaboration with the secondary care and primary care teams.

The links between primary and secondary care must be strengthened if these management plans are to be adhered to: there must be a commitment to increased dialogue and communication between the two sectors, reinforced by easily accessed information services and treatment protocols.

Patients and their carers must be involved in treatment planning. Policy-makers and service providers alike should seek the views of patients and support groups in a conscious departure from the ‘doctor knows best’ approach to care.

The rheumatologist should provide professional leadership in the development of disease management strategies, ensuring that all these objectives are reached. She or he will be responsible for the ongoing education of all stakeholders, including health professionals, GPs, commissioners, policy-makers and patients, so that the advances made in treating these painful and costly diseases can be implemented as efficiently as possible. There is clearly a need for further research in order to improve therapies and identify subgroups at risk from poor outcome. Such developments could have strong implications for the management strategies outlined in this report. Clinical guidelines for the treatment of both conditions in the primary and secondary care settings will also prove valuable.

This report has outlined that the clinical management of OA and RA should be part of a broad strategy for minimizing the impact of these painful and costly diseases on the NHS, the community and, most importantly, the individual with the disease. We anticipate that these recommendations will have an equal relevance for clinical practice in continental Europe.

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