SPECIAL COMMUNICATION

Standards of Care for Acute and Chronic Musculoskeletal Pain: The Bone and Joint Decade (2000–2010)

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Musculoskeletal conditions often manifest with the onset of pain and the resulting physical limitations. Musculoskeletal pain is almost inevitable in an individual's lifetime. It is one of the most common reasons for self-medication and entry into the health care system. Musculoskeletal pain affects 1 in 4 adults and is the most common source of serious long-term pain and physical disability. The monumental impact of musculoskeletal conditions is now recognized by the United Nations, the World Health Organization, World Bank, and numerous governments throughout the world through support of the Bone and Joint Decade 2000 to 2010 initiative. Individuals with musculoskeletal pain concerns are regularly ignored, their complaints often misunderstood by health care providers, and accordingly they do not receive timely or effective treatment. The standards of care in this document are designed to provide generic guidelines for appropriate care of people with acute or chronic musculoskeletal pain. This document was developed over a 4-year period using multiple international meetings and a Task Force of the Bone and Joint Decade for developing international standards for the care of acute and chronic musculoskeletal pain. The final document is a product of the World Health Organization Collaborating Centre for Evidence-Based Health Care in Musculoskeletal Disorders.

Key Words: Musculoskeletal system; Pain; Rehabilitation; Treatment outcome.

THE OVERALL OBJECTIVES of this document are (1) to inform health care providers in the management of acute and chronic musculoskeletal pain; and (2) to promote partnerships among the community, patients, and clinicians in decision-making in relation to pain—its prevention and management.

This document is based on 3 themes: (1) access to information, support, and knowledge that optimize musculoskeletal health for everyone and enable self-management; (2) access to the right services that enable early assessment, management, and prevention of chronic pain; and (3) access to ongoing and responsive treatment and support.

This documents draws on a number of major documents produced by national and international groups over the last few years: *Core Curriculum for Professional Education in Pain*,[1] produced by the Committee on Education of the International Association for the Study of Pain (*http://www.iasp-pain.org*); *Evidence-Based Management of Acute Musculoskeletal Pain: A Guide for Clinicians*,[2] based in a composite review of best practices for the treatment of musculoskeletal pain produced by the Australian Acute Musculoskeletal Pain Guidelines Group (*http://www.nhmrc.gov.au/publications/synopses/cp94syn.htm*); *Health Care Guideline: Assessment and Management of Chronic Pain*,[3] *Health Care Guideline: Adult Low Back Pain*,[4] and *Health Care Guideline: Assessment and Management of Acute Pain*[5] detailed practice guidelines for musculoskeletal conditions produced by the Institute for Clinical Systems Improvement (*http://www.icsi.org*); *Standards of Care for People With Back Pain*,[6] *Standards of Care for People With Inflammatory Arthritis*,[7] *Standards of Care for People With Osteoarthritis*,[8] *Standards of Care for People With Connective Tissue Diseases*,[9] *Standards of Care for People With Metabolic Bone Disease*,[10] and *Standards of Care for People With Regional Musculoskeletal Pain*[11] produced by ARMA (*http://www.arma.uk.net*); *European Action Towards Better Musculoskeletal Health*[12] review of evidenced-based medicine and best practices for treatment of musculoskeletal pain prepared in cooperation with many European health organizations and experts (*http://www.boneandjointdecade.org/ViewDocument.aspx?ContId=534*); and *Methods of Treating Chronic Pain: A Systematic Review*[13] based on a systematic and critical review of the scientific literature regarding medications, referral, interventions, and patient education with generic recommendations by SBU (*http://sbu.se/en/Published/Yellow/Methods-of-Treating-Chronic-Pain*).

Musculoskeletal conditions often manifest with the onset of pain and the resulting physical limitations. Musculoskeletal

List of Abbreviations

ARMA	Arthritis and Musculoskeletal Alliance
SBU	Swedish Council on Technology Assessment in Health Care

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pain is almost inevitable in an individual's lifetime. It is one of the most common reasons for self-medication and entry into the health care system.[14] Musculoskeletal pain affects 1 in 4 adults and is the most common source of serious long-term pain and physical disability. Chronic pain, often a result of unresolved musculoskeletal pain, affects 1 in 5 adults across Europe, with significant numbers losing their jobs or taking significant amounts of time off work each year.[15] In fact, musculoskeletal conditions are the primary health problems that limit work among industrialized nations; up to 60% of people on early retirement or long-term sick leave have chronic musculoskeletal ailments.[16]

Musculoskeletal problems result in a significant burden on both social and health care resources, accounting for a quarter of overall cost of illness on a global scale. When looking at the United Sates alone, the cost associated with these conditions increased 18% during the last 5 years, reaching $254 billion. Excluding trauma, musculoskeletal conditions are responsible for roughly 25% of the total expense of illness in developed nations.[17] They are the second most common cause for an individual to seek a physician and in a vast majority of countries account for up to 20% of a typical primary care practice.[18] There is some evidence that musculoskeletal pain is now more common than it was 40 years ago.[19] Whether this is a result of an increase in reporting or a heightened awareness of the symptoms is not clear.

Although the spectrum for musculoskeletal conditions is broad, they can be placed, respectively, within the following major categories: (1) joint conditions—for example, rheumatoid arthritis and osteoarthritis; (2) osteoporosis—for example, fragility fractures; (3) spinal disorders—for example, low back pain; (4) musculoskeletal injuries—for example, high-energy limb fractures, strains, and sprains mainly related to occupation of sports; and (5) childhood disorders. Overall, they incorporate problems ranging from acute onset and short duration to lifelong disorders. In the years to come, the incidence and impact of musculoskeletal conditions with consequential pain is expected to increase substantially in both developed and developing nations because of aging populations, lifestyle changes resulting in obesity, and decreased physical fitness, as well as an increase in road traffic collisions with the urbanization and motorization of the developing world.[20,21] The monumental impact of musculoskeletal conditions is now recognized by the United Nations, the World Health Organization, World Bank, and numerous governments throughout the world through support of the Bone and Joint Decade 2000 to 2010 initiative.[22] Yet patients with musculoskeletal pain concerns are regularly ignored, their complaints often misunderstood by health care providers, and accordingly they do not receive timely or effective treatment. The standards of care in this document are designed to provide guidelines for appropriate care of people with acute or chronic musculoskeletal pain.

Pain is an individual, multifactorial experience influenced by culture, previous pain experiences, belief, mood, and ability to cope. Although pain may indicate tissue damage, it can be experienced in the absence of an identifiable cause. Significant variability occurs in the degree of disability experienced in relation to pain and there is individual variation in response to pain treatments.

Effective pain relief is a human right[23]:

(1) It should be possible to reduce pain to a tolerable level in most people. Pain may not be completely alleviated but only reduced in some people due to its multifaceted nature.
(2) Unrelieved severe pain has adverse psychologic and physiologic effects.
(3) The person with pain should be involved in the assessment and management of their pain.
(4) To be effective pain treatments must be flexible and tailored to individual needs. Very different interventions (eg, medications, acupuncture, surgery, faith healing, herbs) are utilized worldwide with varying degrees of success based on a multitude of factors (eg, physical, cultural, affective, motivational, cognitive).
(5) Pain should be treated early, as established severe pain is much more difficult to treat and consumes significant community and health sector resources.

The term *acute pain* refers to pain that has been present for less than 3 to 6 months.[24]

Chronic pain is pain that has been present for longer than 3 to 6 months.[25] Successful management of pain in the acute phase is essential to prevent transition to chronic pain, which presents a significant social and economic burden. The burden of chronic musculoskeletal pain is often underestimated as to the negative impact it has on the individual, family, and community because of the resulting prolonged disability. Chronic musculoskeletal pain conditions are some of the most common causes of long term disability.

The development of chronic pain is likely the result of small, cumulative changes in lifestyle that have been made to cope with acute musculoskeletal pain.[26] The intensity, duration, and character of the pain influence psychosocial response, and the psychosocial response in turn influences the course of events. People vary in their potential to develop chronic pain. A combination of behaviors, beliefs, and emotions may be involved in the transition from acute to chronic pain.[26] When pain is unrelieved over time, or if there are recurrent episodes of pain, chronic pain may develop. It is essential to identify people with acute pain who are at risk of developing chronic pain and to intervene early to prevent this occurrence.

The appreciation and understanding of pain is now an integral part of patient care and has recently been identified by the US Joint Commission on Accreditation of Healthcare Organizations as the fifth vital sign.[27] Over the last decade, there have been extraordinary advances in the unraveling of pain mechanisms at the molecular level. These expand our understanding of the physiologic and pharmacologic aspects of pain including changes in the central and peripheral nervous system, the identification of chemical pathways, nerve receptive pathways, peripheral sensitization, and central neuroplasticity in the perpetuation of pain and links between inflammation, pain, and psychologic status.[28,29]

STANDARDS OF CARE

These standards are designed to give health service planners and health professionals the information needed to plan for and provide high-quality, evidence-based services for people with acute and chronic musculoskeletal pain. They should also identify for the community and patients the care and treatment they can reasonably expect to receive. The standards recognize that (1) the patient with musculoskeletal pain needs timely access to care that is founded on evidence-based medicine; (2) different types of advice and support may be needed at different times for people with musculoskeletal pain; and (3) integrated services are needed to provide advice and support to cover all aspects of managing musculoskeletal pain—clinical, personal, psychosocial, and employment.

STANDARDS OF CARE FOR ACUTE MUSCULOSKELETAL PAIN

Acute musculoskeletal pain is a biologic symptom of an apparent nociceptive stimulus from the pathophysiologic process involved with tissue damage, disease, or dysfunction. Acute pain is generally self-limiting, and as the nociceptive stimulus lessens, the pain decreases. Appropriate management is usually associated with good symptomatic and functional outcomes. The generic recommendations for evaluation, management, and care are provided in table 1 and supplemental appendixes 1 through 4.

Prevention

To minimize the occurrence of acute musculoskeletal pain, one should strive to reach or maintain a healthy lifestyle. This includes physical activity to maintain physical fitness, maintaining an ideal weight, monitoring diet, accident prevention, creation of a safe home environment, minimization of risks acquired through the workplace, as well as lifestyle choices (no smoking or alcohol overuse) that are conducive to overall health and well being. Public and individual awareness of the problems that relate to musculoskeletal health are essential to minimize musculoskeletal pain.

Initial Assessment

To find the origin and etiology of the acute musculoskeletal pain efficiently and effectively while ruling out serious or specific underlying conditions as the source of pain, the individual's complete medical history, social situation, and physical examination need to be considered. Health care providers should use the red flags for identifying relatively uncommon conditions requiring urgent evaluation. Such conditions include tumors, infections, fractures, soft tissue injuries, childhood disorders, and neurologic damage. Screening for serious or specific conditions occurs as part of a history and physical examination and should occur at the initial assessment and subsequent visits. It is essential to complete a physical examination centered on the areas of pain with attention to related musculoskeletal components as well as related spine and neurologic structures.

Initial Management

Serious underlying condition. To reduce the risks for a decline in health resulting from a serious underlying condition, a sufficient and rapid assessment of the patient's current health status is critical. Imaging studies and laboratory tests should be tailored to the suspected condition. The resulting medical and surgical intervention and/or management should evaluate all options available with the ultimate outcome of satisfactorily controlling the underlying condition and pain for the individual. All the while, the patient and family should have sufficient means of communication and understanding with those medical professionals involved.

Specific musculoskeletal condition. To reduce the risks for a decline in health resulting from a specific acute or recurrent underlying condition, a sufficient and swift assessment of the patient's current health status is critical. Imaging studies and laboratory tests should be tailored to the suspected condition. The resulting medical and surgical intervention and/or management should evaluate all options available with the ultimate outcome of satisfactorily controlling the underlying condition and pain for the individual. All the while, the patient and family should have sufficient means of communication and understanding with those medical professionals involved.

Nonspecific acute musculoskeletal pain. To reduce the risks for a decline in health such as, deconditioning and contractures resulting from acute musculoskeletal pain, a sufficient and rapid assessment of the patient's current health status is essential. Whereas imaging studies and laboratory tests are useful for serious or specific underlying conditions, these are rarely indicated or useful for acute musculoskeletal pain. Instead, medical and surgical management should explore all options so that the pain is controlled adequately and conservatively. The patient and the family should be provided information regarding the nature of the pain, and the individual's limitations should be communicated with assurance and encouragement to return to normal activities as soon as possible. Any progress or setbacks should be monitored and followed up on at future visits.

Follow-Up Care

When monitoring the patient, the physician should periodically re-evaluate the initial assessment to ensure optimal treatment and recognition of potential latent features of serious or specific underlying conditions that originally were thought to be acute nonspecific musculoskeletal pain. Physician should be familiar and use both the red and yellow flags in identifying and managing the patient's pain. The term *yellow flags* identifies the psychosocial and occupational factors that may increase the risk of chronicity in people presenting with acute musculoskeletal pain. Kendall et al[30] developed guidelines for assessing yellow flags, outlining factors that should be assessed particularly when the response to therapy is slower than expected. The presence of such factors is a prompt for further detailed assessment and early intervention. Red flags and yellow flags are not mutually exclusive, and intervention may be required for both clinical and psychologic risk factors, which should be reviewed and evaluated at each visit. Consideration of various lifestyle factors as well as compliance with the treatment plan should also be taken into account. Medical management and care should be modified to control pain and encourage recovery.

Rehabilitation

The primary goal of rehabilitation in response to acute musculoskeletal pain is to re-establish function and mobility to the pre-existing level. The functional potential should consider the premorbid status as well as the resulting limitations induced by the musculoskeletal injury. The program should be customized to the patient's needs while monitoring any acute musculoskeletal pain, and the expectations for their recovery should be fully communicated to the individual and the family.

Prevention of Recurrent Musculoskeletal Pain

To ensure prevention of recurrent acute musculoskeletal pain and other complications, direct focus should be placed on a successful recovery while monitoring lifestyle and additional risks that could contribute to a relapse in musculoskeletal pain. Allowing the individual to take responsibility for care with continued support from the family and the physician as well as the employer and other people involved in the process is desired. Health services, the voluntary sector, and other agencies should provide information, advice, and facilities to enable people to manage recurrent episodes of acute musculoskeletal pain and provide guidelines on whether or when to seek medical advice.

Prevention of Chronic Musculoskeletal Pain

One of the most important reasons for adequately treating acute musculoskeletal pain is to prevent progression to chronic

Table 1: Standards of Care for Acute Musculoskeletal Pain: Descriptions of Target Areas, Needs, and Rationale for Reaching the Goals Recommend Using a Standardized Preplanned Care Protocol to Obtain These Goals in Any Setting

	Standard Care	Needs
Prevention		
Goal	To minimize occurrence of acute musculoskeletal pain.	
At place of residence	Maintain individual weight within recommended healthy body mass index. Eat a balanced diet that meets recommended daily allowance for calcium, vitamin D, and fish oils. Modify home environment to remove additional risks of fall, injury, etc. Use protective equipment.	Knowledge of individual, employer, physician and community about a lifestyle to promote bone and joint health.
At place of work	Minimize workplace exposure to at risk activities, such as vibration, repetitive tasks, inappropriate lifting, etc. Use proper body mechanics in all activities. Use protective equipment.	
At place of recreation	Achieve and maintain the optimal level of physical activity and fitness within own personal limitations. Avoid abnormal use or overuse of the musculoskeletal system. Use protective equipment.	
In daily lifestyle	Avoid smoking. Avoid excess consumption of alcohol.	
Initial assessment		
Goal	To assess adequately and rapidly the individual's background and current health state in order to formulate an etiology of the acute musculoskeletal pain, as well as eliminate serious underlying conditions as the cause—fracture, severe soft tissue injury, tumor, infection, inflammatory arthritis, childhood disorders, aneurysm, osteonecrosis, neurologic compromise, or other relevant pathology.	
Medical history	General and specific but to include areas that are relevant to origin, radiation, quality, severity, time, and intensity attributes as well as location, onset, duration, quality, impact, and modifying factors. Review previous episodes, treatment, and medications. Comorbidity including risk of serious underlying conditions. Past medical, surgical, and psychologic history. Current drug therapy. Patient's perception of symptoms.	Practitioners knowledgeable in the red flags for rapid identification of serious underlying conditions related to acute musculoskeletal pain (supplemental appendix 1). Practitioners knowledgeable in the normative presentation, management, and complications related to specific causes of acute musculoskeletal pain (supplemental appendix 2).
Social history	Social situation including living conditions, occupation, disability compensation, and pending litigation. Smoking and abuse of other substances.	Practitioners knowledgeable in the relationship between the social history and later potential for rehabilitation.
Physical examination	Focused on area of pain with attention to the musculoskeletal components as well as a related spine and neurologic structures. Compare painful regions with normative areas on the contralateral side of the individual for symmetry, sensation, temperature, pulse, and sensitivity to palpation. Rule out pathologic causes resulting from serious underlying conditions. Cognitive status.	
Initial management, if assessment suggests a serious underlying condition		
Goal	To assess adequately and rapidly the patient's current health state in order to diminish the risks for deterioration of health from the serious underlying condition.	

Table 1: (Cont'd) Standards of Care for Acute Musculoskeletal Pain: Descriptions of Target Areas, Needs, and Rationale for Reaching the Goals Recommend Using a Standardized Preplanned Care Protocol to Obtain These Goals in Any Setting

	Standard Care	Needs
Imaging studies	X-ray examination should aim to identify the components of suspected serious condition as well as common fractures. If a serious soft tissue injury, a childhood disease, or neurologic deterioration is suspected, consider obtaining an MRI. In addition, in those with cardiovascular and pulmonary conditions or of high age, perform a pulmonary radiography at the same time.	Specialist appropriately trained in identifying relevant findings on imaging studies, including the recognition of pathologic causes.
Laboratory tests	Laboratory tests tailored to the suspected serious condition.	Practitioners with appropriate training and experience to evaluate all options, including referral to specialist when needed. Standardized flowcharts to ensure that appropriate care is delivered (supplemental appendix 3).
Medical management	Ensure adequate pain control. Arrange appropriate test, and ensure early and appropriate treatment, or consultation.	
Surgical management	Arrange appropriate tests, and ensure early and appropriate treatment, or consultation. Ensure adequate pain control.	
Care	Information to the patient and to the family on the condition and expectations.	Appropriate communication (supplemental appendix 4).
Initial management, if assessment suggests specific acute musculoskeletal pain		
Goal	To assess adequately and rapidly the patient's current health state in order to diminish the risks for deterioration of health from the acute musculoskeletal pain.	
Imaging studies	X-ray examination should aim to identify the components of suspected serious specific condition. If a serious soft tissue injury, a childhood disease, or neurologic deterioration is suspected, consider obtaining an MRI.	Specialist appropriately trained in identifying relevant findings on imaging studies, including the recognition of pathologic causes.
Laboratory test	Generally indicated only when serious underlying conditions are suspected.	Practitioners with appropriate training and experience to evaluate all options, including referral to specialist when needed. Standardized flowcharts to ensure that appropriate care is delivered (supplemental appendix 3).
Medical management	Ensure adequate pain control, including RICE (rest, ice, compression, elevation). Arrange for early and appropriate test, treatment, or consultation. Ensure adequate conservative management. Consider early mobilization.	
Surgical management	Ensure adequate pain control. Ensure adequate conservative management. Consider early mobilization and rehabilitation.	
Initial management, if assessment suggests nonspecific acute musculoskeletal pain		
Goal	To assess adequately and rapidly the patient's current health state in order to diminish the risks for deterioration of health from the acute musculoskeletal pain.	
Imaging studies	Generally indicated only when serious underlying conditions are suspected.	Rarely indicated.
Laboratory test	Generally indicated only when serious underlying conditions are suspected.	Rarely indicated.
Medical management	Ensure adequate pain control. Ensure adequate conservative management.	Practitioners with appropriate training and experience of all options (supplemental appendix 3).
Surgical management	Ensure adequate pain control. Ensure adequate conservative management.	Surgical intervention rarely indicated (supplemental appendix 3).

Table 1: (Cont'd) Standards of Care for Acute Musculoskeletal Pain: Descriptions of Target Areas, Needs, and Rationale for Reaching the Goals Recommend Using a Standardized Preplanned Care Protocol to Obtain These Goals in Any Setting

	Standard Care	Needs
Care	Provide information on nature of acute musculoskeletal pain. Provide assurance that recovery is expected. Review activity limitations, if any, caused by acute musculoskeletal pain. Encourage return to normal activities (including work—with or without restrictions) as soon as possible. Encourage low-stress aerobic exercise. Identify and discuss individual's concerns that may affect management plan. Schedule follow-up visit. Return to clinic earlier if condition deteriorates.	Appropriate communication (supplemental appendix 4).
Follow-up care		
Goal	Re-evaluate for optimal treatment and detection of latent features of serious and/or specific underlying conditions initially presenting as acute nonspecific musculoskeletal pain.	
Reassess	Evaluate individual closely with each visit. Review and evaluate for red flags at each contact/visit. Review progress and pain level and adjust management as needed. If symptoms persist, check for compliance with treatment plan, re-evaluate for serious underlying condition if symptoms unchanged or worsening. Assess for psychologic, socioeconomic, and occupational factors that may influence presentation, response to treatment, and recovery. Explore other potential barriers to recovery with individual and family.	Practitioners knowledgeable in the red flags for rapid identification of serious underlying conditions related to acute musculoskeletal pain (supplemental appendix 1). Practitioners knowledgeable in the normative presentation, management, and complications related to specific causes of acute musculoskeletal pain (supplemental appendix 2). Practitioners knowledgeable in the yellow flags and other factors that may influence presentation, response to treatment, and recovery with acute musculoskeletal pain (supplemental appendix 5).
Medical management	Monitor individual for pain. Consider alternative interventions. Ensure adequate pain control. Ensure adequate conservative management.	
Surgical management	After surgical intervention, avoid surgical complications and ensure normative healing process.	Practitioners with appropriate training and experience to evaluate all options, including referral to specialist when needed. Standardized flowcharts to ensure that appropriate care is delivered (supplemental appendix 3).
Care	Information to the patient and family on the acute musculoskeletal pain and expectations. Provide assurance that recovery is expected. Review activity limitations, if any, caused by acute musculoskeletal pain. Encourage return to normative activities (including work—with or without restrictions) as soon as possible. Encourage low-stress aerobic exercise. Schedule follow-up visit as needed. Return to clinic if condition deteriorates.	Appropriate communication (supplemental appendix 4).
Rehabilitation		
Goal	To restore functioning and mobility to the premorbid level.	
Rehabilitation	Assess the functional potential of the patient on the basis of the premorbid status and the consequences on functioning from the musculoskeletal pain. Needs assessment. The abilities and mobility in particular should be trained, and individual training programs should be developed.	Multidisciplinary team training, including physiotherapy and occupational therapy, if needed.

Table 1: (Cont'd) Standards of Care for Acute Musculoskeletal Pain: Descriptions of Target Areas, Needs, and Rationale for Reaching the Goals Recommend Using a Standardized Preplanned Care Protocol to Obtain These Goals in Any Setting

	Standard Care	Needs
Care	Information to the patient and family on the acute musculoskeletal pain and expectations. Provide assurance that recovery is expected. Review activity limitations, if any, caused by acute musculoskeletal pain.	Appropriate communication (supplemental appendix 4).
Prevention of recurrent acute musculoskeletal pain		
Goal	To ensure maximum postrecovery well-being with avoidance of recurring acute musculoskeletal pain or other complications and to allow for appropriate function and activity.	
Home management	Enable the patient to take responsibility for care (bearing in mind that some people will require a greater level of support and assistance, with the support of the clinician). Emphasize patient education and conservative home self-care which includes limited bed rest, early ambulation, postural advice, resumption of light-duty activities, use of ice and heat, anti-inflammatory and analgesic over-the-counter medication, and early return to work or activities.	Knowledge of individual, employer, or physician, and community about a bone and joint healthy lifestyle. Practioners with appropriate training and experience to evaluate all options, including referral to specialist when needed. Standardized flowcharts to ensure that appropriate care is delivered (supplemental appendix 3).
Identifying risk	Identify patients at risk of future musculoskeletal injury. Initiate appropriate investigation and modify environment to prevent injury.	
Medical management	Appropriate use of over-the-counter medications for recurrent acute musculoskeletal pain.	
Care	Continued education, advice, and support.	Skilled nursing or therapy staff with training and experience in the treatment of patients with recurrent acute musculoskeletal pain.
Prevention of chronic musculoskeletal pain		
Goal	To assess adequately the patient's current health state in order to diminish the risks for deterioration of health from the serious condition.	

Table 1: (Cont'd) Standards of Care for Acute Musculoskeletal Pain: Descriptions of Target Areas, Needs, and Rationale for Reaching the Goals Recommend Using a Standardized Preplanned Care Protocol to Obtain These Goals in Any Setting

	Standard Care	Needs
Identifying risk	Identify patients at risk of chronic pain during care for acute musculoskeletal pain. Initiate appropriate early intervention.	Practitioners with knowledge of the pathogenesis of the underlying disease or injury and the natural healing process, and the ability to identify differences from the natural healing process. Practitioners knowledgeable in the yellow flags and other factors that may influence presentation, response to treatment, and recovery with acute musculoskeletal pain (supplemental appendix 5). Practitioners knowledgeable in the predictors of chronicity with acute musculoskeletal pain (supplemental appendix 6). Practitioners knowledgeable in the red flags for rapid identification of serious underlying conditions related to acute musculoskeletal pain and in potential specific underlying disorders (supplemental appendix 1). Practitioners knowledgeable in the normative procedures, management, and complications related to chronic musculoskeletal pain (supplemental appendix 2). Practitioners with appropriate training and experience to evaluate all options, including referral to specialist when needed. Standardized flowcharts to ensure that appropriate care is delivered (supplemental appendix 3). Surgical intervention rarely indicated. Skilled nursing or therapy staff with training and experience in the treatment of patients with recurrent acute musculoskeletal pain.
Reassess	Evaluate individual closely with each visit. Review and evaluate for red flags at each contact/visit. If symptoms persist, check for compliance with treatment plan, re-evaluate for serious and/or specific underlying condition if symptoms unchanged or worsening. Review progress, pain level, and level of function. Adjust management as needed. Assess for psychologic, socioeconomic, and occupational factors that may influence presentation, response to treatment, and recovery. Explore other potential barriers to recovery with individual and family.	
Medical management	Monitor individual for pain. Consider alternative interventions. Ensure adequate pain control. Ensure adequate conservative management.	
Surgical management	Monitor individual for pain. Consider alternative nonsurgical interventions. Ensure adequate pain control. Ensure adequate conservative management.	
Care	Continued education, advice, and support.	

Abbreviation: MRI, magnetic resonance imaging.

musculoskeletal pain. To limit the possibility of decline in health because of chronic musculoskeletal pain, the patient's present state of health should be gauged and monitored long-term. The physician's knowledge of the red and yellow flags as well as other factors influencing the progress of acute musculoskeletal pain is imperative in prevention and early identification of a more serious condition. All aspects of the patient's life, from overall health to introduced risks, should be reassessed throughout treatment and recovery. When necessary, medical and surgical management should be re-evaluated and tailored to control pain effectively and efficiently. Information should be widely available to people with musculoskeletal pain on how to reduce the risk of developing chronic pain.

STANDARDS OF CARE FOR CHRONIC MUSCULOSKELETAL PAIN

Chronic musculoskeletal pain is generally identified as a musculoskeletal pain condition that has no identifiable underlying serious or specific disorder and has not resolved in less than 3 to 6 months. Chronic musculoskeletal pain is not synonymous with acute recurring musculoskeletal pain such as that observed with rheumatoid arthritis and recurrent mechanical back pain. Over time there are changes to the somatic, neural, psychologic, and behavioral aspects of the individual with chronic pain. The treatment of this situation requires understanding the balance of the physical, psychologic, and societal components of the pain for satisfactory resolution. The generic recommendations for evaluation, management, and care are provided in table 2 and supplemental appendixes 1 through 6.

Prevention

To minimize the occurrence of chronic musculoskeletal pain, one should identify individuals at risk during care of acute musculoskeletal pain and respond with appropriate intervention, paying particular attention to the psychosocial and occupational factors (yellow flags). It is important to maintain a healthy lifestyle; this includes monitoring weight and diet, risks acquired through the workplace, and recreational activity, as well as lifestyle choices that are conducive to overall health and well being. In case of a specific chronic musculoskeletal disorder—for example, osteoarthritis—appropriate care of the underlying disease and adapted pain treatment are crucial to avoid further nonsomatic deterioration.

Initial Assessment

To find the origin and etiology of the musculoskeletal pain efficiently and effectively while ruling out serious or specific underlying conditions as the source, the individual's background and current health state need initial consideration. Health care providers should use the red and yellow flags for identifying significant underlying conditions that may be related to the pain, while also focusing on the patient's complete medical history, social situation, and history, in addition to a physical examination centered on the areas of pain with attention to related musculoskeletal components and related spine and neurologic structures.

Initial Management

Serious underlying condition. To reduce the risks for a decline in health resulting from a serious underlying condition, a sufficient and rapid assessment of the patient's current health status is imperative. Imaging studies and laboratory tests should be tailored to the suspected condition. The resulting medical and surgical intervention and/or management should evaluate all options available with the ultimate outcome of satisfactorily controlling pain for the individual. All the while, the patient and family should have sufficient means of communication and understanding with those medical professionals involved.

Specific underlying condition. To reduce the risks for a decline in health resulting from a specific underlying condition, a sufficient and rapid assessment of the patient's current health status is imperative. Imaging studies and laboratory tests should be tailored to the suspected condition. The resulting medical and surgical intervention and/or management should evaluate all options available with the ultimate outcome of satisfactorily controlling pain for the patient. All the while, the patient and family should have sufficient means of communication and understanding with those medical professionals involved.

Chronic musculoskeletal pain. To reduce the risks for a decline in health resulting from chronic musculoskeletal pain, a sufficient and swift assessment of the patient's current health status is crucial. Whereas imaging studies and laboratory tests are useful for serious and specific underlying conditions, these are rarely indicated or useful for musculoskeletal pain. Instead, medical and surgical management should explore all options so that the pain is controlled adequately and conservatively. The patient and family should be provided information regarding the nature of the pain, and the patient's limitations should be communicated with assurance and encouragement to return to normal activities as soon as possible. Any progress or setbacks should be monitored and followed up on at future visits.

Follow-Up Care

When monitoring the patient, the physician should periodically re-evaluate the initial assessment to ensure optimal treatment and recognition of potential latent features of serious or specific underlying conditions that originally were thought to be chronic musculoskeletal pain. The physician should be familiar and use both the red and yellow flags in identifying and managing the patient's pain. Consideration of various lifestyle factors as well as compliance with the treatment plan should also be taken into account. Medical management and care should be modified to control pain and encourage recovery, avoiding surgical intervention unless necessary.

Self-Management

Health services, the voluntary sector, and other agencies should provide information, advice, and facilities to enable people to manage episodes of chronic musculoskeletal pain and provide guidelines on whether or when to seek medical advice.

Involvement of people with musculoskeletal pain in service development is essential. Health service organizations should involve people with acute and chronic musculoskeletal pain in the development of their services for these conditions.

PAIN MANAGEMENT

Von Korff[31] showed that patients in pain want (1) to know what the problem is, (2) to be reassured that it is not serious, (3) to be relieved of their pain, and (4) to receive information about their pain.

People in pain want advice on how to manage their pain, including nonpharmacologic and pharmacologic interventions and how to return to normative activity as quickly as possible. It is important to satisfy this need for knowledge, alleviate fear, and focus on preventing disability produced by the pain.[32] Use of a preventive approach to influence behavior is best done at the initial visit. This is particularly important in acute muscu-

Table 2: Standards of Care for Chronic Musculoskeletal Pain: Descriptions of Target Areas, Needs, and Rationale for Reaching the Goals Recommend Using a Standardized Preplanned Care Protocol to Obtain These Goals in Any Setting

	Standard Care	Needs
Prevention		
Goal	To minimize occurrence of chronic musculoskeletal pain.	
Identifying risk	Identify patients at risk of chronic pain because of severe underlying disorders. Identify patients at risk of chronic pain during care for chronic musculoskeletal pain. Initiate appropriate early intervention.	Practitioners experienced in identifying serious or specific underlying musculoskeletal disorders and related risk factors (supplemental appendixes 1, 2). Practitioners knowledgeable in the yellow flags and other factors that may influence presentation, response to treatment, and recovery with chronic musculoskeletal pain (supplemental appendix 5). Practitioners knowledgeable in the predictors of chronicity with chronic musculoskeletal pain (supplemental appendix 6).
At place of residence	Maintain individual weight within recommended healthy body mass index. Eat a balanced diet that meets recommended daily allowance for calcium, vitamin D, and fish oils. Modify home environment to remove additional risks of fall, injury, etc. Use protective equipment.	Knowledge of individual, employer, and community about a healthy lifestyle for bones and joints.
At place of work	Minimize workplace exposure to at risk activities, such as vibration, repetitive tasks, inappropriate lifting, etc. Use proper body mechanics in all activities. Use protective equipment.	
At place of recreation	Achieve and maintain the optimal level of physical activity and fitness within own personal limitations. Avoid abnormal use or overuse of the musculoskeletal system. Use protective equipment.	
In daily lifestyle	Avoid smoking. Avoid excess consumption of alcohol.	
Initial assessment		
Goal	To assess adequately and rapidly the individual's background and current health state in order to formulate an etiology of the chronic musculoskeletal pain, as well as eliminate serious underlying conditions as the cause—fracture, severe soft tissue injury, tumor, infection, inflammatory arthritis, childhood disorders, aneurysm, osteonecrosis, neurologic compromise, or other relevant pathology.	

Table 2: (Cont'd) Standards of Care for Chronic Musculoskeletal Pain: Descriptions of Target Areas, Needs, and Rationale for Reaching the Goals Recommend Using a Standardized Preplanned Care Protocol to Obtain These Goals in Any Setting

	Standard Care	Needs
Medical history	General and specific but to include areas that are relevant to origin, radiation, quality, severity, time, and intensity attributes as well as location, onset, duration, quality, impact, and modifying factors. Review previous episodes, treatment, and medications. Comorbidity including risk of serious underlying conditions. Past medical, surgical, and psychologic history. Current drug therapy. Patient's perception of symptoms.	Practitioners knowledgeable in the red flags for rapid identification of serious underlying conditions related to chronic musculoskeletal pain (supplemental appendix 1). Practitioners knowledgeable in the normal presentation, management, and complications related to specific causes of chronic musculoskeletal pain (supplemental appendix 2).
Social history	Social situation including living conditions, occupation, disability compensation, and pending litigation. Smoking and abuse of other substances.	Practitioners knowledgeable in the yellow flags and other factors that may influence presentation, response to treatment, and recovery with chronic musculoskeletal pain (supplemental appendix 5).
Physical examination	Focused on area of pain with attention to the musculoskeletal components as well as a related spine and neurologic structures. Compare painful regions with normal areas on the contralateral side of the individual for symmetry, sensation, temperature, pulse, and sensitivity to palpation. Rule out pathologic causes resulting from serious underlying conditions. Cognitive status.	Practitioners knowledgeable in the predictors of chronicity with chronic musculoskeletal pain (supplemental appendix 5). Practitioners knowledgeable in the relationship between the social history and later potential for rehabilitation.
Initial management, if assessment suggests a serious or specific underlying condition		
Goal	To assess adequately and rapidly the patient's current health state in order to diminish the risks for deterioration of health from the serious underlying condition.	
Imaging studies	X-ray examination should aim to identify the components of suspected serious condition as well as common fractures. If a serious soft tissue injury, a childhood disease, or neurologic deterioration is suspected, consider obtaining an MRI. In addition, in those with cardiovascular and pulmonary conditions or of high age, perform pulmonary radiography at the same time.	Specialist appropriately trained in identifying relevant findings on imaging studies, including the recognition of pathologic causes.
Laboratory tests	Laboratory tests tailored to the suspected serious condition.	Practitioners with appropriate training and experience to evaluate all options, including referral to specialist when needed. Standardized flowcharts to ensure that appropriate care is delivered (supplemental appendix 3).
Medical management	Ensure adequate pain control. Arrange appropriate test, and ensure early and appropriate treatment, or consultation.	
Surgical management	Arrange appropriate tests, and ensure early and appropriate treatment, or consultation. Ensure adequate pain control.	
Care	Information to the individual and to the family on the condition and expectations.	Appropriate communication (supplemental appendix 4).
Initial management, if assessment suggests specific chronic musculoskeletal pain		
Goal	To assess adequately and rapidly the patient's current health state in order to diminish the risks for deterioration of health from the chronic musculoskeletal pain.	

Table 2: (Cont'd) Standards of Care for Chronic Musculoskeletal Pain: Descriptions of Target Areas, Needs, and Rationale for Reaching the Goals Recommend Using a Standardized Preplanned Care Protocol to Obtain These Goals in Any Setting

	Standard Care	Needs
Imaging studies	X-ray examination should aim to identify the components of suspected serious specific condition. If a serious soft tissue injury, a childhood disease, or neurologic deterioration is suspected, consider obtaining an MRI.	Specialist appropriately trained in identifying relevant findings on imaging studies, including the recognition of pathologic causes.
Laboratory test	Generally indicated only when serious underlying conditions are suspected.	Practitioners with appropriate training and experience to evaluate all options, including referral to specialist when needed. Standardized flowcharts to ensure that appropriate care is delivered (supplemental appendix 3).
Medical management	Ensure adequate pain control, including RICE (rest, ice, compression, elevation). Arrange for early and appropriate test, treatment, or consultation. Ensure adequate conservative management. Consider early mobilization.	
Surgical management	Ensure adequate pain control. Ensure adequate conservative management. Consider early mobilization and rehabilitation.	
Initial management, if assessment suggests nonspecific chronic musculoskeletal pain		
Goal	To assess adequately and rapidly the patient's current health state in order to diminish the risks for deterioration of health from the chronic musculoskeletal pain.	
Imaging studies	Generally indicated only when serious underlying conditions are suspected.	Rarely indicated.
Laboratory test	Generally indicated only when serious underlying conditions are suspected.	Rarely indicated.
Medical management	Ensure adequate pain control. Ensure adequate conservative management.	Practitioners with appropriate training and experience to evaluate all options (supplemental appendix 3).
Surgical management	Ensure adequate pain control. Ensure adequate conservative management.	Rarely indicated.
Care	Provide information on nature of chronic musculoskeletal pain. Provide assurance that recovery is expected. Review activity limitations, if any, caused by chronic musculoskeletal pain. Encourage return to normal activities (including work—with or without restrictions) as soon as possible. Encourage low-stress aerobic exercise. Identify and discuss individual's concerns that may affect management plan. Schedule follow-up visit. Return to clinic earlier if condition deteriorates.	Appropriate communication (supplemental appendix 4).
Follow-up care		
Goal	Re-evaluate for optimal treatment and detection of latent features of serious and/or specific underlying conditions initially presenting as chronic nonspecific musculoskeletal pain.	

Table 2: (Cont'd) Standards of Care for Chronic Musculoskeletal Pain: Descriptions of Target Areas, Needs, and Rationale for Reaching the Goals Recommend Using a Standardized Preplanned Care Protocol to Obtain These Goals in Any Setting

	Standard Care	Needs
Reassess	Evaluate individual closely with each visit. Review and evaluate for red flags at each contact or visit. Review progress and pain level and adjust management as needed. If symptoms persist, check for compliance with treatment plan, re-evaluate for serious underlying condition if symptoms unchanged or worsening. Assess for psychologic, socioeconomic, and occupational factors that may influence presentation, response to treatment, and recovery. Explore other potential barriers to recovery with individual and family.	Practitioners experienced in identifying serious or specific underlying musculoskeletal disorders and related risk factors (supplemental appendixes 1, 2). Practitioners knowledgeable in the yellow flags and other factors that may influence presentation, response to treatment, and recovery with chronic musculoskeletal pain (supplemental appendix 5). Practitioners knowledgeable in the predictors of chronicity with chronic musculoskeletal pain (supplemental appendix 5).
Medical management	Monitor individual for pain. Consider alternative interventions. Ensure adequate pain control. Ensure adequate conservative management.	Practitioners knowledgeable in the normative procedures, management, and complications related to chronic musculoskeletal pain. Surgical intervention is rarely indicated (supplemental appendix 3).
Surgical management	After surgical intervention, avoid surgical complications and ensure normative healing process.	
Care	Information to the patient and family on the chronic musculoskeletal pain and expectations. Provide assurance that recovery is expected. Review activity limitations, if any, caused by chronic musculoskeletal pain. Encourage return to normal activities (including work—with or without restrictions) as soon as possible. Encourage low-stress aerobic exercise. Schedule follow-up visit as needed. Return to clinic if condition deteriorates.	Appropriate communication (supplemental appendix 4).

Abbreviation: MRI, magnetic resonance imaging.

loskeletal pain, and success at this point will often prevent progression to chronicity.

The National Health and Medical Research Council guidelines for the management of acute pain[23] review in detail many common misconceptions about pain management including a lack of understanding of the pharmacokinetics of analgesics, mistaken beliefs about addiction, poor knowledge of dosage requirements, concerns about side effects, and a lack of awareness that pain is potentially harmful. These issues are also discussed at length in the standards of care documents from ARMA.[6-11] Evidenced-based medicine and best care practices are summarized in tables 1 and 2 and supplemental appendixes 1 through 6 with detail and extensive background material in references by the Australian Acute Musculoskeletal Pain Guidelines Group,[2] the Institute for Clinical Systems Improvement,[3-5] and SBU.[13]

Effective Communication

Any consultation between a clinician and a patient involves the exchange of information. Effective communication of information is fundamental to the success of any clinical management plan (see supplemental appendix 3).

Information is gathered from a patient during clinical assessment. It is important for the clinician to communicate the

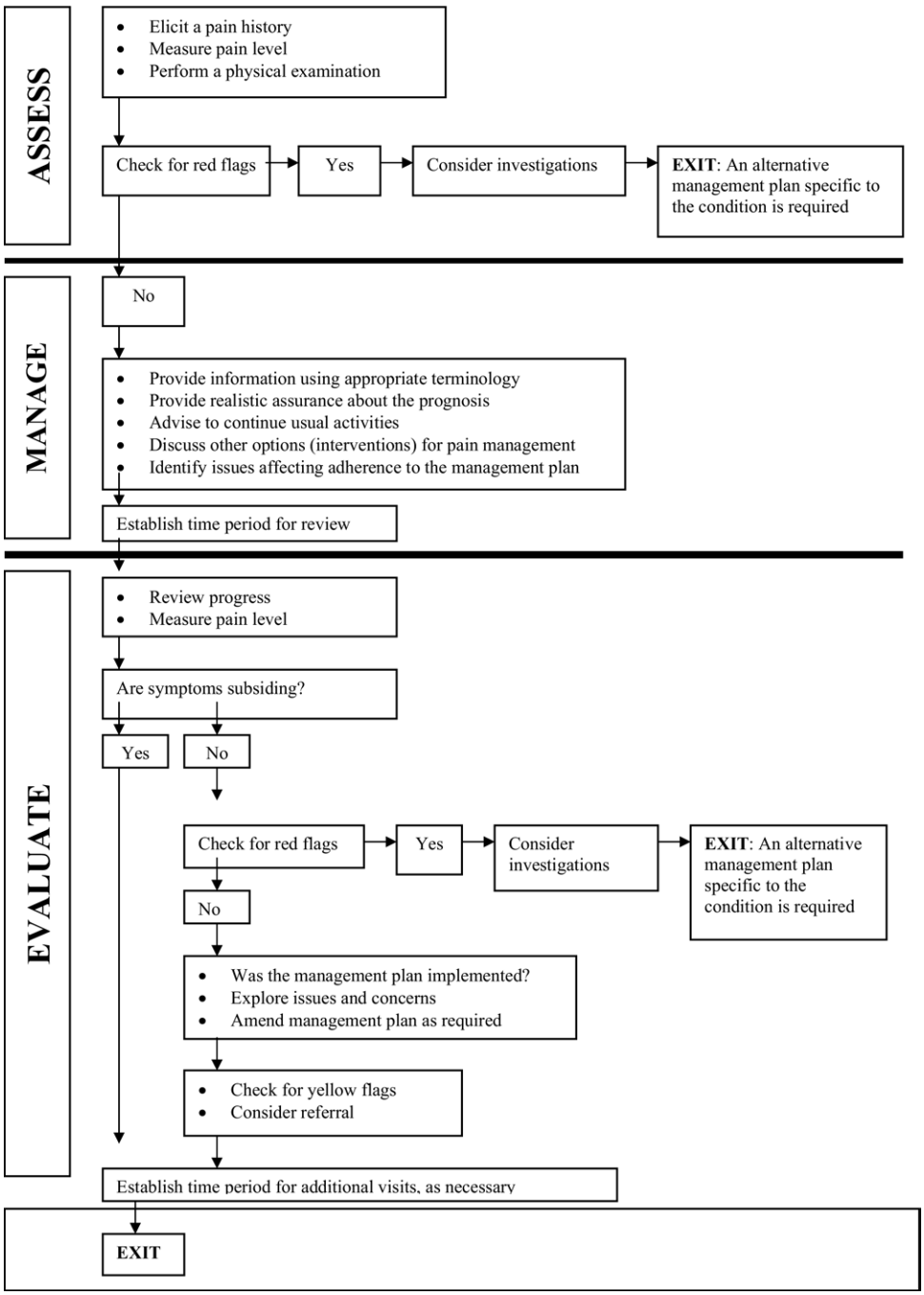

Fig 1. Management plan using standards of care for musculoskeletal pain.

Table 3: Classification of the Obstacles Contributing to Recovery From Musculoskeletal Pain

Flags	Obstacles to Recovery	Factors
Clinical red flags	Organic pathology	Biomedical factors
	Concurrent medical problems	
Clinical yellow flags	Iatrogenic factors	Psychologic factors
	Beliefs	
	Coping strategies	
	Distress	
	Illness behavior	
	Willingness to change	
	Family reinforcement	Socioeconomic factors
Occupational flags	Work status	
Socio-occupational flags	Health benefits and insurance	
	Litigation	
	Work satisfaction	Occupational factors
	Working conditions	
	Work characteristics	
	Social policy	

NOTE. Adapted with permission from Main and Spanswick.[34]

findings to the patient. Once a serious cause for the pain or a specific disorder has been ruled out, the patient can be reassured that it is not necessary, or possible in many cases, to know the specific cause of an acute episode of musculoskeletal pain, and that the pain can be managed effectively without the necessity to identify a cause.

Two-way communication should be encouraged so that all issues of the patient's concern are raised, a management plan is developed, and the respective roles and responsibilities are clear in relation to the implementation of that plan.

Developing a Management Plan

Conservative management of acute and chronic musculoskeletal pain using standards of care is designed to help the patient progress through the episode of pain and regain normative function (see supplemental appendix 4). The following approach is recommended. One, develop a management plan in conjunction with the patient, fostering a cooperative and supportive environment. This is an essential element to build a committed patient-provider relationship. Two, tailor the plan to meet the needs of each patient, taking his/her preferences and abilities into account. Three, include actions that the patient and the clinician may take in the event of an exacerbation or recurrence of pain, or a slow progress to recovery. Four, the plan should be clear to both the clinician and the patient to encourage participation, and will require review at follow-up visits. Five, the plan should enable the patient to take responsibility for care (bearing in mind that some people will require a greater level of support and assistance, with the support of the clinician).

Components of a Management Plan

The management plan comprises the processes of assessment, management, and evaluation and/or review.

An outline of the management plan is provided as figure 1.

Assessment

A history and physical examination are required to identify any clinical features of serious conditions (red flags) or psychosocial and occupational factors (yellow flags) that might influence recovery.

Ancillary investigations, such as imaging or laboratory studies, are not generally indicated unless features of serious or specific conditions are identified. In cases in which features of serious or specific conditions are present, an alternative plan of management is required.

Management Plan

Individuals with musculoskeletal pain seek an explanation and information about the nature of their pain. An effective communication strategy uses appropriate terms to describe acute musculoskeletal pain. It is most important that the clinician ensures that the patient does understand what is being discussed.

The natural history of acute musculoskeletal pain is generally favorable; thus, epidemiologic data serve as a basis for reassurance that recovery can be expected in most cases. Information on the prognosis and provision of assurance is an integral part of the management plan. Activities should be encouraged, and resumption of normal activities should occur as soon as possible.

In addition to initial interventions such as providing information, assurance, and advice to maintain reasonable activity levels, nonpharmacologic (eg, active, passive, and behavioral therapies) and pharmacologic interventions may be needed to assist return to normal activity. Treatment decisions should be made with the patient, giving due consideration to the potential risks and benefits of treatment options. It is important that patients have realistic expectations of what the interventions are likely to do. Information on the interventions for acute musculoskeletal pain should be provided in the form of patient education sheets.

Evaluation and Review

A single health care provider visit or 1-step interventions are unlikely to be successful. The management plan should be iterative, requiring small amendments or major changes, as needed. On subsequent visits, the health care provider should evaluate the degree to which the plan has been successful and make modifications as necessary. Ongoing review provides an important opportunity to assess for features of serious conditions (red flags) as well as psychosocial factors and occupational factors (yellow flags) that may not have been evident on previous visits (table 3). This interaction is also a time to explore questions and concerns as well as provide further explanation and assurance. Further intervention may be required if issues arise. Review also demonstrates concern that progress has been made. This is particularly important when there is intense pain and distress at the initial presentation. The need for further visits should be discussed at each consultation.[33]

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Supplemental Appendix 1: Signs and Symptoms Suggesting Serious Causes of Musculoskeletal Pain

Red Flag	Condition
• Acute urinary retention • Saddle anesthesia • Anal sphincter tone decrease • Acute fecal or urinary incontinence • Bilateral lower-extremity weakness or numbness • Progressive neurologic deficit	Cauda equine syndrome
• Abdominal pulsating mass • Cardiovascular risk factors • Anticoagulation therapy • Rest or night pain • Age >60y • Transient ischemic attacks • Bruits • Recent history of trauma to neck • Absence of musculoskeletal signs	Aneurysm
• History of significant trauma • History of minor trauma (if prolonged corticosteroid use, age >50y, or history of osteoporosis) • History of previous fracture or metabolic disease • History of cancer • Positive for Canadian C-spine rule • Positive for Ottawa knee rule	Fracture
• Major muscle weakness with myotomal distribution • Major sensory deficit with dermatomal distribution • Sciatica with radiation past the knee • Minimal to no improvement of radicular symptoms despite 6 weeks of conservative treatment	Significant herniated nucleus pulposus
• Symptoms or signs of infection (eg, fever, sweating) • History of intravenous drug use • Recent bacterial infection (eg, urinary tract, skin, pneumonia) • Immunocompromised state (eg, prolonged steroid use, organ transplant, diabetes, alcoholism, human immunodeficiency virus) • Pain not improved with rest • Trauma to skin or mucous membrane • Indwelling device	Infection (eg, spine, joint, osteomyelitis)
• Past history of malignancy • Age >50y • Pain not improved when supine or resting • Unexplained weight loss • Failure to improve with therapy • Pain for more than 4–6 weeks	Cancer

Supplemental Appendix 2: Signs and Symptoms Suggesting Specific Causes of Musculoskeletal Pain

Signs and Symptoms	Condition
• History of severe joint trauma • Misalignment of biomechanic axis • Advanced age • Decreased range of motion • Activity-related pain • Night pain • Joint effusion	Osteoarthritis
• Immunocompromised state (eg, steroid use, organ transplant, diabetes, alcoholism, human immunodeficiency virus) • Renal dialysis • History of minor trauma in association with corticosteroid use • History of decompression sickness	Arthritis (eg, septic, crystal, inflammatory) Osteonecrosis
• Activity related back and leg pain • Pain relief when sitting or lying • Restricted walking ability	Narrow spinal canal
• Restricted spine movement • Restricted pulmonary function	Inflammatory spine disease -Bechterew disease
• Childhood age • Sudden onset of pain in hip joint or referred pain • Decreased mobility	Childhood disorders - Perthes disease - Slipped capital femoral epiphysis
• History of recent trauma • Positive for classic clinical signs (ie, meniscal sign)	Soft tissue injury - Meniscal tear - Ruptured tendon - Overuse injury - Open wound
• History of recent trauma • Positive for classic clinical signs (ie, sprain)	Strains and sprains - Hematoma - Bruises - Contusion
• Acute onset of pain in 1 joint • No history of trauma • History of hyperuricemia • History of gout • History of recent alcohol or food excess	Gout

Supplemental Appendix 3: Conservative Management for Musculoskeletal Pain[2-13]

Intervention	Description
Foster partnership	Develop rapport with the patient—ensure ownership or the condition (pain) by the patient.
Individualize management	Develop management plan in conjunction with the patient, fostering a cooperative and supportive environment. Tailor the plan to meet the needs of each patient, taking their preferences and abilities into account.
Plan ahead	Include actions that the patient and the clinician may take in the event of an exacerbation or recurrence of pain, or a slow progress to recovery. The plan should be clear to both the clinician and the patient to ensure their participation, and may require follow-up visits.
Simple interventions	Simple interventions (providing information, reassurance, and encouraging reasonable maintenance of activity) may be used alone or in combination with other interventions for the successful management of acute musculoskeletal pain.
Information	Provide information on the nature of acute musculoskeletal pain.
Assurance	Provide assurance about the prospects for recovery on the basis of epidemiologic data.
Encouragement	Encourage activation and resumption of normal activities.
Nonpharmacologic interventions	Nonpharmacologic interventions including active, passive, and behavioral therapies can be used in conjunction with other interventions.
Active	Individuals with musculoskeletal pain should be advised to stay active and continue ordinary daily activity within the limits permitted by the pain. Use of RICE (rest, ice, compression, elevation) during first 24–28h.
Passive	Advise on other lifestyle issues that might impact on recovery—comorbidity, obesity, lack of fitness, etc.
Behavioral	Address issues of stress and coping mechanisms.
Pharmacologic interventions	Specific pharmacologic interventions may be required to relieve pain; such agents can be used in conjunction with nonpharmacologic interventions. Specific pharmacologic interventions may be required to relieve pain; such agents can be used in conjunction with nonpharmacologic interventions.
Simple analgesics	Acetaminophen (paracetamol) or other simple analgesics, administered regularly, are recommended for relief of mild to moderate acute musculoskeletal pain.
Nonsteroidal anti-inflammatory drugs	Where acetaminophen (paracetamol) is insufficient for pain relief, a nonsteroidal anti-inflammatory medication may be used, unless contraindicated.
Opioid analgesics	Oral opioids may be necessary to relieve severe musculoskeletal pain. It is preferable to administer a short-acting agent at regular intervals, rather than on a pain-contingent basis. Ongoing need for opioid analgesia is an indication for reassessment.
Adjuvant agents	Adjuvant agents such as anticonvulsants and antidepressants are not recommended in the management of acute musculoskeletal pain.
Muscle relaxants	Any benefits from muscle relaxants may be outweighed by their adverse effects; therefore, they cannot be routinely recommended.
Reassess	Red flag and psychosocial indicators should be reviewed and evaluated at each contact or visit.
Review management plan	Reevaluate the pain and revise the management plan as required.

Supplemental Appendix 4: Techniques of Effective Communication

Techniques	Description
Use of partnership approach	Work with individuals to develop a management plan so that they know what to expect, and understand their role and responsibilities.
Avoid jargon	Conveyed information in correct but neutral terms, avoiding alarming diagnostic labels; jargon should be avoided.
Provide an explanation	Explanation is important to overcome inappropriate expectations, fears, or mistaken beliefs that individuals may have about their condition or its management.
Use learning aids	Printed materials and models may be useful for communicating concepts.
Communicate at an appropriate level	Clinicians should adapt their method of communication to meet the needs and abilities of each patient.
Address barriers to communication	Clinicians should check that information has been understood; barriers to understanding should be explored and addressed.

Supplemental Appendix 5: Psychosocial Indicators That Can Be Barriers to Recovery From Musculoskeletal Pain

Indicator	Description
Iatrogenic factors	Unintentional complication of treatment or health intervention
Beliefs	Pain is due to a progressive pathology, pain is harmful or severely disabling, avoidance of activity will help recovery
Coping strategies	Depressed or negative moods, social withdrawal, anger
	Self-perceived "disability" used as justification for inactivity, manipulation of others, and attempts to collect compensation. Overwhelmed by pain, loss of hope, absence of plans for the future, no control over the pain
Emotional distress	Housing, daycare, employment, financial stability, food, transportation, immigration status, family problems, substance abuse
Behavior	"Sickness behaviors" such as extended rest, history of back pain, time off, or other claims
Willingness to change	Unrelenting expectation that passive treatments rather than active self-management will help
Family reinforcement	Overprotective family or lack of support
Work status	No promotion or progress at low-level job, lack of skills or opportunity to compete in the community
	Removal from labor market for $<$6 months because of pain results in $>$90% chance of return to work
	Removal from labor market for $>$12 months because of pain results in $<$10% chance of return to work
Health benefits and insurance	Significant payment for workers' compensation while injured
Litigation	Problems with claim and compensation, secondary gain
Work satisfaction	Problems at work or low job satisfaction
Working conditions	Heavy work, unsociable hours
Social policy	Policy that identifies "injured" persons as noncontributors to society or economy

Supplemental Appendix 6: Predictors of Chronicity: Waddell's Nonorganic Signs[35,36]

Sign	Description
Superficial tenderness, nonanatomic tenderness	Marked tenderness with minimal pressure or tenderness in other than a dermatomal or myotomal pattern
Pain reaction to simulation tests for axial loading	Pain in low back with vertical compression of the cervical spine
Pain reaction to en bloc rotation	Pain in low back with simultaneous rotation of hips and upper body in same direction
Effect of distraction during examination (straight-leg raising test)	Significant discrepancy between straight-leg raising test in sitting and supine positions
Regional sensory disturbance in nonanatomic distribution	Impairment of sensation in other than a dermatomal pattern or peripheral nerve distribution (eg, whole arm or leg)
Regional weakness or sensory changes in nonanatomic distribution	Motor/sensory function in other than a myotomal or dermatomal pattern or peripheral nerve distribution (eg, whole arm or leg)
Overreaction during examination	Overt pain behavior (eg, grimacing, sighing, guarding, bracing, rubbing); consider cultural variations