How to develop strategies for improving musculoskeletal health.

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Published in:
Best Practice & Research: Clinical Rheumatology

DOI:
10.1016/j.berh.2006.10.005

2007

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Strategies for the Prevention and Management of Musculoskeletal Conditions

Chapter 1

How to develop strategies for improving musculoskeletal health

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Abstract

Musculoskeletal conditions are a major cause of morbidity and evidence based strategies have been developed to reduce their incidence and impact on individuals and on society – the European Action for Better Musculoskeletal Health(1). This issue is based around this report. These strategies are inclusive of all major musculoskeletal conditions with recommendations for prevention and management, stratified for degree of risk in the population. The development of these strategies required a framework that would enable the integration of evidence and expert opinion and the development of this is discussed. The implementation must be addressed if these strategies are to be effective and actions required of and implications for different stakeholders are considered. In this report, we find evidence to support the need of an integrated approach to improve musculoskeletal health by an improvement by the whole population in lifestyle with increasing physical activity, avoiding obesity, smoking and excess alcohol along with prevention of accidents and musculoskeletal injuries. However the individual health gain will be small and, in addition, specific interventions need to be targeted at those with most to gain – that is those at highest risk or those with the early features of a musculoskeletal condition.

Introduction

Musculoskeletal conditions are a major cause of morbidity throughout the world and have a substantial influence on health and quality of life inflicting an enormous cost on health and social care systems(2;3). Strategies for reducing this burden have recently been proposed in the European Action Towards Better Musculoskeletal Health Report(1) and in the Disease Control Priorities in Developing Countries report(4).

The European Action Towards Better Musculoskeletal Health has developed strategies to reduce the incidence and impact on the individual and society of musculoskeletal conditions in Europe but these are applicable to most parts of the world. This issue is largely drawn from this work. There were several challenges to developing such strategies and these will be considered in this chapter.

The aim has been to develop strategies that are inclusive, considering the spectrum of conditions that affect musculoskeletal health ranging from often short-term problems related to trauma to persistent and progressive conditions such as rheumatoid arthritis. The recommendations should also be comprehensive and consider all aspects of the control of musculoskeletal conditions, from prevention to rehabilitation. The recommended strategies should be based on the best and most recent evidence where available. They should be feasible to implement. In addition they combine what can be achieved through evidence-based interventions with what those with musculoskeletal conditions, their carers and representatives and healthcare providers want to be achieved. The development of the strategies has therefore looked for a commonality of recommendations that will prevent a spectrum of musculoskeletal conditions or improve musculoskeletal health whatever the underlying condition.

To accomplish this, the challenge was to develop a framework that would enable the synthesis of evidence for a range of interventions in the prevention and management of a variety of musculoskeletal conditions at different stages of their natural history with various outcome measures into broad based recommendations that will benefit the spectrum of conditions and can be implemented at a strategic level (Table 1). This is illustrated by the challenge of bringing together recommendations for the prevention of arthritis, with back pain, osteoporosis and injuries of various kinds. Likewise developing common recommendations for the management of a usually short-term problem associated with injuries and the longterm and progressive problems associated with arthritis. The framework which has been developed has allowed the identification of common themes across the various musculoskeletal conditions so that these strategies have the broadest benefit for people with musculoskeletal conditions as a whole. This approach could be applied to developing strategies for other conditions.

Table 1

How to develop health strategies for the prevention and management of musculoskeletal conditions; the steps
• Document the impact of musculoskeletal conditions to set priorities. • Identify risk factors that impact on both the development and outcome of musculoskeletal conditions to facilitate the development of strategies and priorities for their prevention. • Identify commonality between the musculoskeletal conditions when identifying targets for intervention by using the framework of the WHO International Classification of Functioning, Health an Disability. • Identify commonality between the interventions used for the prevention and control of the various musculoskeletal conditions. • Identify interventions by evidence of efficacy from randomised-controlled trials, meta-analysis, systematic reviews and evidence based guidelines for the different stages of any condition – from prevention in the normal population, prevention in people at high risk and treatment at early and late

stages.

- Develop recommendations based on evidence of effectiveness in clinical practice.
- Develop strategies that are based on evidence and experience for prevention in the normal population and high risk groups and for treatment at the early and more established stages of the condition.
- Make recommendations for their implementation, identifying barriers and ways in which implementation can be facilitated.
- Monitor the dissemination and implementation of these policies.

A key step to developing a framework is agreement on certain definitions. These are of the different stages of the conditions; of the populations from which the evidence has been identified and for whom the evidence is therefore applicable; of the interventions; of the outcome goals for which evidence has been identified and of the targets for the recommended interventions. The WHO International Classification of Functioning, Disability and Health(5) has provided a model for these goals and targets and greatly contributed to gaining commonality in recommendations. The need for these strategies has to be justified by evidence of the burden of these conditions. The synthesis of evidence into strategies and policy recommendations requires a wide range capabilities which came from experts in the various musculoskeletal conditions from the different relevant disciplines (rheumatology, orthopaedics, rehabilitation, physiotherapy, primary care, public health, health policy etc) and from across the European Community along with people with experience of having musculoskeletal conditions and their representatives. They have all worked together to produce integrated recommendations for the prevention and control of the spectrum musculoskeletal conditions.

The conditions

There a wide range of musculoskeletal conditions but major musculoskeletal conditions and problems in terms of commonality and outcome are joint diseases, including osteoarthritis and rheumatoid arthritis, osteoporosis, back pain and musculoskeletal trauma and injuries, often related to occupation or leisure time activities. These account for the majority of specific problems but there are many who have non-specific musculoskeletal problems and associated disability for which only general recommendations for pain management and rehabilitation can be made. These different conditions and problems have a range of different characteristics and natural histories. Some occur acutely such as trauma whereas others are more gradual in onset and may be persistent and progressive such as arthritis or recurrent such as low backpain. Osteoporosis is clinically silent unless it manifests as a low trauma fracture. However it was possible to define different stages of these conditions, which identifies the populations from whom the evidence is obtained and for whom the evidence-based strategies are applicable (vide infra).

The populations

It is important to be clear for whom any strategy is aimed. It is also important to only make recommendations for an intervention if the evidence has been shown to be applicable to that target

population. It is therefore necessary to define the target population for each specific condition, in order to reach the aimed effect (Table 2).

Table 2

The Populations for which health strategies can be aimed at	
Population as a whole	The normal population not selected for any known risk or presence of a condition. However strategies may vary according to age, gender or other contextual factors
At risk population	Those who have an increased risk of the developing the health condition. This may relate to age, gender, hereditable factors, lifestyle, the environment etc
Population with established conditions - early stages and / or mild disease	When a condition first manifests itself there may be different opportunities for what can be achieved in terms of reversing the situation or preventing progression.
Population with established conditions - late stages and / or severe disease	Many musculoskeletal conditions are persistent and progressive with increasing disability. At the later stages or more severe stages of the condition, the targets will be different.

The *population as a whole* is the target for strategies to prevent the onset of any musculoskeletal condition. However, prevention is more cost effective if targeted at those who are at *high risk*. There are also those with the *conditions already established*. Many of the conditions are chronic and progressive and recommendations have been developed for the different stages where this is appropriate. This is from the *early stages* when the condition may be reversible to the *late stages* when they may be associated with significant disability. In general there are most opportunities to reduce the burden in those with the earliest features before irreversible problems have developed.

Consequently, for each musculoskeletal condition the "at risk population" has to be defined. The different stages of the conditions in terms of *early and / or mild disease* to *longstanding and / or severe disease* have also to be defined. The precise definition of these stages varies between the conditions and is given in the subsequent chapters.

The interventions

There are a wide variety of interventions for the prevention and management of musculoskeletal conditions. They can however be themed into four main groups – lifestyle, pharmacological, surgical and rehabilitative (Table 3). Putting interventions into these common themes and then considering specific examples of interventions has allowed a common set of recommendations to be developed.

Table 3

Interventions for the prevention and management of musculoskeletal conditions. They are themed into four main groups and within these groups they can be considered according to the type of interventional target. Specific examples of interventions are also given.

Interventions	Type of Effect	*Specific examples of interventions*
Lifestyle Interventions		Diet, weight, exercise, smoking, alcohol
Pharmacological Interventions	**Symptoms**	Simple analgesics, anti-inflammatory analgesics, antidepressants, muscle relaxants etc
	Disease process	Disease modifying therapies
	Local treatment	Intra-articular steroids, topical therapies
	Supplements	Minerals, oils, vitamins (E, C, D), other (eg glucosamine)
Surgical Interventions	**To modify**	Tendon transfer, soft tissue procedures around a joint, spinal fusion, osteotomy
	To repair	Fracture fixation, bone grafting, ligament repairs
	To remove	Menisectomy, discectomy, excision arthroplasty
	To replace	Arthroplasty (cemented, uncemented, unipolar, bipolar, total, different surfaces etc)
Rehabilitative Interventions	**To treat impairment**	Angular joint mobilisation (active ROM-exercise, assisted ROM-exercise, passive ROM-exercise) Joint play techniques (mobilisation (gliding of joint surfaces), impulse mobilisation, traction) Joint immobilisation (rest, selective functional immobilization, non-selective functional immobilisation, change of vector of forces) Muscle techniques (restoring muscle balance, strengthening exercises, flexibility training) Neuromuscular rehabilitation (co-ordination and balance, recreational activities, biofeedback, relaxation techniques, reflex therapies and acupuncture) Physical fitness (aerobic fitness and endurance) Joint protection Physical modalities (therapeutic heat, therapeutic cold, hydrotherapy, massage, electrotherapy) Body awareness and image
	To compensate for impairments	Braces Aids and devices Modifying the environment or the nature of a task Vocational counselling Support services Social interventions (incl. insurance benefits)
	To recognise and address personal factors	Behaviour therapy Education Psychological support Self-Management

The outcomes

Any health condition affects an individual in a variety of ways, each of which may need a different approach to prevention and management. A standardised approach is therefore needed to identify and agree the key outcomes of each of the conditions and the concepts of the World Health Organisation (WHO) International Classification of Functioning(5) (see chapter 11) provides such a framework. The agreed outcomes can be defined in terms of; (1) the symptoms and tissue damage associated with the condition, (2) the effect on the individual in terms of limitation of activities and (3) the effect in terms of restriction of participation. For example, for osteoporosis the outcomes for tissue damage are fracture and low bone density whilst pain is the most important symptom. Limitation of activities and restricted participation can be measured using generic and disease-specific quality of life instruments.

The targets for interventions

Recommended interventions for each musculoskeletal condition need to relate to specific targets and specific populations. These relate to the defined outcomes used to assess the evidence for each condition and focus around reducing symptoms, preventing tissue damage and reducing disability. For example, the targets for osteoporosis are to prevent fractures and improve quality of life by all people maximising their bone mass, older people at risk of fracture preventing falls, and by reducing pain and disability if a fracture has occurred.

Identifying the evidence

A standardised search strategy was undertaken in the areas of osteoporosis, osteoarthritis, back pain, rheumatoid arthritis and traumatology for both guidelines and systematic reviews using MEDLINE and EMBASE from 1995 onwards supplemented by a search of the World Wide Web (Google) and, in addition, relevant governmental, clinical and research organisations within Europe were contacted asking for any guidelines that were available in the area of prevention or management of musculoskeletal conditions. A filter was carried out of guidelines and systematic reviews identified to remove irrelevant papers and a hand search carried out to identify and include missed papers, including major clinical studies. The abstracts of these papers were made available on the web and the experts from each condition-based group undertook an initial screening process using an agreed checklist. A shortlist of guidelines and systematic reviews was derived which were then appraised using the AGREE tool(6) for guidelines and the Cochrane criteria for systematic reviews see URL: http://www.cochrane.org/). This process resulted in the final selection of papers which have been appraised and used to develop the recommendations. The processes of identifying evidence for other conditions were similar and are reported in this issue are given within the chapters.

Appraising the evidence

Interventions were assessed for robustness and effectiveness on the basis of evidence identified as above, and was then graded using the index adapted from Eccles (Table 4)(7). This considers the

quality of the evidence; whether there is sufficient evidence to make a grading; whether there is inconsistency of data and finally the nature of effect, whether positive, negative or if there is evidence of no effect. The population in which the evidence has been obtained was also considered. The lack of direct comparative trials limits the ability to comment on size of effect in some cases. The strategies that are recommended take the effect size into consideration where possible.

Table 4 The grading of the evidence (adapted from Eccles et al (7))

Grading of the Evidence	
Categories of Evidence	
Ia	Evidence from meta-analysis of randomised controlled trials
Ib	Evidence from at least one randomised controlled trial
IIa	Evidence from at least one controlled study without randomisation
IIb	Evidence from at least one other type of quasi-experimental study
III	Evidence from descriptive studies, i.e. comparative studies, correlation studies and case-control studies
IV	Evidence from expert committee reports or opinion, or clinical experience of respective authority or both
#	Inconsistent findings from research
IE	Inadequate evidence from which to make a grading
The nature of the effect	
+	Positive effect
0	Evidence of no effect
–	Negative effect

The evidence is presented separately for the different musculoskeletal conditions within subsequent chapters. It is generally presented in tables for each category of intervention. The population group that the evidence applies to is given along with the strength of evidence.

From Evidence to Recommendations

The recommendations have been developed by reviewing the agreed evidence-based interventions and by expert opinion. A defined framework has been used to facilitate the development of recommendations so that they are similar for all the different musculoskeletal conditions and allow common messages to be developed.

This framework considers the key targets that need to be addressed by the different evidence-based interventions. It also considers the different conditions and the populations that should be targeted. Any recommendations must also take into account any associated side effects or risks of the interventions. For example, the evidence for lifestyle interventions has been considered in light of the effect of the prevention of the development of osteoarthritis in the whole population, in the "at risk

population", those with the early stage of the condition and those at a late stage. In addition the rationale behind the intervention, its evidence base and the evidence of effect on key outcomes are made explicit. The recommendations were been graded according to Table 5.

Table 5 Grading of the recommendations(7)

Grading of recommendations	
A	Directly based on category I evidence
B	Directly based on category II evidence or extrapolated from category I evidence
C	Directly based on category III evidence or extrapolated from category II evidence
D	Directly based on category IV evidence or extrapolated from category III evidence

Limitations of the evidence

The methodology to identify and grade evidence that has been used to develop guidelines is weighted towards randomised control trials. In the context of musculoskeletal conditions, many of which are chronic with longterm consequences for which interventions are often complex, there is a paucity of such evidence and recommendations have to be made on the basis of observational studies and expert opinion. Although this means the grading of recommendations appears to be lower, it does not been that the potential benefit is any less. It just reflects the nature of the evidence base. For example, total hip replacement for osteoarthritis is a highly cost effective intervention yet there are no randomised control trials to demonstrate its benefit as these would be inappropriate to perform. Likewise it is difficult to obtain such randomised control trial evidence for many lifestyle changes. Expert consensus has therefore been used where necessary to develop the recommendations.

From recommended interventions to strategies for the prevention and management of musculoskeletal conditions

Strategies for the prevention and management of musculoskeletal conditions bring together the evidence-based interventions that have been identified for the different conditions. The key messages are given in table 6 and more detail of what this means for the specific conditions is given within the subsequent chapters of this issue as well as in the European Action for Better Musculoskeletal Health Report(1).

Table 6

Strategies for the prevention and control of musculoskeletal conditions – key messages

Strategies for the whole population
Everyone is at risk of developing musculoskeletal conditions, but to reduce the enormous impact on the quality of life of individuals and socio-economic impact on society related to musculoskeletal conditions, people at all ages should be encouraged to follow a bone and joint healthy lifestyle and to avoid the specific

risks related to musculoskeletal health. This means:

- Physical activity to maintain physical fitness
- Maintaining an ideal weight
- A balanced diet that meets the recommended daily allowance for calcium and vitamin D
- The avoidance of smoking
- The balanced use of alcohol and avoidance of alcohol abuse
- The promotion of accident prevention programmes for the avoidance of musculoskeletal injuries
- Health promotion at the workplace and related to sports activities for the avoidance of abnormal and overuse of the musculoskeletal system
- Greater public and individual awareness of the problems that relate to the musculoskeletal system. Good quality information on what can be done to prevent or effectively manage the conditions and the need for early assessment

Strategies for those at risk

Those at greatest risk must be identified and encouraged to take measures to reduce their risk. This should be on a background of being encouraged to follow a healthy lifestyle and to avoid the specific risks related to musculoskeletal diseases.

This requires a case finding approach for the different musculoskeletal conditions to identify those individuals most at risk who will benefit most from evidence-based interventions

Strategies for those with early features of musculoskeletal conditions

Those with earliest features of a musculoskeletal condition should receive an early and appropriate assessment of the cause of their problem. Once their needs have been identified they should receive early and appropriate management and, in addition, education in the importance of self-management.

This requires methods to ensure that those who have the earliest features of the different musculoskeletal conditions are assessed by someone with the appropriate competency and that the person should have timely access to care that is appropriate to their needs.

This should be on a background of enabling people to recognise the early features of musculoskeletal conditions and to know what to do, either managing the problem themselves or knowing when to seek appropriate professional help. In addition people should be enabled to access the skills necessary to manage and take responsibility for their own condition in the long term and to be able to lead full and independent lives.

Strategies for those with established musculoskeletal conditions

Those with a musculoskeletal condition, that is those who have pain, impairment of function, and limitation of activities and restriction of participation, should have fair opportunity of access to appropriate care which will reduce pain and the consequences of musculoskeletal conditions, with improvement in functioning, activities and participation.

Most outcomes are best achieved with good pain management, disease management and disease rehabilitation. These outcomes should be achieved in the most cost effective way possible for the appropriate environment.

This should be on a background of enabling people to recognise the early features of musculoskeletal

conditions and to know what to do, either managing the problem themselves or knowing when to seek appropriate professional help. In addition people should be enabled to access the skills necessary to manage and take responsibility for their own condition in the long term and to be able to lead full and independent lives.

The strategies look for commonality of recommendations that will maintain or improve musculoskeletal health whatever the underlying condition. They also combine what can be achieved from evidence-based interventions with what the different stakeholders want to be achieved with respect to their wishes and priorities. The stakeholders include those with musculoskeletal conditions and their carers and representatives; health care providers; health care purchasers and health policy makers. The potential gains and any risks of the strategies are identified both for musculoskeletal health and also for other aspects of health. The resources in terms of systems, human and physical necessary for the implementation of these strategies are considered.

It is not possible to prioritise between the different strategies on the basis of evidence as the relevance, the effectiveness and the costs will vary depending on the population being considered and there is a lack of studies looking at the outcome of such strategies. In addition, the recommendations are broadly based and are not given for specific interventions. This is because there is a lack of comparative data to enable such specific recommendations to be made.

Health strategies need plans for implementation if they are to achieve their goals of improving health. Consideration is given to what is necessary for the different strategies to be implemented at the different levels – the political, employer, health and social care professional, the patient and their carer and at the public level.

Strategies for the prevention and management of musculoskeletal conditions, as previously discussed (Table 2), can be aimed at

- the whole population
- those at high risk or with early features of the condition
- those with the established condition.

- **Population based strategies**

  Population based strategies entail identifying modifiable factors that influence the development or severity of musculoskeletal conditions and altering the prevalence of these determinants in the population. Evidence is needed of the risk associated with these determinants of health, if they can be modified and what is the benefit to the population if this is achieved. The intervention will be targeted at the whole population and its benefits and risks have to be balanced accordingly. Safety is a priority over efficacy. Concordance has a major influence on effectiveness of this approach, as there is little incentive to change lifestyle or modify other determinants of health. This approach is largely dependent on health

promotion initiatives. Implementation of these strategies is difficult as it requires a major change in behaviour by a large number of people without specific motivation.

- **Strategies for those at high-risk**

  A high-risk strategy entails identifying those individuals who are at most risk of the condition or a worse outcome from the condition and using an intervention to prevent or treat it to improve the outcome. Methods are needed to find those at highest risk, with early features of the condition or with bad prognostic features and treatments are needed that have been shown to improve outcome. Efficacy is of increased importance but safety always remains of concern. Concordance is greater as there is more personal identification with the potential health problem. This approach is largely dependent on health care systems. The health gains of this approach are easier to achieve as there are case-finding approaches and motivation to alter behaviour is greater.

- **Management of those with established musculoskeletal conditions**

  The management of those with a musculoskeletal condition is aimed at cure or to prevent the condition from progressing. It entails diagnosis, assessing severity and likely prognosis and tailoring the evidence based management accordingly. As it is not always possible to reverse the condition or prevent progression, management also needs to focus on minimising the impact of any persistent problems. Concordance is greatest as the impact of the condition is evident and the cost effectiveness of any intervention is greater at this stage. Identifying those with the earliest features of several of these musculoskeletal conditions and timely treatment will have most effect in reducing the burden of specific problems.

Health gain and health risks of any strategy

There are benefits and risks associated with any intervention or strategy. The benefits need to be considered in terms of quality of life for the individual, for example, the ability to do what they wish to do with as little difficulty as possible, as well as reducing the burden of disease on society. Increased independence of people means less need for health and social care as well as less support from carers. The benefits outside musculoskeletal health must also be considered. It is also important to consider how soon any benefit is likely to be seen when trying to evaluate a strategy.

All interventions are associated with certain risks, even health promotion. There are risks and side effects associated with screening and diagnostic tests and pharmacological, surgical or rehabilitative interventions. There are also risks associated with implementing any healthy living strategies, for example, encouraging people to participate in physical exercise will increase their risk of trauma. These should be balanced by benefits in preventing disease, disability and improving quality of life. A test that suggests someone is at risk of a condition may result in anxiety about health – making healthy people sick. Any such strategy of identifying people at risk or with early features of a musculoskeletal condition must have clear potential positive benefits to health.

Interventions that may be used to prevent or treat a condition may also have potential detrimental effects. Therefore any decision to participate in a screening or diagnostic test or to accept an intervention must be made a fully informed person. This must be considered when adopting any strategy for implementation.

Who to target?

Benefit from any strategy will be greatest for those who are at increased risk of developing the condition or having a poor outcome from it. For example, increasing physical activity in those who already undertake regular exercise gives little additional benefit, but increasing it in those who are physically inactive will be of significant benefit. For the successful implementation of any strategy, it therefore needs to be clear who will benefit most and how best to identify them in practical terms. In addition, people need to have an understanding of their personal risk and of the necessity to take positive actions to reduce that risk.

What are the implications for the delivery of health and social care?

The implementation of any of the recommended strategies will require resources. These may be considered in terms of the health systems needed to deliver them and also in terms of specific resources - human, physical and financial.

Health care can be provided in the community, primary care and secondary care. Some strategies such as health promotion will be undertaken mainly in the community where the services will need to be. Strategies to identify those at high risk or at the early stages of the condition will be predominantly undertaken in the community and in primary care, but systems for diagnosis and assessment may need to be set up within secondary care. More effective treatment of those with established conditions might need to be focused around secondary care but may be delivered as a seamless service between primary and secondary care by an integrated multi-disciplinary service. Interventions such as surgery clearly need good secondary care facilities but the outcomes will be improved if this is in a multi-disciplinary setting with access to rehabilitation both in secondary care and in the community. The trend of hospitals being focused around acute care has reduced access to intermediate care in some health systems. The provision of intermediate care may be an effective way of delivering some of the recommended strategies. The full involvement of people in their own care may also have implications as to how care is delivered. Such changes in the systems of delivering high quality care do not necessarily require additional resources, but the needs may be met by reorganisation of existing resources – human, physical and organisational. For example, self-management strategies can reduce the service demands on primary and secondary care.

There are also specific resource implications (table 7). Appropriately trained personnel will be necessary for most interventions, from health promotion to the ability to perform a hip joint replacement. They not only require the provision of appropriate training and continuing professional

development but they also require the necessary physical facilities and working environment to achieve their goals. The provision of such services requires economic resources. The success of such services requires people to use them. This requires an understanding amongst the population as a whole of the need to take positive actions to improve their health as well as having a positive attitude about what can be achieved. This can be achieved through public education.

There also needs to be a commitment at the political level to give priority and financial resources, and also at the professional level to ensure recognition of need and access to appropriate care. There are many effective interventions for musculoskeletal conditions, pharmaceutical, rehabilitative and surgical, but access to some is restricted largely related to costs. There is a need to consider these against the longterm costs of the condition if not treated more effectively.

Table 7

The implementation of appropriate strategies for the prevention and management of musculoskeletal conditions will need resources for the delivery of health and social care.

Resource Implications		
Health care	Personnel	People
		Skills (training and CPD)
	Services & facilities	Community care
		Primary care
		Specialist outpatient care
		Specialist inpatient care
		Surgery (day or inpatient)
		Emergency room
		Rehabilitation service (physiotherapist, occupational therapist, social worker etc)
		Devices and aids
		Diagnostic procedures and tests
		Medication (prescription and non-prescription)
Personal	Support	Self care (carers / services)
		Home care (carers / services)
		Family care (carers / services)
		Transportation
Home		Environmental adaptations
Productivity		Flexible working (compensation)
		Sick leave (paid)
		Early retirement (pension)

What is the cost effectiveness?

Priorities have to be made in health care and health economic tools are frequently used in this context. It is difficult however to use these at present when trying to make choices for strategies to prevent musculoskeletal conditions and to improve their outcomes. There is currently little information on cost effectiveness for population-based strategies. There is some evidence for high-risk strategies and more data for specific interventions for those with various musculoskeletal conditions. However there are few data for the use of such interventions within an integrated strategy. Given the tremendous costs of health care utilisation and work absenteeism associated with musculoskeletal conditions from their earliest stages, it is clear that interventions that reduce incidence, chronicity, recurrences and limitation of activities will have a huge impact on cost reduction. The economic benefits can be measured in terms such as reduced medical and social care and return to employment. In addition, many of the recommended strategies do not require expensive technologies or have additional health benefits. They are therefore likely to be cost effective.

To decide which approaches are most cost effective and to prioritise between other disease areas requires more economic evaluations. Such research is strongly recommended. In the absence of the research a simple economic matrix is given (Table 8) which can act as an aid in deciding implementation priorities.

Table 8 Economic matrix to aid implementation decisions(8) *(Evidence-based Implementation - A simple economic matrix. Bandolier 18. 1995)* The matrix indicates that if a new or existing treatment carries significant healthcare benefits and consumes fewer health care resources, it should be implemented immediately.

		Comparative Health Benefit		
Comparative Resource Use		***Higher***	***Similar***	***Lower***
	Higher	Maybe Prioritised reserve list	Maybe Put on hold	No Do not pursue
	Similar	Yes Phased implementation	Maybe Examine further	No Do not pursue

	Lower	Yes Implementation immediately	Yes Manage Implementation	Maybe Further analysis benefits & costs

How to monitor effectiveness

Indicators are needed that can be used to measure the implementation of the recommended strategies and the effect they have on health. A set of indicators that can be used across the European community for measuring and monitoring the impact of musculoskeletal conditions has been recommended in the European Commission Report "Indicators for Monitoring Musculoskeletal Problems and Conditions" (Grant no. S12.297217)(1). These indicators need to be applied across Europe to monitor the impact of these strategies.
[http://europa.eu.int/comm/health/ph_projects/2000/monitoring/fp_monitoring_2000_frep_01_en.pdf].

What do we need to know?

The strategies that have been outlined indicate that there is a strong evidence base for action that can and should be taken for the prevention and management of musculoskeletal conditions. However there are many gaps in our knowledge which have been identified. The most important is the lack of evidence of the effectiveness of integrated strategies such as those recommended to improve musculoskeletal health, although there is evidence for their effectiveness as individual interventions. In addition there is a lack of information about the potential cost effectiveness of these strategies to allow informed choices about their implementation at a local level.

Indicators need to be used, such as those recommended in the European Commission Report "Indicators for Monitoring Musculoskeletal Problems and Conditions", to monitor whether the implementation of these strategies improve musculoskeletal health. In addition, user-centred outcome should be used to enable targeting and monitoring of care. These indicators not only consider the direct effects on health of musculoskeletal problems and conditions but also the impact due to effects on employment and social care. Health economic evaluations are needed of the strategies to enable choices to be made on the basis of cost effectiveness in the local settings they are to be implemented.

Strategies and successful implementation

The implementation of strategies to improve musculoskeletal health is the real challenge. There are actions needed at all levels: from policies trying to influence health behaviour of an entire population, to changing the management of the individual patients in the doctor's office. The ultimate aim of implementation is to convert evidence based cost-effective intervention recommendations into health gains for the population and for the individual by transforming the strategic plan into an action plan, which should include a process of outcome evaluation. Firstly we need to consider the specific actions

required to implement these strategies and secondly what this implies for these different stakeholders. In this way we can identify what needs to be done and by whom to reach the goals for the whole population, for those at risk and for those with a musculoskeletal condition. In addition, knowledge on principles and systematic approaches to implementation are key for success, as indicated elsewhere in this issue. Based on this, early and appropriate intervention for those at highest risk or with early features of a musculoskeletal condition should be the first implementation target, since evidence of positive effects are compelling for these groups.

Suggestions of actions required to implement the recommended strategies are given in the following tables. These consider separately what needs to be done and then what can be done at the European and national political levels; the employer level; the heath and social care professional level; the patient and carer level and finally by the public as a whole.

Key points

- Musculoskeletal conditions are common and are a major cause of morbidity
- Evidence-based strategies are needed to reduce this burden that tackle the common determinants of musculoskeletal health including the major conditions.
- A common framework has been developed to enable the identification of common strategies for prevention and management of major musculoskeletal problems.
- The WHO ICF provides a framework for the outcomes to be achieved of symptom control, avoiding tissue damage and preventing limitation of activities and restriction of participation.
- Recommendations are need for the whole population, those at risk and those with the earliest features of a musculoskeletal problem as well as those with established problems.
- There is most to gain by targeting those at highest risk or with early features of a musculoskeletal condition or problem

Research agenda

- Evidence of cost effectiveness of integrated strategies for improving musculoskeletal health
- Indicators to monitor whether implementation of health strategies improve musculoskeletal health

Appendix

What actions are necessary to prevent musculoskeletal problems and conditions where possible and to ensure that those people with musculoskeletal problems and conditions enjoy life with quality and independence:

General

⇒ A comprehensive health strategy to address the determinants of musculoskeletal health should be developed at the European, national and local levels. This should consider health promotion, prevention, treatment and rehabilitation of musculoskeletal conditions based on the recommendations of this report.

⇒ It should be ensured that musculoskeletal conditions reach the political agenda at all levels, recognising the importance of musculoskeletal health and making appropriate priorities with resources.

⇒ Priority should be given at the European and national level to the research needs of musculoskeletal conditions. European and national research programmes should be developed that will lead to a better understanding of the causes of musculoskeletal conditions and their effects on people, more effective prevention and treatment and to recognise the need to evaluate the cost effectiveness of strategies for their prevention.

⇒ Programmes to prevent musculoskeletal problems and conditions should link with existing priorities and activities, such as around determinants of health, where there are opportunities for mutual benefit.

⇒ Data should be collected, for example as part of health interview surveys, to monitor determinants for, occurrence and impact of musculoskeletal conditions in all European states in a standardised manner. This will enable the quantification and monitoring of the scale of the problem and the effect of the implementation of any health strategies.

To implement strategies for the whole population

⇒ The awareness of the public and of health professionals should be raised about the scale and impact of musculoskeletal conditions and of the options for prevention and treatment.

⇒ People at all ages should be empowered to be responsible for their own musculoskeletal health by access to information about a musculoskeletal healthy lifestyle supported through public health programmes, health promotion campaigns and healthy workplace programmes.

⇒ This requires actions by the whole community including policy makers, providers of health and social care, employers and the public.

⇒ Health promotion initiatives should be harmonised and synergies explored where there are similar recommendations such as for cancer and cardiovascular disease.

⇒ Data should be collected, eg in health interview surveys, to monitor determinants for, occurrence and impact of musculoskeletal conditions in all European states in a standardised manner. This will enable the quantification and monitoring of the scale of the problem and the effect of the implementation of any health strategies.

⇒ Employment and disability legislation should be appropriate for the maintenance of musculoskeletal health.

⇒ Safe communities should be created that reduce the risk of accidents and facilitate a musculoskeletal healthy lifestyle.

⇒ Workplaces should be created that provide appropriate ergonomics, reduce risk of accidents and optimise psychological stress.

To implement strategies for the at risk population

⇒ Case finding approaches should be implemented for the different musculoskeletal conditions aimed at identifying those individuals who are most at risk of future problems related to musculoskeletal diseases and who will benefit from evidence-based interventions. This should be through

- Clinical guidelines that are accepted by peers
- Provision of appropriate resources
- Use of information systems
- Ensuring competency of health care providers

⇒ Actions should be taken across the community to reduce the risk factors for musculoskeletal conditions.

⇒ People at all ages should be empowered to be responsible for their own musculoskeletal health and understand by access to information and education about their personal risks and of the actions they can take to reduce their risks through public health programmes, health promotion campaigns and healthy workplace programmes.

⇒ Further research should be undertaken to better identify those at most risk of musculoskeletal conditions to enable more effective targeting of strategies for prevention.

To implement strategies for those with a musculoskeletal condition

⇒ Those with any of the different musculoskeletal conditions, at any stage from the earliest features, should be assessed and managed by someone with the appropriate competency and have timely access to care that is appropriate to their needs (equity) through

- Implementation of evidence based guidelines for early management with appropriate resources
- Quality assurance mechanisms for guidelines and outcome of care
- Access to
  - education
  - symptom control
  - disease modifying therapy when indicated
  - rehabilitation
  - multi-professional and multi-disciplinary integrated approach to care as required
  - support to minimise impact on home, work and leisure activities

⇒ Timely access for those with the earliest features of a musculoskeletal condition is most important to minimise the associated morbidity.

⇒ People at all ages should be empowered to be responsible for their own musculoskeletal health by access to information and education to enable them to recognise the early features of a musculoskeletal condition and to know what to do, through both managing the problem themselves and knowing when to seek expert help.

⇒ The stigmata associated with musculoskeletal conditions should be reduced and a positive attitude created to facilitate early presentation to the healthcare system through education and raising awareness.

⇒ People with an established musculoskeletal conditions should also be empowered to know what to do, through both managing the problem themselves and knowing when to seek expert help through information, education and training.

⇒ People should be enabled to access the skills necessary to take responsibility for their own musculoskeletal condition in the long term, make informed choices and to be able to lead full and independent lives through

- Access to high quality information so that people can develop and maintain an informed dialogue with health and social care professionals
- Self management programmes / expert patient groups

⇒ People should be enabled to participate in home, work and leisure activities through environmental adaptation, provision of services and sickness benefit regulations.

⇒ People should be enabled to stay at work or in education by health care, social support, education and training, and employment policies, which are linked where appropriate. For example:

- Flexible education and training arrangements
- Flexible working arrangements
- Flexible benefits and social support

⇒ There should be an integrated approach to those with musculoskeletal conditions between health and social care professionals.

⇒ There should be appropriate education and competency of health professionals to manage musculoskeletal conditions in an evidence-based way at all levels of health care provision.

What are the implications for the different stakeholders?

These actions have implications for what the different stakeholders need to do. Recommendations are given for each level:

European Political Level

⇒ Develop and implement European plans and policies that

- recognise the importance of musculoskeletal health
- encourage & facilitate the implementation of this strategy
- explicitly refer to musculoskeletal conditions alongside existing priorities and activities for other disease areas where there is mutual benefit such as within public health policies and initiatives for common determinants of health.
- give priority to the need for research and for programmes to be developed that will lead to a better understanding of the causes of musculoskeletal conditions and their effects on people, and secondly the need to evaluate the cost effectiveness of strategies for their prevention.

⇒ Recognise political salience of reducing the burden of musculoskeletal conditions

⇒ Initiate data collection, for example as part of health interview surveys, to monitor determinants for, occurrence and impact of musculoskeletal conditions in all European States in a standardised manner.

⇒ Support cross–sectoral working and bring together policies of mutual benefit for musculoskeletal health eg bringing together health, social, education, transportation and housing policies.

⇒ Develop policies to keep people at work despite their musculoskeletal condition.

⇒ Encourage national implementation of guidelines for case-finding appropriate to local population.

National Political Level

⇒ Develop and implement national and regional plans / policies that

- recognise the importance of musculoskeletal health and give appropriate priority to the improvement of musculoskeletal health that is commensurate with the burden of these conditions.
- encourage & facilitate the implementation of this strategy, recognising political opportunities and providing necessary resources.
- explicitly refer to musculoskeletal conditions alongside existing priorities and activities for other disease areas where there is mutual benefit such as within public health policies and initiatives for common determinants of health.
- give priority to the need for research and for programmes to be developed that will lead to a better understanding of the causes of musculoskeletal conditions and their effects on people, and secondly the need to evaluate the cost effectiveness of strategies for their prevention.

⇒ Initiate data collection, for example as part of health interview surveys, to monitor determinants for, occurrence and impact of musculoskeletal conditions in a standardised manner to other European States.

⇒ Provide public health programmes that implement the recommended strategies, including actions to reduce known risk factors.

⇒ Health and safety legislation appropriate to maintaining musculoskeletal health.

⇒ Support cross–sectoral working - bring together policies of mutual benefit eg bringing together health, social, education, employment, transportation and housing policies

⇒ Initiate development and implementation of guidelines for case-finding appropriate to local population and provision of resources and incentives for the implementation of these guidelines.

⇒ Implement guidelines for early management of musculoskeletal conditions appropriate to the local population and provision of resources and incentives for the implementation of these guidelines.

⇒ Ensure health systems provide timely access to care with equity of access for the various musculoskeletal conditions where early actions will alter outcomes.

⇒ Develop quality assurance mechanisms for guidelines.

⇒ Ensure competency of providers of care, including establishing standards for education and training of health and social care professionals.

⇒ Develop and implement policies to keep people at work despite their musculoskeletal condition, such as flexible working arrangements, flexible benefits and appropriate social support.

Employer Level

⇒ Create a good workplace that provides appropriate ergonomics, reduces the risk of accidents and minimises psychological stress.

⇒ Provide access to appropriate lifestyle advice and offer workplace programmes to discourage smoking and provide healthy food.

⇒ Offer opportunities to keep people in employment or to facilitate early return to employment through work adjustment or flexibility in working hours.

⇒ Timely provision of vocational and professional rehabilitation.

Health and Social Care Professional Level

⇒ Ensure all health and social professionals are aware of the need for and possibilities for prevention, and to promote them.

⇒ Have an advocacy role, communicating the burden of disease to public, politicians and peers, and promoting strategies for their prevention and treatment.

⇒ Develop a more integrated approach between health and social care professionals and identify mutual benefits across sectors.

⇒ Ensure appropriate competency of health and social care professionals so that they are able to (a) recognise and advise those at risk and are (b) able to manage those with a musculoskeletal problem appropriate to their needs including recognising when they require timely and / or more expert management (triage).

⇒ Prioritise resources into appropriate services to improve musculoskeletal health (financial, physical and human).

⇒ Implement guidelines for management of musculoskeletal conditions at all stages appropriate to local population that include identification of those who need most rapid assessment and management.

⇒ Provide integrated, co-ordinated, seamless, multi-professional, multi-disciplinary care.

⇒ Establish quality assurance systems to ensure the best outcomes for those with musculoskeletal conditions.

Patient / Carer Level

⇒ Recognise the patient / carer potential educational role to the community by engaging with other stakeholders and relating experience.

⇒ Understand the concept of being a person at risk, take a responsibility to maintain your own musculoskeletal health and ensure that you have access to reliable and up-to-date information to minimise your risk of developing a musculoskeletal condition.

⇒ Reduce the stigma associated with musculoskeletal conditions and create a positive attitude to facilitate early presentation to the healthcare system through education and raising awareness.

⇒ Enable people to recognise the early features of a musculoskeletal conditions and to know what to do, either managing the problem themselves or knowing when to seek expert help.

⇒ Enable people to access the skills necessary to manage and take responsibility for their condition in the long term and to be able to lead full and independent lives.

⇒ Ensure access to high quality information so that people can develop and maintain an informed dialogue with health and social care professionals.

⇒ Ensure access to early assessment and management, including access to self-management courses where available.

⇒ Be aware of your rights and access to education, training and employment.

Public Level

⇒ Raise children to actively participate in physical activities, have body awareness and maintain this throughout life through education, public awareness and health promotion.

⇒ Take responsibility to maintain own musculoskeletal health.

⇒ Be aware of the need for and possibilities for prevention of musculoskeletal problems and be able to make informed choices through education.

⇒ Take steps to identify your individual risk and need for intervention by accessing information and other methods of risk assessment.

⇒ Reduce the stigma associated with musculoskeletal conditions and encourage others in the community to take early action to reduce their risk.

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