



British Society of Physical
& Rehabilitation Medicine

CONSENSUS PAPER

Shoulder pain in adults with a neurological condition

Prevention, assessment and management of
shoulder pain following acquired brain injury, spinal
cord injury and other neurological diagnoses.

A working party
consensus paper
Published 2026

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1 The consensus paper development process

1.1 Objectives of the consensus paper

- To increase healthcare professionals' awareness of shoulder pain in people with a neurological condition.
- To support the implementation of preventative measures and early identification of shoulder pain to enable timely management.
- To provide an approach for accurately diagnosing the underlying cause(s) of shoulder pain in people with a neurological condition.
- To support healthcare professionals in establishing an effective treatment plan based on the underlying cause(s).

1.2 Patient group

The statements in this document apply to adults aged 18 years and over with a neurological condition who are at risk of developing, or have already developed, shoulder pain. Conditions may include, but are not limited to, stroke, traumatic brain injury, multiple sclerosis, Guillain–Barré syndrome, and spinal cord injury.

1.3 Target audience

This document is intended for healthcare professionals involved in the care of people with a neurological condition, including:

- Doctors, nurses and allied health professionals (AHPs).
- Commissioners, service providers and managers of acute and rehabilitative neurological services, including acute stroke units, inpatient rehabilitation units, community and outpatient services.

1.4 Disclaimer

The recommendations in this document are not mandatory but may be used as a framework to support clinical care. Healthcare professionals should consider the individual's needs, preferences and values when applying them.

Recommendations are made on the assumption that those undertaking treatments are appropriately trained to arrange and/or deliver them. Clinicians should work within their scope of practice and adhere to the guidance of their relevant professional governing bodies.



1.5 Working party

The working party included representation from a multidisciplinary team with expertise in diagnosing and treating shoulder pain in the neurological population:

- Consultants specialised in Rehabilitation Medicine
- Physiotherapists
- Occupational therapist
- Consultees provided specialist advice and support to the committee as required.

Members did not receive financial support to attend meetings, and the consensus process was not sponsored by a third party.

Chairs

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1.6 Consensus paper methodology

The working party met on 10 occasions between November 2023 and September 2024. Meetings were held online, each lasting up to 2.5 hours, and focused on developing consensus on key topic areas. Additional meetings between the chairs, Rachel Higgins (RH) and Celine Lakra (CL), were held to coordinate the overall writing and editing of the document.

All meetings and work relating to this paper were undertaken during members' non-contracted work time. Dedicated funding was not available for the identification, synthesis and formal evaluation of evidence. Consequently, a full systematic review process was not feasible.

Literature reviews were conducted at regular intervals, culminating in the final review in December 2025. Given the relative paucity of high-quality evidence in several areas of neurological shoulder pain management, particularly within specific neurological populations, relevant evidence from non-neurological populations was considered where deemed clinically transferable. Recommendations were informed by the best available evidence and an iterative consensus process of drafting and discussion until consensus amongst the working party was reached.

Consultees were involved in meetings relevant to their specialism and provided secondary review and editorial input. Sections relating to analgesia terminology, pain assessment and analgesia management were written by Fausto Morell-Ducos (FMD) and CL independently of the main consensus process. The full document was reviewed and approved by the working party in April 2026 and was subsequently reviewed by the BSPRM Society Research Committee prior to publication.

As this document is a position paper rather than a clinical practice guideline, a pragmatic recommendation grading system has been adopted. Recommendations were assigned a strength rating of:

R1 (Strong recommendation)	Supported by consistent evidence and/or strong expert consensus.
R2 (Recommendation)	Supported by moderate evidence and/or substantial expert consensus.
R3 (Consensus recommendation)	Based primarily on expert opinion and clinical experience; evidence is limited.
GPP (Good Practice Point)	Recommendations based on accepted standards of clinical practice where evidence review is not applicable.



Where published evidence informed a recommendation, the applicability of that evidence to the neurological population was identified as:

D (Direct evidence)	Evidence derived from neurological populations.
I (Indirect evidence)	Evidence extrapolated from non-neurological populations.

This framework was chosen to provide transparency regarding both the strength of recommendations and the applicability of the supporting evidence, while recognising the limited availability of high-quality evidence in many areas of neurological shoulder pain management.



2 Terminology

Chronic pain: pain that persists or recurs for longer than three months (Nicholas et al., 2019). It is distinct from acute pain and persists beyond the expected time taken for the underlying damage or pathology to have healed (Scholz et al., 2019).

The ICD-11 classifies chronic pain into chronic primary pain and chronic secondary pain syndromes. Distinguishing between these categories can be challenging as they often co-exist (Perrot et al., 2019).

- **Chronic primary pain**, in which persistent pain may be conceived of as a disease in its own right. Nociceptive pain is the predominant underlying mechanism, resulting from augmented central nervous system pain, sensory processing and altered pain modulation. It includes syndromes such as fibromyalgia and complex regional pain syndrome.
- **Chronic secondary pain** refers to pain that arises as a consequence of another underlying condition, of which chronic secondary musculoskeletal pain is a subtype (International Association for the Study of Pain, 2026).
 - **Chronic secondary musculoskeletal pain:** chronic pain arising from bone(s), joint(s), muscle(s), vertebral column, tendon(s) or related soft tissue(s). It is a heterogeneous group of chronic pain conditions. Aetiologies may be local or systemic, including musculoskeletal disease with inflammation or structural/biomechanical factors, or neurological disease that causes altered biomechanical function.

Although persistent nociception is the primary driver of chronic secondary musculoskeletal pain, in many instances, pain pathways become sensitised over time, and previously innocuous stimuli begin to elicit pain (Arendt-Nielsen, 2017). This is termed 'nociceptive pain'. Those with chronic secondary musculoskeletal pain who exhibit neuropathic-like symptoms, suggestive of pain sensitisation, may therefore respond differently to standard treatments.

Complex Regional Pain Syndrome (CRPS): a debilitating, painful condition in a limb, associated with sensory, motor, autonomic, skin and bone changes (Goebel et al., 2018). The pain is persistent and subjectively disproportionate to the original insult. It may be triggered by trauma or injury to the affected body part.

CRPS is a diagnosis of exclusion where other potential causes for pain have been ruled out and is a form of chronic primary pain. There are two subtypes: CRPS-1 occurs after illness or injury without identifiable nerve damage. 'Shoulder-hand syndrome' is one variant and is an alternative term for CRPS-1 of the upper limb. CRPS-2 is associated with damage to a specific nerve.

Frozen shoulder: the preferred term to describe capsular fibrosis of the shoulder, previously referred to as 'adhesive capsulitis'. It can be considered to have three overlapping phases:

1. Pain-predominant frozen shoulder: where the shoulder is more painful than stiff ('freezing' early phase). It results from local injury and active inflammation of the joint capsule.
2. Stiffness-predominant frozen shoulder: where the stiffness is greater than pain ('frozen' later phase). This arises due to joint fibrosis; however, pain and possibly the inflammatory environment have been reduced (Lewis, 2015).
3. The final 'thawing' or 'recovery' phase: where resolution of pain/stiffness takes place. This stage is not clearly defined in those with neurological conditions, as the clinical course and trajectory of frozen shoulder appear to differ from those with frozen shoulder in isolation. By the nature of this stage being resolutory, it is not further addressed within this consensus guideline.

Neuropathic pain: pain occurring secondary to a central (brain and/or spinal cord) or peripheral nervous system lesion, named 'central' or 'peripheral' neuropathic pain, respectively (Scholz et al., 2019). Chronic



neuropathic pain refers to neuropathic pain persisting for 12 weeks or more (Scholz et al., 2019) and is a subtype of chronic secondary pain.

The predominant signs and symptoms include burning, cold, electric shock, tingling, pins and needles, numbness, and itching (Colloca et al., 2017). Pain may be evoked by non-noxious touch stimuli (allodynia) and may have continuous and/or episodic (paroxysmal) components.

Nociceptive pain: pain attributable to the activation of peripheral receptive terminals of primary afferent neurones in response to noxious chemical, mechanical or thermal stimuli (Smart et al., 2012). The release of pro-inflammatory mediators results in activation and sensitisation of peripheral nociceptive nerve fibres. It is caused by ongoing inflammation and tissue damage (Fitzcharles et al., 2021).

Two main subtypes are recognised: visceral and somatic. Somatic nociceptive pain, which includes shoulder pain, may be experienced as sharp, aching, or throbbing and tends to be localised to the site of injury. Symptoms typically wane as the injury heals (Woller et al., 2017).

Nociplastic pain: introduced by the International Association for the Study of Pain (IASP) in 2017 as a third mechanistic pain descriptor, alongside nociceptive and neuropathic pain. It is defined as pain which arises from altered nociception in the absence of clear evidence of actual or threatened tissue damage which could be causing the activation of peripheral nociceptors, or evidence of disease or lesion of the somatosensory system causing the pain (International Association for the Study of Pain, 2026).

The mechanisms that mediate nociplastic pain involve changes in the properties of neurons in the peripheral and central nervous systems (Woolf, 2011), known as peripheral and central sensitisation.

Nociplastic pain can manifest clinically as allodynia and hyperalgesia with tingling, numbness, and burning sensations (O'Neill & Felson, 2018). These symptoms are similar to those of neuropathic pain, although no consistent abnormality in the somatosensory nervous system has been identified, for example, in people with osteoarthritis (Zolio et al., 2021). Symptoms are therefore sometimes referred to as 'neuropathic-like' in this context.

Nociplastic pain may occur in isolation (as in CRPS), or in combination with nociceptive pain (if persistent, as in chronic secondary musculoskeletal pain) or neuropathic pain in a mixed-pain state (Fitzcharles et al., 2021). Recognition of this type of pain is valuable, as it has a decreased responsiveness to NSAIDs, opioids, injections or surgery when compared to nociceptive pain (Fitzcharles et al., 2021).

Neurogenic heterotopic ossification: a condition in which mature, lamellar bone forms in extra-skeletal soft tissue where bone does not usually exist (Sun & Hanyu-Deutmeyer, 2023). Typically, large joints such as the hips or shoulders are affected. Individuals at increased risk include those following traumatic brain injury, stroke, and spinal cord injury.

Subacromial pain syndrome (SAPS): an umbrella term which encompasses conditions causing pain related to structures under the acromion, for example, subacromial and subdeltoid bursitis, biceps tenosynovitis, or supraspinatus partial/complete tear. This has previously been termed 'impingement'.



3 Introduction

Shoulder pain is a commonly occurring symptom in the general population, with prevalence estimates in worldwide primary care health records ranging from 1.0 to 4.8% (Lucas et al., 2022). It has been estimated to be the third most common musculoskeletal condition presenting to primary care in the United Kingdom (UK) after back and knee pain (Urwin et al., 1998). In the neurological population, the prevalence of shoulder pain is substantially higher, affecting 39% within one year after stroke (Anwer & Alghadir, 2020) and 34% of individuals within one year of discharge from a rehabilitation unit after spinal cord injury (Eriks-Hoogland et al., 2014). The sequelae of a neurological condition, particularly upper limb weakness, glenohumeral subluxation, upper limb spasticity, sensory impairment, and neglect, are recognised risk factors for the development of shoulder pain (Anwer & Alghadir, 2020).

In the general non-neurological population, chronic shoulder pain leads to functional disability, particularly with regard to work, ability to carry out household tasks and leisure activities (Luime et al., 2004). Psychosocial wellbeing is also negatively impacted: when compared to those with hip pain, individuals with shoulder pain are more likely to experience anxiety and depression and have a lower quality of life. (Bilberg et al., 2014). As a result, shoulder pain is associated with considerable socioeconomic burden (Virta et al., 2012).

Individuals with neurological conditions already face considerable challenges with regard to impaired function and reduced quality of life. For those who subsequently develop shoulder pain, outcomes are unfavourable compared to those who do not. Specifically, they are less able to care for themselves and, as a result, have comparatively longer hospital admissions (Li et al., 2023). Participation in rehabilitation is reduced due to pain, which discourages movement and, therefore, function (Vasudevan & Browne, 2014). Most who suffer from shoulder pain acutely following stroke experience it at a moderate to severe level. Moreover, resolution rates are low, with only 14% recovering at 12 months (Adey-Wakeling et al., 2015).

Recognition of the specific pain type(s) involved as well as the clinical presentation is essential to appropriately treat the individual in a timely manner and avoid the delivery of ineffective or inappropriate care. This paper focuses on the three most commonly occurring pain types relevant to shoulder pain following neurological diagnosis:

1. **Acute nociceptive pain:** as occurs in acute rotator cuff tear, or early osteoarthritis flare following stroke.
2. **Chronic secondary musculoskeletal pain:** in which mechanisms include nociceptive, nociplastic, and/or neuropathic components, as occurs in frozen shoulder.
3. **Neuropathic pain:** which may be acute or chronic, such as central post-stroke neuropathic pain.

These types of pain may occur alone or in combination. They may also co-exist with chronic primary pain, including Complex Regional Pain Syndrome (CRPS). Management of chronic primary pain and CRPS is beyond the scope of this guidance; readers are directed to the National Institute of Health and Care Excellence (NICE) guidelines for the management of chronic primary pain and the Royal College of Physicians guidance for the management of CRPS (National Institute of Clinical Excellence (NICE), 2021; Royal College of Physicians, 2018a). In these cases, specialist pain services should be involved early in the care process.

Identifying the cause(s) of pain in individuals with neurological conditions is clinically challenging, particularly in the presence of cognitive, communication, motor and/or sensory impairments. Furthermore, the paucity of high-quality research in this population limits clinicians' access to information regarding current best practice. Much of the published evidence used to direct clinical practice is derived from non-neurological populations and may not be directly applicable to this specific group. This, together with its high prevalence, underscores the urgent need for robust prevention and management strategies tailored to this population.



This consensus paper has therefore been developed by experienced clinicians to support others in managing shoulder pain and the common conditions that cause it in those with a neurological condition. It is intended for doctors specialising in Rehabilitation Medicine and for physiotherapists, occupational therapists, nurses, and other healthcare professionals involved in the care of this specific group. This paper aims to provide a comprehensive understanding of the various physiological mechanisms underlying shoulder pain in this population and presents three key principles of management: prevention, treatment of the underlying condition causing the pain, and analgesic management.



4 Shoulder anatomy and the principles of movement

A sound understanding of shoulder anatomy, normal functional movement, and the key pathological changes occurring to the joint and surrounding tissues following neurological injury is essential. An overview of pertinent information related to shoulder pain is included below.

4.1 Overview of shoulder anatomy

The shoulder complex:

The shoulder complex comprises four joints: the glenohumeral, acromioclavicular, sternoclavicular joints (true synovial articulations) and the scapulothoracic joint (a non-synovial articulation between the scapula and thoracic wall). Synovial fluid and bursae (subacromial, subdeltoid, subscapular) reduce friction between moving structures.

The glenohumeral joint:

The glenohumeral joint (GHJ) comprises a ball and socket articulation between the humeral head and the glenoid fossa of the scapula. Unlike many other joints, the glenoid fossa is shallow and in contact with only one quarter of the surface of the humeral head. To maintain the glenoid fossa as a congruent socket for the arm in motion, the scapula moves in a synchronous manner. This joint structure enables a large range of motion but at the expense of stability. Stability is provided by static (non-contractile) and dynamic (contractile) stabilisers:

Static stabilisers:

- The glenoid labrum is a fibrocartilaginous rim attached to the edge of the glenoid fossa, which increases concavity and surface area.
- The glenohumeral joint capsule is a fibrous sheath which encases the joint. When the arm is moved, rotational forces generate tension within the capsular fibres, leading to compression and centring of the joint surfaces, as well as shock absorption. Negative intra-articular pressure, mediated by the interaction between the capsule and synovial fluid, also contributes to joint stability (Funk, 2023). In addition, the labrum and capsule are highly sensitive to stretch and play an important proprioceptive role.
- Ligaments are thickened portions of the capsule that constitute the glenohumeral ligaments (superior, middle and inferior glenohumeral). These ligaments become taut when in different positions, limiting excessive translation of the humeral head.
- The scapula and thoracic wall provide structural stability to the shoulder complex as a whole. The scapula serves as a critical link in the proximal-to-distal transfer of energy and forces during upper limb movement, contributing to the kinetic chain.

Dynamic stabilisers:

- The rotator cuff muscles (subscapularis, infraspinatus, supraspinatus and teres minor) have a primary function to centre and stabilise the humeral head within the glenoid fossa. Synchronised rotator cuff movements reduce excessive humeral head translation during arm movement (Parsons et al., 2002) and counteract the downward pull of gravity on the arm, thereby maintaining joint integrity.
- Additional stabilising muscles, including the deltoid, the long head of the biceps, and the pectoralis major, also contribute to the dynamic centring of the humeral head.
- Scapular stabilising muscles (latissimus dorsi, rhomboids, trapezius, levator scapulae) maintain appropriate scapular alignment, thereby providing a stable base for the rotator cuff to function effectively.



Neuromuscular control:

Joint position and integrity are regulated through afferent and efferent neural pathways to the shoulder complex, where proprioceptive feedback and dynamic response of the muscles occur.

With regard to peripheral nerve supply, the motor and sensory peripheral nerve supply from the brachial plexus (C5 to T1) to the shoulder is included in Appendix 1. Notably, the suprascapular nerve provides 70% of the sensory innervation of the shoulder.

4.2 The principles of shoulder movement

4.2.1 The 'normal' shoulder

To illustrate the movement of the 'normal' shoulder, the basic kinesiology of arm elevation is outlined below.

To achieve full arm elevation (180 degrees), the muscles of the shoulder complex must produce intricate and synchronous movement across all four joints. Initial arm elevation occurs predominantly at the glenohumeral joint. As elevation continues above 90 degrees, the rotator cuff muscles (specifically infraspinatus and teres minor) externally rotate the humerus by 45 degrees to clear the greater tuberosity from the coracoacromial arch.

Concurrently, the serratus anterior and the upper and lower trapezius muscles upwardly rotate the scapula at the scapulothoracic joint to position the glenoid fossa superiorly. The scapula also tilts posteriorly and externally rotates in order to clear the acromion from the moving humeral head (Funk, 2023). Simultaneously, the clavicle elevates and rotates at the sternoclavicular and acromioclavicular joints. Throughout arm elevation, the humeral head is approximated in the glenoid fossa. The rotator cuff muscles counteract the upward force placed on the humerus during elevation, pulling it downwards and central to the fossa.

These combined actions allow safe clearance of the humerus from the coracoacromial arch, preventing damage to local structures including bursae, tendons and peripheral nerves. In addition to the key shoulder musculature already named, postural muscles play a fundamental stabilising role in the trunk and rest of the body, providing a base from which arm movements can occur.

4.2.2 The shoulder following neurological injury

In the presence of neurological impairment(s), the shoulder is highly vulnerable to injury. Neurological conditions, including stroke, traumatic brain injury, spinal cord injury, and Guillain–Barré syndrome, are characterised by differing patterns of impairment and trajectories of recovery. Possible symptoms or impairments are detailed below, along with how they affect the structure and function of the shoulder, predisposing it to injury and pain.

Weakness

- Weakness is common, affecting 70% of people following stroke (Kwakkel et al., 2003). It is a key risk factor in the development of shoulder pain. Risk is highest in those with complete motor loss; following stroke, 83% of those with complete motor loss developed shoulder pain compared to 50% of those with partial motor impairment (Kwakkel et al., 2003; Lindgren et al., 2007). Weakness may involve the rotator cuff or any other muscles of the shoulder complex.
- Weakness disturbs the intricate, synchronous muscle activity of the shoulder required for shoulder stability, placing it at risk of injury both at rest and during movement. If weakness is significant, the downward pull of gravity cannot be counteracted, and inferior subluxation of the GHJ can result. Without adequate support (i.e. if 24-hour positioning is not optimised), traction-related injuries to the tendons, ligaments and peripheral nerves of the shoulder can occur.
- Rotator cuff weakness compromises its role in dynamic humeral head centring during movement. Malalignment of the humeral head risks damage to local structures beneath the coracoacromial arch.



► — Shoulder anatomy and the principles of movement

- Weakness of postural muscles alters the position of the trunk and scapula and, therefore, the joints of the shoulder complex. This impairs the normal function of dynamic stabilisers, including the rotator cuff, which in turn may result in malalignment of the humeral head.

Spasticity

- Spasticity can affect multiple muscles around the shoulder (including the rotator cuff). A resultant muscle imbalance can alter the position of the humeral head within the glenoid fossa and disrupt synchronous muscle activity during movement. Spasticity typically presents as one of two main patterns: (A) Shoulder adduction, elevation, flexion and internal rotation of the shoulder. (B) Shoulder abduction or adduction, extension and internal rotation of the shoulder (Image 1) (Jacinto et al., 2022).

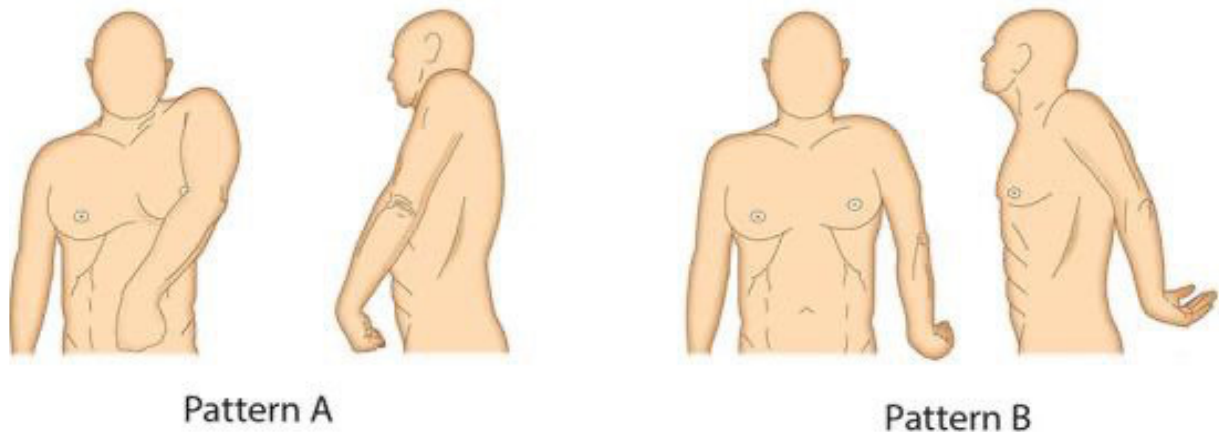


Image 1. The two most common shoulder spasticity patterns.

Sensory impairment

- Sensory loss or disturbance may result in reduced proprioceptive and tactile feedback, impairing both voluntary and involuntary movement control. The proprioceptive role of the capsule may be affected, leading to overstretch and increased injury risk. Secondary inflammation of the capsule can occur. Moreover, the individual may not be aware of the pain and therefore may not withdraw or reposition their arm accordingly. The resulting risk to the shoulder includes damage to soft-tissue structures.
- Neglect may lead to suboptimal positioning of the arm at rest or during handling, which leaves the shoulder vulnerable to injury.
- Neuropathic pain can lead to adopting protective postures in an effort to avoid the arm from being touched or moved.

Secondary complications which may result from any of the above mechanisms include:

- Muscle shortening due to reduced movement and/or avoidance of movement due to pain. Shortening disturbs the intricate, synchronous muscle activity of the shoulder complex.
- Contractures, structural changes in muscle affecting its elasticity, extensibility and length, may alter shoulder function.
- Joint stiffness resulting from lack of use/movement. Progressive loss of motion at any of the four joints of the shoulder complex can occur.
- Traction-related injuries to muscle and tendons of the rotator cuff and other surrounding muscles, and/or peripheral nerves resulting in localised inflammation and pain.
- Subacromial pain syndrome (SAPS). Altered shoulder kinematics can damage soft-tissue structures beneath the coracoacromial arch, for example subacromial and subdeltoid bursitis, biceps tenosynovitis, or a partial/complete supraspinatus tear.



- Frozen shoulder (also known as 'adhesive capsulitis') is a condition in which capsular damage and therefore inflammation trigger capsular fibrosis, neovascularisation and new nerve formation (Beare et al., 2023).
- Nociceptive pain may arise from any of the above mechanisms, presenting as acute (<12 weeks) nociceptive pain or chronic secondary musculoskeletal pain (>12 weeks).
- In rare cases, CRPS may develop (Harden et al., 2022).



5 Clinical presentations

Ascertaining the exact clinical diagnosis(es) of shoulder pain is essential to guide further investigation and successful management. However, differentiating between the multiple potential contributors to shoulder pain can be challenging, particularly when secondary complications have developed, as symptoms and signs can overlap. Moreover, a combination of pathologies may be contributing to the patient's pain presentation. It is likely that one or two conditions are the predominant driver(s) of pain, and therefore their management should be prioritised.

Key clinical and radiological findings for the main shoulder pain presentations are summarised in Table 1 and can be used to support the diagnostic process. For each clinical presentation, the treating team should also consider whether the patient's presenting pain is acute, chronic, and/or neuropathic, as this will guide the choice of analgesia (Section 9). The pain type(s) which are likely to be involved are therefore also described for each condition.

Any relevant past medical history that may account for or contribute to shoulder pain (e.g. shoulder arthritis) should be noted. Aside from the main clinical presentations, fracture and/or dislocation should be considered, particularly if there is a history of falls, trauma, and/or osteoporosis. The rare but potentially treatable condition heterotopic ossification should also be considered. In cases where pain does not improve despite optimised management of the team's most likely diagnosis, alternative diagnoses should be considered.

Table 1. Common clinical presentations

Clinical presentations	Positive clinical and/or radiological findings	Likely predominant pain diagnoses
Pain related to weakness	- Complete motor loss or partial motor impairment of the muscles of the shoulder complex. - Inferior subluxation of the humeral head may be present if the proximal arm is unsupported. - Passive range of movement of the glenohumeral joint may be relatively preserved (assessor to follow handling guidance in Section 8.2.1). - Pain may be relieved when subluxation is corrected via positioning, e.g. using pillow support or neuromuscular electrical stimulation.	<i>Acute nociceptive pain</i> <i>Chronic secondary musculoskeletal pain (>12 weeks)</i>
Pain related to spasticity	- There are typical patterns of the muscles involved (Jacinto et al., 2022; Turner-Stokes et al., 2025) which will be suggestive of the presence of spasticity. - Examination of the affected muscles confirms velocity-dependent increase in tone when stretched. - Antero-medial subluxation of the humeral head. - Reduced range of movement (active and/or passive), typically abduction and external rotation. - Contractures may be present.	<i>Acute nociceptive pain</i> <i>Chronic secondary musculoskeletal pain (>12 weeks)</i>



Subacromial pain syndrome (SAPS)	● Pain is typically worse during or just after lifting the affected arm (Diercks et al., 2014). ● In the general population, pain typically worsens during active elevation between 60 and 120 degrees. In the presence of weakness and/or joint stiffness, this range may not be achievable. ● The Hawkins-Kennedy passive test can be helpful to exclude subacromial pain if the test is negative, in combination with other clinical signs (Desmeules et al., 2025). If positive, reproduced pain in the anterior shoulder can be interpreted as implicating biceps tendon involvement and a more lateral position can implicate subscapularis, but overall, there is a lack of specificity to be confident in these interpretations in isolation (Hegedus et al., 2008). ● Active tests such as Jobe's and external rotation lag tests are not clinically possible or appropriate tests in the presence of significant weakness. ● Ultrasound will aid in diagnosis in conjunction with clinical assessment. The finding of a rotator cuff tear on imaging does not necessarily mean that this is the cause of the patient's pain: in the general population, asymptomatic tears have been found to be twice as common as symptomatic tears (Minagawa et al., 2013).	<i>Acute nociceptive pain</i> <i>Chronic secondary musculoskeletal pain (>12 weeks)</i>
Frozen shoulder (two phases described)	Pain predominant frozen shoulder: ● Progressive and increasing pain on movement. ● Loss of range of motion of the glenohumeral joint may be present but will typically be limited by pain (rather than stiffness). Loss of range of motion typically affects external rotation, abduction and internal rotation. ● Frozen shoulder is a clinical diagnosis and therefore further investigation is only warranted if other possible diagnoses are being considered. ● If conducted, an ultrasound may reveal joint effusion +/- neovascularity with power doppler (i.e. capsulitis). Stiffness predominant frozen shoulder: ● Loss of range of motion of the glenohumeral joint, where movement is limited by stiffness (rather than pain), typically external rotation, abduction and internal rotation. ● Maximal external rotation is reduced by at least 50% range compared to the unaffected side. This limitation remains present even when the arm is repositioned into abduction. ● Movement may feel markedly stiff at end of available range, as though the joint cannot be moved any further.	<i>Acute nociceptive pain</i> <i>Chronic secondary musculoskeletal pain (>12 weeks)</i>



Osteoarthritis of glenohumeral joint	● Stiffness and/or loss of range of movements of the shoulder. ● Imaging findings consistent with glenohumeral osteoarthritis. ● Ultrasound may reveal joint effusion +/- neovascularity on power doppler, particularly in the context of a flare of arthritis.	<i>Acute nociceptive pain</i> <i>Chronic secondary musculoskeletal pain (>12 weeks)</i>
Complex regional pain syndrome	● A range of symptoms and signs may be present (Pertoldi & Di Benedetto, 2005) which include continuing pain disproportionate to any inciting event, allodynia and/or hyperalgesia, changes in skin temperature, colour, oedema, sweating asymmetry and decreased range of motion, motor dysfunction or trophic changes (hair/nail/skin changes). ● The new International Association for the Study of Pain criteria (IASP) (also known as Budapest criteria) (Harden et al., 2007, 2010) and the more recent consensus-based adaptation of these criteria (the “Valencia consensus”) (Goebel et al., 2021) may be used to assist clinicians with diagnosis, however co-existing neurological impairments in this patient group including sensory and motor loss limit its reliability.	<i>Chronic primary pain</i>
Central or peripheral neuropathic pain	● Although the diagnosis of neuropathic pain is clinical, IASP classifies it as possible, probable or definite on the basis of neuroanatomically plausible distribution of symptoms, sensory changes in the same area, and confirmation of a lesion or disease with diagnostic testing (Scholz et al., 2019). ● Clinical examination may reveal hypoaesthesia or hypoalgesia (decreased pain sensation) to several modalities (generally warm, cold, and pinprick), allodynia, hyperalgesia, and vasomotor or sudomotor changes particularly after nerve trauma. ● Neuropathic pain is typically experienced within the distribution of central or peripheral nervous system involvement. Central post stroke pain typically occurs in those with thalamic or medullary involvement. Peripheral neuropathic pain is experienced in the distribution of the peripheral nerve(s) involved. It is not typically localised to the shoulder alone. ● Pain may occur without evidence of a stimulus.	<i>Acute or chronic neuropathic pain</i>





6 Assessment

Assessment of shoulder pain should comprise:

1. Taking a pain history (Section 6.1)
2. Examination (Section 6.2)
3. Inclusion of appropriate pain assessment tools (Section 6.3)
4. Functional outcome assessment (Section 6.4)
5. Goal setting (Section 6.5)
6. Investigations (Section 6.6)

Outcomes should also be collected to evaluate the effectiveness of individual services (Appendix 4).

6.1 Pain history

A thorough and reliable shoulder pain history should be obtained from the patient and, where appropriate, from carers and/or family member(s). It will provide valuable diagnostic information that may assist in distinguishing between different pain states. Key components of a shoulder pain history should include (Lakra et al., 2023):

- Onset, severity, character, and timing of pain, i.e. whether pain occurs at rest, sleep, or during movement.
- Functional use of the affected arm.
- History of trauma.
- A comprehensive review of prior investigation and management
 - When considering analgesic options, the evaluation should include a review of current pain management, the potential for analgesic side effects (particularly sedation), and patient preferences.

Patients with cognitive and/or communication impairment may benefit from the involvement of a multidisciplinary team, including speech and language therapy, to support them in providing as much of their own history as possible.

A pain history requires a biopsychosocial approach (Section 9.4), including not only the assessment of experienced pain but also its downstream effects and contextual factors (Hawker, 2017). Co-existing comorbidities, including mental health, socioeconomic status and educational background, play an important role in the experience of pain. The negative impact on sleep, fatigue, and quality of life should be routinely considered. Further information can be found in the NICE guidance for chronic pain (National Institute of Clinical Excellence (NICE), 2021).

6.2 Clinical examination

For individuals with cognitive and/or communication impairment, observed behaviours reported by family members, carer(s), and/or the treating team should be included in the examination. Such observations may include:

- Behavioural responses, e.g. facial expression, protective withdrawal.
- Functional behaviours, e.g. guarding or protecting the arm.



- Physiological responses, e.g. changes in heart rate.
- Analgesia use, e.g. cumulative opioid dosage.

Recommended components of the physical examination of the shoulder in this patient group are outlined in Appendix 2.

6.3 Pain assessment tools

Pain scales and other pain-related assessment tools should be incorporated into the assessment. Shoulder-pain specific tools that account for cognitive and/or communication impairments should be used where possible (Appendix 3) (Jackson et al., 2006; Lynne Turner-Stokes & Diana Jackson, 2006; Turner-Stokes & Rusconi, 2003).

Additional tools may be selected according to the predominant pain type:

- **Acute pain:** Regular measurement of pain intensity using a pain scale and evaluation of the functional effects of pain is valuable. However, there is evidence that overreliance on unidimensional pain scales and unrealistic targets (e.g. aiming for a pain score of 0) can lead to excessive opioid use and is not associated with improved pain experience or functional outcomes (Levy et al., 2018). More recent evidence supports the aim of reducing suffering and improving function rather than targeting specific pain scores (Joint Commission, 2018; Schug et al., 2020). Pain measurement should therefore form part of a holistic assessment.
- **Chronic pain:** Unidimensional pain scales are generally avoided (unless used for rating the intensity of specific episodes). Consequently, validated multi-dimensional tools provide a more comprehensive picture of the chronic pain experience.
- **Neuropathic pain:** Specific scales distinguish neuropathic pain from other types of pain. These scales have similar specificity and sensitivity and have mostly been validated (Haanpää et al., 2011). Such scales can also be used to screen for neuropathic pain in an acute setting (Schug et al., 2020). Generic chronic pain scales, such as the Brief Pain Inventory (BPI) and McGill Pain Questionnaire (MPQ), also have some discriminative properties that may be helpful in assessment (Attal et al., 2023).

Examples of pain assessment scales are outlined in Appendix 3. However, it is important to note that most have been studied in non-neurological populations and do not specifically assess shoulder pain.

Pain scales can be used at the initial assessment and at subsequent follow-up points to monitor response to intervention. If pain is present, both static and dynamic measurements (i.e. pain at rest and on movement/activity) should be recorded (Breivik et al., 2008). The frequency of assessment will depend on the duration and severity of pain, the needs of the patient, the intervention(s) delivered, and response(s) to intervention (Gordon et al., 2005). It is recommended that the same team member(s) complete these tools to ensure consistency across assessments.

6.4 Functional assessment

Evaluation of functional outcome and change should be evaluated using a validated measure of activity (active and passive function) such as the Arm Activity measure (Ashford et al., 2013; Reebye et al., 2022; Royal College of Physicians, 2018b; Stokes et al., 2021).

6.5 Goal setting

The perspectives and wishes of the individual with shoulder pain should be central to all treatment(s) delivered. This ensures that treatment is appropriate and that patients are fully engaged in the rehabilitation process. Patient-focused goals should therefore form an integral part of a rehabilitation treatment plan. Goal achievement should be evaluated at appropriate points in care (Reebye et al., 2022; Royal College of Physicians, 2018b; Stokes et al., 2021).



Goal Attainment Scaling is recommended as a structured approach to evaluating goal achievement (Royal College of Physicians, 2018b). The Focal Spasticity Index, incorporating goal categorisation for spasticity management, is recommended when this is relevant to shoulder management (Ashford et al., 2016; Jacinto et al., 2022).

6.6 Investigations

Investigation choice should be considered based on the suspected clinical presentation(s). In severe and/or refractory cases, focused imaging should be sought. The need for imaging should be continually assessed during the patient's treatment. Commonly used investigations are included in Table 2.

Table 2: Common investigations

X-ray	● In many cases X-ray findings will be normal. An X-ray should be considered where there is a history of trauma or suspected dislocation. It can also confirm the presence of heterotopic ossification or calcific deposits in the rotator cuff; however, the absence of radiological findings does not exclude these conditions. The absence of subluxation via X-ray does not rule out clinical subluxation, as the arm may have been supported during imaging.
Ultrasound	● Ultrasound is a highly useful diagnostic imaging modality in this patient group. Its diagnostic capability is comparable to MRI in the diagnosis of rotator cuff pathology (De Jesus et al., 2009). The most common clinical indications for ultrasound of the shoulder are rotator cuff and biceps tendon pathology, disorders of other soft-tissue structures, as well as bony cortex abnormalities (Petranova et al., 2012). ● When using ultrasound in practice, it is important to follow the clinical rather than radiological diagnosis. In cases of suspected frozen shoulder for example, the differentiation of ultrasound features is likely to be dependent on the skill of the sonographer and therefore should not be routinely used for diagnosis (Stella et al., 2022). The prevalence of partial rotator cuff tears is up to 40% in asymptomatic patients, where rates increase with age (Lawrence et al., 2019). Therefore, the positive finding of a tear should be considered in the context of the patient's suspected clinical diagnosis. ● In addition to its diagnostic value, ultrasound enables direct visualisation of structures during procedures such as fluid aspiration or focal steroid injection. Assessment, investigation and appropriate and accurate management can therefore be provided within a single point of care. This is particularly advantageous to this patient population who may have limited/ reduced mobility.
CT	● CT imaging should be considered where there is diagnostic uncertainty from initial X-ray imaging. CT should be considered following trauma where fracture or dislocation is suspected but not adequately characterised on plain radiographs, or where detailed assessment of bony anatomy is required for treatment planning. CT arthrography can be considered in cases where MRI is contraindicated.
Magnetic resonance imaging (MRI)	● An MRI is the gold standard for the assessment of soft tissue pathology; however, it is unlikely to be required in practice if an ultrasound is available. An MRI should be considered for patients where there is a history of dislocation or trauma, where there are concerns about joint stability, or when surgery is being considered.
Nerve conduction studies	● In the case of suspected peripheral nerve injury, nerve conduction studies will confirm diagnosis.



6.7 Section 6 summary of key recommendations and grading

Key recommendations	Strength rating	Applicability
Pain scales and other pain-related assessment tools should be incorporated into the assessment.	R2	I
Shoulder-pain specific tools that account for cognitive and/or communication impairments should be used where possible.	R2	D
The same team member(s) should complete these tools to ensure consistency.	GPP	-
Functional outcome should be evaluated using a validated measure such as Arm Activity measure.	R2	D
Goal achievement should be evaluated at appropriate points in care.	R1	D



7 Prevention

7.1 Overview of prevention

Prevention of shoulder pain is the primary priority spanning all management approaches. Early recognition of risk factors and proactive management of the shoulder may prevent pain from developing and reduce the complications which may result. Those at risk of developing pain should be identified as early as possible, with preventative strategies put in place and reassessed at regular intervals. If pain develops, the appropriate management plan should be commenced at the earliest opportunity (Section 8).

7.2 Key principles of prevention

The key principles in preventing the development of shoulder pain include:

1. 24-hour positioning programme (Section 7.2.1).
2. Slings (Section 7.2.2).
3. Strengthening (Section 7.2.3).
4. Functional task practice (Section 7.2.4).
5. Neuromuscular electrical stimulation (Section 7.2.5).
6. Patient, family and carer education (Section 7.2.6).
7. Healthcare professional education and training (Section 7.2.7).

7.2.1 24-hour positioning programme

In individuals where the integrity of the shoulder joint is compromised (i.e. in the presence of weakness, spasticity, proprioceptive loss and/or neglect), a 24-hour positioning programme should be implemented. If shoulder pain develops, it is essential that the programme is continued. The aim of the positioning programme is to prevent secondary complications listed in Section 4.2.2 as well as pain.

The 24-hour positioning programme should be individualised and will depend on the neurological presentation. Specific strategies should be considered in the presence of the following impairments:

- **Weakness:** In those with complete motor loss or significant shoulder weakness, the arm should be positioned supportively at all times to centre the humeral head within the glenoid fossa. This includes supporting the forearm during transfers (Image 1).
- **Spasticity:** In the presence of spasticity, positioning should promote gentle stretching of the involved muscle groups. For example, if internal rotator muscles are affected, the arm should be positioned regularly into an externally rotated position as tolerated.
- **Neglect and/or proprioceptive loss:** In the presence of neglect and/or proprioceptive loss, the arm should be positioned to provide support, maintaining neutral alignment. Use of visual and tactile cues should be used to enhance awareness of the arm and therefore prevent injury.

The position of the arm should be considered throughout the 24-hour period, i.e. when sitting, during activities, transfers, ambulation and at night. Pillows (Images 2-6), tables, armrests, slings and other aids can be used to position and support the arm. For those who require a wheelchair, a suitable arm support should be sourced. Individuals at risk of developing shoulder pain and/or their carers should be encouraged to reposition the arm regularly, whilst maintaining central humeral head alignment within the glenoid fossa.



Healthcare professionals should take particular care when elevating the arm above 90 degrees. The humerus should be externally rotated while maintaining approximation and central humeral head alignment within the glenoid fossa. This will reduce the risk of compression and therefore damage to structures beneath the coracoacromial arch.

Image 1: Supporting a vulnerable shoulder joint by supporting the forearm during a standing transfer.



Image 2: Positioning in supine with arm abducted and externally rotated, supported with pillows.



Image 3 and 4: Positioning in side lying with arm supported with pillow.



Image 5: Supporting the arm on a pillow and towel with arm in slight abduction.



Image 6: Positioning in supine with arms supported with pillows.



7.2.2 Slings

A shoulder sling/support (specifically those providing whole-arm support or those with proximal and distal components) should be considered for individuals with rotator cuff weakness when joint integrity is at risk of compromise. When worn, the humeral head should ideally be centred in the glenoid fossa without the presence of subluxation. In those with sensory impairment and/or neglect, a sling can provide some protection to an otherwise vulnerable arm and shoulder joint.

There are several types of shoulder slings available. Shower slings can be used to protect a vulnerable glenohumeral joint during showering and personal care. Slings that provide whole-arm support are most effective at reducing subluxation; however, they position the shoulder in internal rotation and the elbow in a flexed position (Image 7). Slings with proximal and distal components reduce subluxation to a lesser extent; however, they offer the functional advantage of allowing elbow movement (Nadler & Pauls, 2017) (Image 8). Clinically, slings with a proximal and distal component are often more challenging for the patient and/or carers to don and doff. Healthcare professionals should assess the effectiveness of any prescribed sling and adopt an individualised, practical approach when selecting the most appropriate option for the patient.

It is important that slings are worn only when the arm is unsupported, such as when standing, during transfers, and/or while walking. Extended periods of sling wearing remove the arm from the body schema, discourage functional use of the arm, and risk exacerbating neglect. Slings should therefore be removed when the arm can be adequately positioned and supported via other methods, such as when sitting or lying in bed.

A sling should be regarded as a short-term preventative device aimed at protecting soft tissue and neural structures of the shoulder whilst the underlying weakness is addressed through active rehabilitation (Sections 7.2.4, 7.2.5 and 7.2.6). Sling use should be reviewed regularly to reduce wear time as proximal muscle activity improves. Discontinue their use altogether once adequate rotator cuff muscle activity is achieved to maintain joint integrity.



Image 7: Example of a shoulder sling with a proximal (upper arm) and distal (upper forearm) component. The elbow rests in extension but the sling allows movement at the elbow.



Image 8: Shoulder sling supporting the forearm proximally and distally. Note the arm is held in an internally rotated position and movement at the elbow is very limited.



7.2.3 Strengthening

The association between the degree of weakness and the risk and severity of shoulder pain is well documented (Lindgren et al., 2007; Nadler et al., 2020). Strengthening should therefore form a key component of the approach to reduce both the risk and severity of pain.

When devising a strengthening exercise programme, the therapist should consider:

- The degree of weakness of the shoulder complex and proximal arm, with particular attention to the extent of rotator cuff involvement and resulting stability (or instability) of the glenohumeral joint. This will inform the degree and type of arm support required to maintain joint integrity during strengthening exercises.
- The degree of weakness of the distal arm/hand, including the ability to form and sustain a grip, with or without support and/or compensation.
- The presence and severity of shoulder pain during movement or exercise.
- The irritability of the pain, i.e. the time it takes for pain to settle after movement or exercise.

Strengthening exercise programmes should integrate a whole-body approach. Exercises should be selected to involve the entire kinetic chain wherever possible (using multiple joints simultaneously and replicating functional movement patterns, i.e., trunk, pelvis, and lower limbs). In particular, lateral weight transference such as stepping can be integrated into the programme (Richardson et al., 2020). For those unable to step, lateral weight transference in sitting or supported standing can be used. In cases of significant muscle imbalance, strengthening the weak muscle groups in isolation may also be indicated.



The optimal dosage of strengthening exercise in this population remains unclear. Often, a pragmatic approach to strength training must be taken based on the degree of weakness, perceived exertion, and fatigability. Ensuring rest periods of several minutes to allow muscle recovery after exertion is key to effective training (Grgic et al., 2018). A useful resource for exercise prescription for endurance and strength training is the American College of Sports Medicine Guidelines (Grgic et al., 2018).

Patients should be encouraged to perform strengthening exercises independently where possible. The programme should be reviewed regularly and progressed in line with improvements in strength, endurance, functional ability and pain.

The format of the strengthening programme should be determined by the degree of weakness affecting the shoulder complex. Recommendations are summarised in Table 3.

Profound weakness of the muscles of the shoulder complex (equating to Medical Research Council (MRC) (Compston, 2010) grade 0): Where there is complete motor loss of the shoulder complex, including the rotator cuff, it is not possible for the patient to actively strengthen the shoulder muscles. Shoulder handling and positioning advice should be followed as detailed above to maintain joint integrity and reduce the risk of secondary injury and complications.

Neuromuscular electrical stimulation (NMES) should be initiated where appropriate (Section 7.2.5). The treating team should regularly reassess for evidence of motor recovery and, when present, commence a shoulder strengthening programme as soon as possible.

Moderate to severe weakness of the shoulder complex (MRC grades 1 to 3) (Images 9-14): An individualised strengthening exercise programme should be commenced at the earliest opportunity. There may be an imbalance of weakness among the affected muscles. A strengthening programme should take this into account and consider the patient's functional goals. NMES may be used as an adjunct to support the weaker muscles (Section 7.2.5).

In the presence of moderate to severe weakness, the soft tissues of the shoulder are particularly vulnerable to injury during strengthening exercises. Care should be taken to consider the position of the arm and ensure the humeral head is centred in the glenoid fossa throughout. For example, when strengthening exercises are performed in sitting or standing, additional support of the arm is usually required. Exercises in positions such as side lying, supine or prone reduce the effects of gravity on the arm. Aids such as towels and pillows can be used to maintain neutral alignment in any position.

Strengthening exercises in a 'de-weighted' format (where the weight of the arm is supported during the exercise) may be used. The reduction in arm weight encourages proximal motor activity and often enables patients to perform exercises through a greater range of motion. De-weighting support can be provided by the therapist/carer, dedicated de-weighting equipment or simple methods such as using a pillowcase or towel on a table.

Weight bearing through the upper limb can also encourage proximal motor activity. However, caution should be taken to avoid excessive translation of the humeral head within the glenoid fossa. Weight bearing should be introduced in a graded fashion in combination with the strengthening programme (S. Lee et al., 2013; Pontillo et al., 2007).

The strengthening programme can be safely progressed to include exercises performed above shoulder height once the patient can actively externally rotate the arm sufficiently to clear the greater tuberosity from the coracoacromial arch. This reduces the risk of compression and, therefore, damage to structures beneath the subacromial space. Clinically, this can be assessed by asking the patient to elevate the arm with the thumb leading.



Image 9: Performing external rotation with the upper arm supported on a pillow. This exercise focuses on concentric contraction of infraspinatus and eccentric contraction of subscapularis.



Image 10: Progression of the external rotation exercise without the upper arm supported on a pillow. This increases the demand on the rotator cuff and surrounding stabilising scapula muscles, deltoid and latissimus dorsi.



Images 11 and 12: Adapting a strengthening exercise that mimics a forwards reach movement. The exercise is performed in supine. The therapist provides 'de-weighting' support at the upper arm and wrist to support the vulnerable shoulder joint and enable exercise through a larger range of movement.



Image 13: Performing an external rotation strengthening exercise in sitting with the upper arm supported on a table with a pillow.



Image 14: Progressing an external rotation strengthening exercise when arm support is no longer required. More demand is placed on the rotator cuff and stabilising scapula muscles, latissimus dorsi and deltoid.



Mild weakness of the shoulder complex (MRC grade 4) (Images 15 and 16): As strength improves or in those presenting with mild weakness of the shoulder, resistance training should be incorporated into the strengthening exercise programme. The aim is to restore pre-injury strength levels and achieve pain-free shoulder movement throughout the full range of motion.

Resistance can be applied using body weight, free weights, resistance bands, exercise equipment or household items with the aim of both reducing pain and working towards rehabilitation goals. Strengthening exercises can be designed to replicate components of functional tasks (Saunders et al., 2025), thereby complementing functional task practice (Section 7.2.4).

Image 15: Example of external rotation resistance training using a resistance band.



Image 16: Example of scapula retraction resistance training using a resistance band.



Table 3: Summary of strengthening recommendations in those at risk of or with shoulder pain

Profound weakness of the shoulder complex <i>MRC Grade: 0</i>	● Neuromuscular electrical stimulation (NMES). ● Follow positioning and handling guidance. ● Regular re-assess for evidence of motor recovery.
Moderate to severe weakness <i>MRC Grade: 1 - 3</i>	● Neuromuscular electrical stimulation (NMES). ● Strengthening programme. ● Support and protect the vulnerable joint during exercises. ● Consider de-weighting exercises. ● Progress to above shoulder height when patient can actively externally rotate the arm (elevate with thumb leading). ● Regularly re-assess and adjust programme.
Mild weakness <i>MRC Grade: 4</i>	● Resistance training. ● Train through full range of motion, aiming to achieve pain free movement throughout. ● Exercises should complement Functional Task Practice.

7.2.4 Functional Task Practice (FTP)

Functional Task Practice (FTP), also referred to as task-oriented training, repetitive task practice, or task-specific training, integrates key motor learning principles (Kleim & Jones, 2008) and promotes neuroplasticity and motor recovery (Thant et al., 2019). FTP is recommended as a principal rehabilitation approach to address upper limb weakness in individuals with neurological conditions, with strong evidence supporting its effectiveness in the stroke population (National Institute of Clinical Excellence (NICE), 2023; Rozevink et al., 2023; Todhunter-Brown et al., 2025). Furthermore, emerging evidence suggests that FTP may contribute to reduced shoulder pain (Ali et al., 2025; Sefastsson et al., 2025).

The dosage and implementation of FTP vary considerably across the literature. However, intensive, repetitive, and goal-directed FTP is generally associated with greater functional improvements (French et al., 2016; Thant et al., 2019).

Careful consideration is required when considering how to safely deliver FTP in those at risk of, or with shoulder pain. While a comprehensive assessment of an individual's cognitive, sensory and motor presentation is essential when designing FTP programmes, the additional key considerations are summarised in Table 4.



Table 4. Summary of FTP key considerations and clinical recommendations for those at risk of or with shoulder pain

	Key considerations	Clinical recommendations
Pain	Presence and severity at rest and during movement; ability to report or indicate pain.	Select tasks achievable within a pain-free range of motion; terminate FTP if pain is exacerbated.
Shoulder and arm strength	Weakness and stability of shoulder/proximal arm; range and active movement throughout the arm, including distal weakness and ability to form a grip.	Focus on quality movement patterns with close monitoring of compensatory movements; consider de-weighting techniques; safely progress to above-shoulder tasks once patient can actively externally rotate the arm.
Fatigue	Fatigability; impact on maintaining quality movement patterns.	Monitor fatigue; adjust task intensity and/or duration to maintain movement quality.
Sensorimotor impairments	Presence of neglect or other sensory impairments; risk of compensatory movement patterns and learned non-use.	Monitor for sensory loss and visual and/or sensory neglect; optimise engagement of affected arm in body schema and visual field; adapt tasks to reduce compensatory patterns and prevent non-use.
Posture and positioning	Postural requirements and alignment.	Optimise posture and alignment; grade postural support from seated to standing as appropriate; monitor movement quality and signs of fatigue throughout.
Environment and aids	Task environment, aids, and adaptations.	Use environmental modifications, aids, or adjuncts to maximise independence.

Regular reassessment is required to monitor pain levels, movement quality, muscle activity and functional engagement. Task selection, intensity, and progression should be modified accordingly. The overarching aim is to facilitate active participation and enhance independence in task performance, while progressively reducing therapist facilitation and the use of adaptive techniques where possible. Suggested practical examples of FTP interventions, organised according to muscle strength, are presented in Table 5.



Table 5. Summary of muscle strength (MRC grade) and practical examples of FTP for those at risk of or with shoulder pain

MRC Grade	Key considerations	Practical examples
Profound weakness <i>MRC Grade: 0</i>	● Provide appropriate postural support. ● Follow positioning guidance (Section 7.2.1). ● Optimise arm position within body schema and visual field; and provide sensory input. ● Full facilitation of the affected arm. ● Education for individual and caregivers on careful handling and safe involvement of affected arm (Section 7.2.7).	● Position arm on bedside table or lap tray during functional tasks e.g., eating, drinking, using phone/computer, reading; position arm on sink e.g. when brushing teeth, washing face. ● Washing/drying arm; applying moisturiser; nail care. ● Seating with bespoke arm supports including wheelchair and shower chair. ● Training to independently don/doff sling or support devices.
Moderate to severe weakness <i>MRC Grade: 1 - 3</i>	● Provide appropriate postural support. ● Follow positioning guidance (Section 7.2.1). ● Encourage active participation within available muscle activity and pain-free range. ● Reduce therapist facilitation as able. ● Consider de-weighting devices e.g. mobile arm support. ● Reduce friction on surfaces; stabilise items on non-slip mats. ● Minimise reaching distances; keep tasks at or below waist height (avoid >90° shoulder elevation). ● Incorporate bimanual tasks to encourage use of affected arm. ● Progress FTP variables such as intensity, duration, task difficulty, as tolerated. ● Monitor fatigue and movement quality. ● Consider adjuncts to improve movement quality and/or proprioceptive feedback e.g. NMES (Section 7.2.5) and taping (Section 8.2.2).	● Active shoulder abduction in pain-free range of motion for tasks such as applying deodorant/washing under the opposite arm; donning a jacket; wiping surfaces; opening fridge/car door. ● Dressing practice with loose clothing; avoid overhead garments; dress weaker arm first, undress last. ● Arrange washing/dressing items at waist height; practice de-weighted reaching; wiping mouth; shaving; eating/drinking. ● Encourage arm use for functional tasks e.g. holding showerhead, washing holding sponge; stabilising items; wiping surfaces; sliding lightweight items across surfaces; opening/closing cupboard doors.



	● Education for individual and caregivers on careful handling and safe involvement of the affected arm (Section 7.2.7).	
Mild weakness <i>MRC Grade: 4</i>	● Reduce requirement to follow positioning guidance as appropriate. ● Promote independence and near-normal movement patterns. ● Minimise therapist facilitation. ● Monitor fatigue and movement quality. ● Consider adjuncts to improve movement quality and/or proprioceptive feedback e.g. taping (Section 8.2.2). ● Consider constraint-induced movement therapy to increase intensity of arm use.	● Encourage functional tasks above waist or shoulder height e.g. washing face/hair; placing or reaching for items in kitchen cupboard; carrying washing basket. ● Gradually increase load or resistance during tasks, e.g. reach and select heavier kitchen items or shopping bags; maintaining positions above waist or shoulder height e.g. hanging out washing or changing a lightbulb.

7.2.5 Neuromuscular electrical stimulation (NMES)

Neuromuscular electrical stimulation (NMES) delivers electrical stimulation to the nerve(s) innervating a muscle via transcutaneous electrodes. The aim is to replicate a physiological contraction of a single muscle or group of muscles.

NMES should be considered in all patients with weakness of the shoulder complex, regardless of whether pain has developed, provided there are no contraindications to its use. Once agreed, NMES should be commenced at the earliest opportunity (J. H. Lee et al., 2017). A recent Cochrane review reported high-certainty evidence that NMES has a moderate effect on strength compared with no treatment or sham stimulation and that this carries over to activity (Scrivener et al., 2025).

Electrode placement and stimulation parameters, including pulse width, frequency and amplitude, can be adjusted to optimise output and achieve the desired result. These parameters should be individualised to the patient's tolerance, specific presentation and rehabilitation goals. Considerations for specific presentations can be found in Box 1 together with examples (Images 17, 18 and 19).

The optimal dosage of NMES has not yet been established. Studies in the stroke population suggest that treatment sessions of 30-60 minutes, one to four times a day, five days a week, can reduce subluxation within six months (J. H. Lee et al., 2017; Scrivener et al., 2025; Vafadar et al., 2015).

Safety and use considerations:

- NMES should not be used in individuals with a cardiac pacemaker or other electronic implanted device due to the risk of interaction until this risk has been evaluated and agreed upon by a trained medical specialist.
- There are several precautions for using NMES, and the reader is directed to the individual device manual. Specific to the neurological population, caution should be applied to those with spinal cord injury above level T6 due to the risk of autonomic dysreflexia.
- There is a risk of skin irritation. A patch test prior to first use is recommended, with particular caution taken for those with sensory impairment.



Box 1. Electrode pad placement for inferior and anteromedial subluxation

Image 17 and 18: Examples of electrode pad placement for inferior subluxation.

Inferior subluxation

For patients at risk of or with an inferior subluxation of the humeral head, supraspinatus and posterior deltoid muscles are commonly targeted. Dual channel devices with an overlapping mode have been recommended to reduce the risk of soft tissue injury from shearing forces, however these machines are typically more expensive. Practically, devices without this setting can be used safely if the patient's arm is supported as per the positioning guidance in Section 7.2.1.

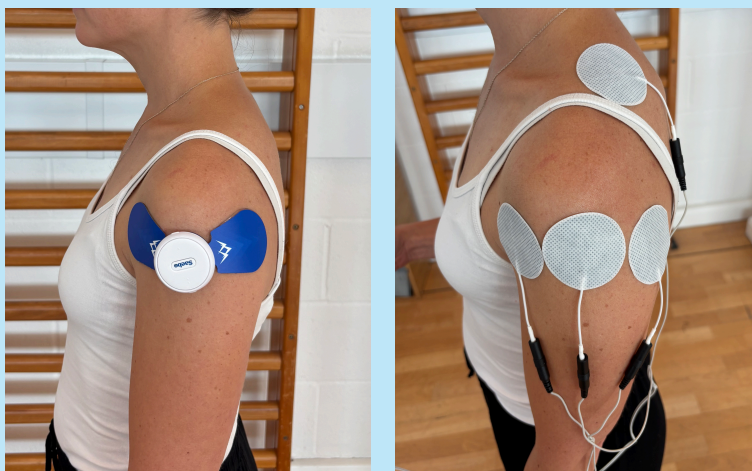


Image 19: Example of electrode pad placement for anteromedial subluxation. Note the fourth electrode is placed on infraspinatus.

Anterior subluxation

In the case of anteromedial subluxation of the humeral head (commonly seen in the presence of spasticity involving the internal rotator muscles), NMES can be used to target the opposing muscles, i.e. the external rotator muscles.



7.2.6 Patient, family and carer education

Healthcare professionals should support individuals, their families, and carers in understanding their risk of developing shoulder pain and provide training on measures to prevent it. For those with upper limb weakness, the individual, their family and carers should receive regular and detailed education and training about the safe positioning and handling of the affected arm, in accordance with national guidance (Intercollegiate Stroke Working Party, 2023).

Education should be tailored to the individual's presentation and specific risk factors. Information should be offered in a format that meets the individual's needs, in the relevant language and taking into consideration cognitive and/or communication impairment(s). Tailored information should be provided at different stages in the rehabilitation process. Individuals, families and carers should be given opportunities to ask questions, clarify information provided and have the information repeated as required to support understanding and reinforcement (Crocker et al., 2021).

7.2.7 Healthcare professional education and training

All healthcare professionals working with individuals at risk of developing shoulder pain should undertake specific training on how to safely support a patient's arm at rest, during movement and transfers. Training should include guidance on arm positioning and repositioning over a 24-hour period, including when the patient is in bed (supine and side lying), when sitting (including familiarity with wheelchair supports), and when transferring.

For those requiring a highly individualised positioning programme (e.g. custom shoulder sling or bespoke arm supports), additional training should be provided to all staff involved in their care.

For staff who are new to the clinical area and/or new to working with individuals with shoulder pain, training should be provided as part of an induction programme. For existing staff, training should be repeated regularly (e.g., annually), with more frequent updates provided if this does not meet their training needs.

7.3 Section 7 summary of key recommendations and grading

Key recommendations	Strength rating	Applicability
A 24-hour positioning programme should be implemented when shoulder integrity is compromised.	R1	D
The programme should continue if pain develops.	R1	D
The arm should be positioned supportively at all times where profound weakness is present.	R1	D
Healthcare professionals should take particular care when passively elevating the arm above 90° in individuals with rotator cuff weakness.	R1	D
A shoulder sling should be considered for individuals with rotator cuff weakness when joint integrity is at risk of compromise. Slings should only be worn when the arm is unsupported.	R2	D
Sling use should be reviewed regularly and wear time should be reduced as recovery occurs.	R3	-



Discontinue sling use when sufficient rotator cuff activity returns.	R3	-
Strengthening should form a key component of the approach to reduce both the risk and severity of shoulder pain.	R1	D
Strengthening programmes should integrate a whole-body approach.	R2	I
The treating team should regularly re-assess those with profound weakness for evidence of motor recovery and commence a shoulder strengthening programme as soon as possible.	R1	D
Individualised strengthening should commence at the earliest opportunity for MRC 1-3 weakness.	R1	D
Resistance training should be incorporated for MRC 4 weakness.	R1	D
FTP is recommended as a key rehabilitation approach in those with upper limb weakness and should be intensive, repetitive and goal-driven.	R1	D
FTP should be delivered within pain-free range of movement of the shoulder.	R2	D
NMES should be considered in all patients with weakness of the shoulder complex, particularly within six months post-stroke.	R1	D
NMES parameters should be individualised.	R3	-
Patch testing prior to use is recommended.	GPP	-
Patients, families and carers should receive education regarding prevention of shoulder pain.	R1	D
Staff should receive training in positioning and handling.	R1	D
Training should be part of staff induction and repeated regularly.	GPP	-



8 Management

Management delivered by a multi-disciplinary team (specialist doctor, physiotherapist, occupational therapist, and rehabilitation nurse) is strongly recommended. Involvement of specialist services, including psychology, orthopaedic surgery and sports and exercise medicine, may be required in selected cases.

At any stage and for any type of pain, involvement of a specialist pain service should be considered. This is of particular importance in the presence of severe pain, significant pain-related functional interference and/or poor response to initial management.

8.1 Management principles

The two key principles of management are described below and should be applied in conjunction:

1) Treatment of the underlying condition(s) causing pain

A successful management plan should adopt a logical, stepwise approach, prioritising treatment of the primary contributor(s) to pain. Treatments may include:

1. Strengthening (Section 8.2.1).
2. Kinesiology taping (Section 8.2.2).
3. Peripheral nerve treatment (Section 8.2.3).
4. Targeted focal treatments, including the use of steroids and botulinum toxin (Section 8.3).
5. Surgical intervention (Section 8.4).

2) Pain management

Pain management aims to reduce the overall burden of pain and to use condition-specific management, including targeted focal treatments (Section 8.3) and analgesia (Section 9).

8.2 Physical management

Physical management is essential to reduce shoulder pain severity and irritability. Components of the physical management programme largely mirror those of the prevention programme (Section 7). Key additional components specific to active management are highlighted below.

For patients with profound, severe, or moderate weakness (MRC grade 0-3), where the shoulder is particularly vulnerable to injury, it is crucial to continue with the 24-hour positioning programme (Section 7.2.1), NMES (Section 7.2.5) and the use of slings if these were indicated (Section 7.2.2). These measures aim to prevent further damage from occurring to the vulnerable structures of the shoulder.

8.2.1 Strengthening

A strengthening programme should continue in the presence of shoulder pain (Section 7.2.3) but may need to be adapted. The following should be considered:

- Ensure the patient is performing each exercise with good technique, aiming for quality movement patterns. Discourage compensatory movement patterns that may be contributing to pain.
- Consider the severity of shoulder pain during movement and exercise, and whether the exercise can be adapted to reduce the pain experienced. For example, temporarily performing the strengthening exercise at a smaller range of motion, or reducing the resistance/weight.



- Consider the irritability of the pain and whether longer rest periods or fewer repetitions are required.
- Review the time of day the patient performs the strengthening exercises and aim to schedule them to coincide with the peak effect of analgesia.

8.2.2 Kinesiology taping

Kinesiology taping refers to the application of elastic cotton tape to the skin. The tape is proposed to 'lift the skin', thereby improving circulation and lymphatic drainage, supporting soft tissues and enhancing proprioceptive feedback (Jaraczewska & Long, 2006). It may therefore be considered in those with mild weakness or muscle imbalance of the shoulder complex. It is not recommended in those with profound weakness, as it cannot maintain the integrity of the glenohumeral joint in the absence of rotator cuff activity. It is not known which clinical presentations derive the most benefit from its use.

The optimal duration of kinesiology tape remains unclear; however, studies in subacute and chronic stroke populations indicate that tape applied for three to four weeks can reduce pain (Huang et al., 2017; Pillastrini et al., 2016; Yang et al., 2018). The long-term effects on pain reduction are unknown.

There are a number of different types of application, which should be individualised to the shoulder pain presentation.

Safety and use considerations:

- There is a risk of skin irritation. A patch test prior to first use is advised. Particular caution should be taken in those with sensory impairment.
- Kinesiology taping requires frequent re-application. Several factors will reduce adhesion to the skin including showering and sweating and therefore reduce the effectiveness of the tape.

8.2.3 Peripheral nerve treatment

Where mechanosensitivity of peripheral nerves is suspected, selected physiotherapy techniques may be effective at reducing nerve irritability. The underpinning treatment principle is to enable free movement of the involved peripheral nerve(s), reducing sensitivity and symptom provocation. Treatments include local palpation and neural glider techniques (Coppieters & Butler, 2008).

These techniques should be introduced cautiously, as a delayed exacerbation of pain may occur between 30 minutes and one hour after treatment. The initial dosage should therefore be kept low, with close monitoring of post-treatment symptom response (Finnerup et al., 2021).

8.3 Targeted focal treatments

Targeted focal interventions are unlikely to be curative when used in isolation: concomitant targeted physical therapy should be used alongside focal intervention to optimise recovery and reduce the risk of recurrence.

The decision to use a targeted focal treatment should be based on a clear understanding of the underlying diagnosis(es) being treated and the expected clinical course of the underlying neurological condition.

Specific examples of where focal interventions may be beneficial include:

- Managing acute exacerbations of localised pain which have not responded to first-line physical treatments and simple analgesia.
- Situations where upper limb function is limited due to significant localised pain, and targeted treatment could improve it.
- Where the patient and/or treating team wish to reduce the overall medication burden and/or their side



effects, particularly in the presence of polypharmacy.

- In the context of a rehabilitation programme, where focal treatment may provide a temporary window of opportunity during which the MDT can optimise upper limb management.
- Where there is a risk of developing long-term complications such as contracture, in which case targeted treatment may have a preventative role.

More than one type of focal intervention may be delivered within the same treatment plan for those with a mixed presentation (e.g., combined joint steroid and muscle botulinum toxin injections) when clinically justified.

Local guidance should be sought on whether blood tests (INR, platelets) and/or medications, such as antiplatelets or anticoagulants, should be paused prior to treatment. Where the individual lacks capacity to consent to the proposed treatment, the MDT should follow the principles of the Mental Capacity Act (2005) (Department for Constitutional Affairs, 2007). Written consent should be obtained prior to the procedure.

Examples of commonly used targeted interventions are detailed below.

8.3.1 Local anaesthetic

Local anaesthetic (LA) may be used in combination with a targeted steroid as part of treatment and as a diagnostic tool. In this case, it can provide immediate information on whether anaesthesia of the injected target (e.g., the subacromial bursa) improves symptoms. This may be particularly helpful in cases of diagnostic uncertainty or where steroids are being used with caution. Commonly used LAs are lidocaine, bupivacaine, and ropivacaine; the latter two are longer acting (Shah et al., 2019). LA injections should be administered under ultrasound guidance to improve accuracy and safety.

8.3.2 Targeted steroid

Targeted steroid injections should only be considered where there is reasonable evidence of an underlying inflammatory process contributing to the patient's symptoms. This is usually demonstrated through a combination of clinical assessment and diagnostic imaging. Injections with steroids should always be ultrasound-guided.

Different steroid preparations have different actions and risk profiles. Selection should depend on the target tissue and clinical indication for treatment. For example, a soluble preparation such as methylprednisolone may be suitable for soft tissue injections, including bursae. A non-soluble crystalline formulation such as triamcinolone may be more suitable for deeper joint injections due to slower absorption; however, the risk of cutaneous side effects is higher (Stephens et al., 2008).

Steroid injections may be administered with LA, which acts as the solvent for the corticosteroid, provides volume to distribute the injectate within the joint, and initiates an immediate analgesic effect (Shah et al., 2019).

A physical management plan should be established at the time of injection and continued thereafter. The treating team should review the effectiveness of the intervention immediately following the procedure (if LA has been used), within two to three weeks (when maximal benefit is expected), and at two to three months (when the effect is likely to be wearing off) via repeating outcome measures. At these time points, adjustments to analgesia, the physical management plan, and/or further interventions may also be considered.

In some cases, two to three repeated injections may be required in the first year following a new diagnosis. Beyond a year, in very specific cases, further injections may be considered annually. The cumulative risks associated with repeated injections at the same site (including tendon rupture) should be considered alongside the potential benefits on a case-by-case basis.



The consent process specific to steroid injections should include the following information:

- Expected onset of action (typically after two weeks) and duration of effect (two to three months).
- Warning of the possibility that the injection may not be effective or may provide only partial relief.
- The risk of symptom recurrence, particularly if a concurrent physical management programme is not in place.
- Common side effects (although this list is not exhaustive and readers should consult the British National Formulary (British National Formulary (BNF), 2026a) and local guidance for up-to-date information on the specific chosen treatment):
 - Steroid flare: Patients may experience pain for one to three days following the procedure. The pain can be treated with anti-inflammatory agents if required and clinically appropriate, but it should resolve on its own. If it occurs, it does not affect the overall treatment outcome.
 - Allergic reaction, bleeding, transient pain after the injection, infection, including septic arthritis, permanent skin depigmentation at the injection site, and fat necrosis at the injection site.
 - Transient rise in blood pressure and blood sugars.
 - As above, there are additional risks associated with repeated injections.

Common sites for focal steroid injection and typical indications are included below. If more than one area is identified, multiple injection sites can be treated simultaneously.

- **Structures within the subacromial space (Rah et al., 2012):** e.g. subdeltoid bursa (bursitis) or biceps tendon (tenosynovitis).
- **Glenohumeral joint** (Chiu et al., 2021; National Institute of Clinical Excellence (NICE), 2023):
 - Steroid +/- LA to the GHJ
 - Should be considered for those with pain-predominant frozen shoulder (i.e. where capsulitis is identified). In such cases, pain relief is the primary goal. In cases of established restriction, this treatment will be unlikely to specifically restore the range of movement.
 - Should also be considered in those with an acute exacerbation of pain secondary to inflammation in the context of GHJ arthritis (Al-Mohrej et al., 2022).
 - Hydrodilatation (saline +/- steroid +/- LA)
 - Should be considered first for those with stiffness-predominant frozen shoulder as it provides mechanical distension of the capsule. In such cases, restoration of range of movement is the primary goal of treatment. Up to 30 ml of fluid is injected into the joint, if tolerated and depending on the capsule's size and restriction. However, there is no standard recommendation for the total volume of injectate.
- **Acromioclavicular joint**, e.g. in the case of osteoarthritis.
- **Suprascapular nerve**, i.e. to provide a nerve block.
 - Long-acting LA +/- steroid is usually used. There is insufficient evidence to support the addition of a steroid in order to prolong the treatment effect.
 - The majority of patients in this group report that the effect lasts for days; however, for others, it may last for months. The underlying mechanism for this is poorly understood.
 - Indications may include:
 - Patients with multiple pathologies/causes for shoulder pain, where targeted injections would not be considered sufficient.
 - Frozen shoulder (J. Bennett et al., 2025; Shanahan et al., 2022).



- Patients who have rotator cuff tears where a conservative approach has been agreed (Coory et al., 2019).
- Other ablative nerve techniques targeting the branches of the suprascapular nerve distal to the suprascapular notch, as well as other nerves supplying sensation to the shoulder joint (e.g. the axillary and lateral pectoral nerves), may be considered depending on local expertise and provision (Biel et al., 2023; Galluccio et al., 2023; Macrae et al., 2023; Yoshida et al., 2025).

8.3.3 Botulinum toxin

Botulinum toxin is recommended as one of the first-line treatments for the management of shoulder spasticity (Reebye et al., 2022; Royal College of Physicians, 2018b; Stokes et al., 2021; Walsh et al., 2022). Specific benefit has been shown with botulinum toxin to address pain resulting from spasticity in the arm, including the shoulder (Turner-Stokes et al., 2025).

Decisions surrounding which muscles to inject depend on the pattern of spasticity and the likely muscles involved (Jacinto et al., 2022). Localisation using ultrasound, electromyography and/or electrical stimulation is recommended to improve the accuracy of muscle selection. Ultrasound enables direct visualisation of specific muscles for injection, whereas electromyography may provide additional information about muscle activity related to spasticity.

Systemic antispasmodic medications (e.g., baclofen) can be considered when focal treatment is insufficient or when management of more generalised spasticity is also required.

8.4 Orthopaedic surgery

Referral to orthopaedic services should take into account the neurological diagnosis, the degree of functional recovery, and the long-term prognosis. Where there is severe loss of upper limb function and limited potential for recovery, surgical intervention is unlikely to provide sufficient improvement to warrant consideration (Lakra et al., 2023).

Surgical options may be appropriate in selected cases where there is the potential to improve a patient's function or pain. Procedures may include capsular release surgery for refractory stiffness-predominant frozen shoulder and shoulder arthroplasty or joint fusion for severe osteoarthritis.

8.5 Section 8 summary of key recommendations and grading

Key recommendations	Strength rating	Applicability
Kinesiology taping may be considered in the presence of mild weakness or muscle imbalance.	R2	D
Neural mobilisation techniques may be considered where mechanosensitivity is suspected.	R2	I
Introduce neural mobilisation cautiously and monitor response.	GPP	
LA may be used diagnostically and therapeutically.	R1	I
Ultrasound guidance should be used when administering local anaesthetic or steroids in this patient group.	R1	I



Steroids should only be considered when inflammation is suspected.	R1	I
Glenohumeral joint steroid injection should be considered as first-line for treatment of pain-predominant frozen shoulder.	R2	I
Hydrodilatation can be considered for stiffness-predominant frozen shoulder.	R3	I
Suprascapular nerve block may be considered in selected patients.	R2	D
Botulinum toxin injections should be considered in those with shoulder spasticity.	R1	D
Localisation using ultrasound, electromyography and/or electrical stimulation is recommended to improve the accuracy of muscle selection for botulinum toxin injection.	R1	D
Surgical options may be appropriate in select cases where there is the potential to improve a patient's function or pain levels.	R2	I



9 Analgesia

Analgesia should be considered as an adjunct to the treatments outlined above. A multimodal analgesic approach addressing the cause(s) and type(s) of pain is required. Such an approach will yield synergistic, additive effects.

Pain in this patient group typically falls into three categories:

1. **Acute nociceptive pain**, which may be mild, moderate or severe.
2. **Chronic secondary musculoskeletal pain**, which may include nociceptive and/or nociplastic elements.
3. **Neuropathic pain**.

The analgesic options available for each category are outlined below.

Prescribing should follow guidance from the British National Formulary (National Institute of Clinical Excellence, 2026), taking into account contraindications, dose adjustments, renal and hepatic function and adverse effects.

When starting treatment and/or changing dose, benefits and side effects should be discussed with the patient. The duration of treatment and the timing of review points should be considered at the time of the initial prescription. At review points, the effectiveness of treatment should be assessed and recorded. Patients using analgesics to manage chronic pain specifically should be reviewed at regular intervals if stable (at least annually) or more frequently if medication is being changed, or the pain syndrome and/or underlying comorbidities alter (Scottish Intercollegiate Guidelines Network (SIGN), 2013). These recommendations are especially relevant when prescribing opioids, where an advanced agreement on the reduction and cessation of opioids should be reached if the expected outcomes are not met (British National Formulary (BNF), 2026b).

9.1 Pharmacological management of acute nociceptive pain

Management will depend on the severity of pain, as in Table 6.

Table 6: The management of acute nociceptive pain

Management of mild or moderate nociceptive pain
The National Institute for Health and Care Excellence (NICE) recommends the use of basic analgesics for the management of mild to moderate nociceptive pain (National Institute of Clinical Excellence (NICE), 2026). Recommended medications include: Paracetamol Nonsteroidal Anti-Inflammatory Drugs (NSAIDs), (e.g. ibuprofen and naproxen). Given the side effect profile of NSAIDs, particularly when considering the neurological patient group, a course should be prescribed with a clear review or end date and appropriate precautions taken to reduce gastrointestinal and cardiovascular risks. Weak opioids such as dihydrocodeine (preferred to codeine due to less variability in CYP450-related metabolism), codeine and tramadol. Side effects including nausea and constipation should be anticipated.



A stepwise strategy is recommended:

- **Step 1** Paracetamol.
- **Step 2** Paracetamol substituted with an NSAID, however if unsuitable, a weak opioid.
- **Step 3** Paracetamol added to the NSAID or weak opioid.
- **Step 4** Paracetamol continued and the NSAID replaced with an alternative NSAID if suitable.
- **Step 5** A weak opioid in addition to paracetamol and/or a NSAID.

In individuals experiencing continuous pain, regular analgesia can be prescribed following a full clinical assessment. Unless there is a clear clinical indication to do otherwise, the full therapeutic dose of one drug should be prescribed before considering switching or adding another analgesic.

Compound analgesics (fixed-ratio combinations of two or more medications, such as co-codamol and co-dydramol) are not recommended in pain states which are not stable as they do not allow titration according to need or weaning of the opioid alone as pain decreases (Levy et al., 2021).

Management of severe nociceptive pain

Opioids are the mainstay of systemic analgesia for severe acute nociceptive pain. When equianalgesic doses are used, oral opioids are as effective as parenteral formulations in the treatment of acute pain (Schug et al., 2020), therefore the oral route should be encouraged where possible.

Frequently occurring side effects include nausea, vomiting, constipation, pruritus, dizziness, dry mouth, sedation and cognitive impairment. These risks should be discussed with the patient, particularly given their relevance in this patient group. Dietary advice, the prophylactic use of a stool softener and a stimulant laxative should be considered, as well as a short course of antiemetic agents if required.

Immediate release (IR) opioids

Oral morphine solution (Oramorph) is widely used in inpatient settings as the first line immediate release (IR) opioid. It is a schedule five controlled drug which requires only one nurse to check and administer it, allowing for faster provision in a ward-based environment when compared to other drugs or formulations e.g. IR oxycodone (The Misuse of Drugs Act, 1971).

IR opioids should be prescribed on an as required (pro re nata - PRN) basis with the dose titrated to effect. A PRN dose interval of two hours allows titration to effect as well as pre-emptive administration before activities which are expected to elicit pain, such as physiotherapy (Quinlan et al., 2022). Pain should be reassessed following administration, with timing guided by the expected time to reach peak effect (typically one hour after administration if given orally (Hoebe et al., 2012)).

Modified release (MR) opioids

Modified-release opioid formulations (i.e. slow-release, controlled-release, extended-release or prolonged-release, including transdermal fentanyl and buprenorphine) are not generally indicated or recommended when managing acute pain.

There is some evidence to support the use of MR opioid formulations where IR opioids are being regularly administered in states of prolonged and stable severe acute nociceptive pain, however their use is associated with increased total opioid use, increased incidence of adverse events, and there is little evidence it provides a superior analgesic effect (Schug et al., 2020). The use of less sedative opioids such as tramadol, tapentadol and transdermal buprenorphine may be considered in such cases (Schug et al., 2020).



9.2 Pharmacological management of chronic secondary musculoskeletal pain

Due to the heterogeneity of conditions underlying chronic secondary musculoskeletal pain, there are no universal guidelines for its management. A stepwise, individualised approach is therefore recommended. Treatment options are outlined in Table 7.

Table 7: The management of chronic secondary musculoskeletal pain

Management of chronic secondary musculoskeletal pain – topical agents
Topical Non-Steroidal Anti-Inflammatories (NSAIDs) may be considered particularly for patients who are unable to tolerate oral NSAIDs, as they have similar efficacy. Their use is recommended by a number of guidelines for arthritis-related pain (Da Costa et al., 2021), although the evidence for post-stroke pain is limited. They have restricted systemic exposure and the risk of all-cause mortality, cardiovascular and gastrointestinal complications are lower than with paracetamol and oral NSAIDs (Kloppenburger et al., 2025). Topical capsaicin low-dose cream (0.025% or 0.075%) is recommended for patients with osteoarthritis, although most of the evidence supporting its use is derived from studies on knee osteoarthritis specifically (British National Formulary (BNF), 2026c). Topical rubefacients should be considered if other pharmacological therapies have been ineffective (Scottish Intercollegiate Guidelines Network (SIGN), 2013).
Management of chronic secondary musculoskeletal pain – oral agents
Paracetamol is not generally recommended and should be used infrequently in the short-term if all other pharmacological treatments (especially NSAIDs) are unsuitable, not tolerated, or ineffective. This is due to its small effect size (National Institute of Clinical Excellence (NICE), 2021). Oral NSAIDs are recommended, however gastrointestinal, renal and cardiovascular side-effects restrict their oral use in the long-term. NSAIDs should be prescribed at the lowest effective dose for the shortest period of time (National Institute of Clinical Excellence (NICE), 2021). Concurrent prescription with a proton pump inhibitor should be considered. Opioids: clearly defined pain associated with identifiable organic disease is more likely to respond to opioids (as opposed to poorly defined pain of uncertain aetiology). However, even well-defined syndromes including major joint osteoarthritis demonstrate a disappointing response to opioids when used in the long-term (Brophy & Fillingham, 2022; Kloppenburger et al., 2019; Kolasinski et al., 2020; National Institute of Clinical Excellence (NICE), 2022). There is limited evidence from randomised controlled trials supporting the use of opioids for periods longer than 12 weeks and limited evidence for long-term efficacy (Faculty of Pain Medicine, 2026). With prolonged or continuous use, tolerance, dependence and other physiological adaptations may further compromise both efficacy and safety (British National Formulary (BNF), 2026b). Opioids should therefore generally only be considered in carefully selected cases for short- to medium-term (i.e. up to three months) treatment of chronic non-malignant pain, when other therapies (pharmacologic and non-pharmacologic) have been insufficient. The benefits should outweigh the risks of serious harm (such as addiction, overdose, and death) (British National Formulary (BNF), 2026b). See the Faculty of Pain Medicine's Opioids Aware resource for further information (Faculty of Pain Medicine, 2026).



There may be a role for medium-term, low-dose opioid therapy in carefully selected patients with chronic pain, provided treatment is provided in a monitored setting. As mentioned above, the risks of longer-term use should be carefully considered as tolerance, dependence and other adaptations compromise efficacy and safety (Faculty of Pain Medicine, 2026).

There are no major differences in efficacy or side-effect profile between the full mu-agonists available in the UK (Faculty of Pain Medicine, 2026). The choice of opioid for longer-term prescribing depends on the specific clinical circumstances, local formularies, guidelines and the expertise of the prescriber. Consideration should be given to the temporal characteristics of the pain experienced by the patient.

Morphine has been recommended as the first-line opioid due to its wide availability, range of formulations and cost-effectiveness. The oral route is recommended as the preferred route of administration. The recommended maximum oral morphine equivalent dose for opioid therapy in chronic pain in the UK is 90 mg/day, with prescriber caution advised above 50 mg/day. Specialist advice is recommended if a dose above 90 mg/day is being considered (Chou et al., 2020; Faculty of Pain Medicine, 2026; Farmer et al., 2019).

Immediate release (IR) opioids

Immediate release preparations can provide effective symptomatic relief in persistent pain and may be appropriate where pain is intermittent and short-lived, where pain intensity varies significantly (when the use of a dose range may be appropriate) or when 'background' pain is well controlled with modified-release preparations, but the patient has infrequent, short-lived episodes of increased pain. This may occur for example in the context of dressing or planned therapy sessions.

Opioid formulations with a rapid onset such as transmucosal/sublingual or intranasal fentanyl are not appropriate for the management of persistent non-cancer pain. Injectable opioids should also not be used in the management of patients with persistent non-cancer pain. Pethidine is also not recommended.

Modified release (MR) opioids

Modified release preparations administered at regular intervals may be appropriate for patients with stable persistent pain.

For a small number of individuals, the transdermal route may be suitable, particularly if the pattern of pain experienced would warrant a modified-release preparation but regular oral dosing is impractical. Buprenorphine as a transdermal patch has the advantage of a lower potential of misuse, and a lower incidence of respiratory depression and physical dependence.

Opioid trial

Where opioids are being considered to treat chronic pain, an opioid trial should be undertaken to establish whether the patient achieves a meaningful reduction in pain and an improvement in function. Measurable treatment goals should be agreed in advance and a strategy for deprescribing put in place if these goals are not achieved (Dowell et al., 2022).

The patient should be reviewed within four weeks of initiation of opioid treatment, and at regular intervals thereafter until a stable regimen has been established.

Further information on conducting an opioid trial can be found in Appendix 5.



Follow up reviews

The Faculty of Pain Medicine recommends that the frequency of review once the opioid regimen has been established depends on the early effectiveness of treatment, the frequency of troublesome side effects, the timing of additional interventions to control pain (e.g., surgery), and the presence of concerns in relation to problematic use of opioids (Faculty of Pain Medicine, 2026). When a regimen is stable and effective and no additional concerns are present, opioid treatment should be reviewed at least six monthly.

Compound analgesics

Compound analgesics may be considered for those with stable chronic pain (British National Formulary (BNF), 2026b).

Duloxetine

Evidence suggests that duloxetine may provide benefit in the treatment of osteoarthritis-related pain either alone or in combinations with NSAIDs (Leaney et al., 2022). Its use is conditionally recommended for hip, knee or hand osteoarthritis by the American College of Rheumatology (Kolasinski et al., 2020) although not within NICE guidelines for the management of osteoarthritis.

9.3 Pharmacological management of neuropathic pain

Management options are described in Table 8.

Table 8: The management of neuropathic pain

The management of neuropathic pain

Neuropathic agents

NICE recommends the following for suspected neuropathic pain in non-specialist settings (National Institute of Clinical Excellence (NICE), 2020):

- Gabapentin
- Pregabalin
- Amitriptyline
- Duloxetine

If there has been no meaningful response to treatment within two to four weeks after titration to adequate dose, patients are unlikely to develop a response thereafter. Regular reassessment and stopping ineffective medication is therefore necessary (Scottish Intercollegiate Guidelines Network (SIGN), 2013).

Where initial treatment is ineffective or not tolerated, the medication should be stopped and an alternative of these options initiated. A further alternative should be considered if the second and third drugs tried are also not effective or not tolerated. However, gabapentin and pregabalin should not be prescribed in combination.

It is important to be aware that the combination of gabapentin and opioids may be associated with increased adverse events, including a reduced level of consciousness and respiratory depression.



The management of neuropathic pain

Combination therapy with antidepressants and gabapentin or pregabalin may be considered in cases where monotherapy is insufficient, however this is not currently advised by NICE for use in non-specialist settings.

Treatment of central neuropathic pain remains an off-label indication for the listed medications.

In cases of central post-stroke pain, gabapentin, pregabalin or amitriptyline are recommended as first-line options.

Capsaicin cream

Capsaicin cream is licensed for post-herpetic neuralgia and painful diabetic peripheral polyneuropathy only, so use for other neuropathic pain conditions is unlicensed. It is recommended by NICE for people with localised neuropathic pain who wish to avoid or who cannot tolerate oral treatments (National Institute of Clinical Excellence (NICE), 2020).

Opioids

The use of opioids is generally not recommended in non-specialist settings, unless initiated on the advice of a specialist. This includes tramadol, except where it is used as acute rescue therapy (National Institute of Clinical Excellence (NICE), 2020).

9.4 Biopsychosocial approach to pain management

Patients with chronic pain share common biological, psychological and social risk factors that predispose them to the development and persistence of pain. These include co-morbid physical and mental chronic disease, attitudes and beliefs about established pain, and socio-demographic factors (female gender, older age, lower socio-economic status, geographical and cultural background, employment status and occupational factors) (Van Hecke et al., 2013).

The biopsychosocial model recognises health and illness as a complex interaction between these factors, modulating the overall experience of pain and the level of functional interference or disability. Recognising these interacting influences provides the basis for a coordinated approach that combines physical rehabilitation and medical treatment with psychological therapies, education, and consideration of social, cultural, and work-related challenges (Scottish Intercollegiate Guidelines Network (SIGN), 2025).

Integrated multidisciplinary management based on the biopsychosocial model is of particular importance for patients who have complex pain conditions such as chronic pain in the presence of additional factors such as a neurological condition, multiple chronic pain problems, polypharmacy, and cognitive impairment (Peppin et al., 2015).

Further recommendations are available in the NICE guidelines on chronic pain, which specifically detail the assessment of chronic primary and secondary pain and the management of chronic primary pain (National Institute of Clinical Excellence (NICE), 2021).



9.5 Section 9 summary of key recommendations and grading

Key recommendations	Strength rating	Applicability
Patients should be reviewed regularly for effectiveness and side effects of treatment.	R1	I
Analgesic recommendations for acute nociceptive pain.	R1	I
Analgesic recommendations for neuropathic pain.	R2	I
Analgesic recommendations for chronic secondary musculoskeletal pain.	R2	I
An opioid trial should be undertaken where opioids are being considered to treat chronic pain.	R2	I
A biopsychosocial approach should be adopted in cases of chronic, complex pain.	R1	I





10 Appendices

Appendix 1: Motor and sensory peripheral nerve supply from the brachial plexus

- Motor supply:
 - Axillary nerve – deltoid, teres minor.
 - Long thoracic nerve – serratus anterior.
 - Suprascapular nerve – supraspinatus and infraspinatus, sensory: posterior GHJ capsule, coracohumeral ligament, coracoclavicular ligament, subacromial bursa.
 - Upper subscapular nerve – subscapularis.
 - Lower subscapular nerve – subscapularis, teres major.
 - Thoracodorsal nerve – latissimus dorsi.
 - Musculocutaneous nerve – biceps brachii, coracobrachialis, brachialis.
 - Dorsal scapular nerve – rhomboid major and minor, levator scapulae.
 - Lateral pectoral nerve – clavicular head of the pectoralis major, pectoralis minor, sensory: subacromial bursa and the acromioclavicular joint.
 - Medial pectoral nerve – pectoralis minor and the sternocostal head of the pectoralis major.
- Sensory supply:
 - Axillary nerve – skin over the shoulder and upper arm, specifically known as the ‘regimental badge’ area.
 - Suprascapular nerve (70% of the sensory innervation) - posterior GHJ capsule, coracohumeral ligament, coracoclavicular ligament, subacromial bursa.

Appendix 2: Tips for examination of the painful shoulder

General points

- Consider the patient's position during the assessment. Where possible, examine the patient in both supine and sitting and/or standing.
- Compare the affected side with the unaffected side where possible.
- Consider the patient's ability to report or indicate pain during the activity to reduce the risk of fear avoidance behaviours.
- The distal arm and neck should also be examined at the initial assessment.

Observation

- Observe the patient anteriorly, posteriorly and laterally.
- Inspect the resting alignment of the arms, shoulder joints, and scapulae. Consider the patient's posture, including their head and neck.
- Note the resting position of the humeral head and the arm. This will provide clues about the presence of low tone, spasticity, or neglect.
- Note the presence of asymmetry or wasting of muscles at the shoulder girdle. Note the presence of



subluxation of the humeral head. Measure the extent and direction of subluxation using fingerbreadth or callipers.

- Observe for signs of CRPS, which may include skin or nail changes, excess or loss of hair, swelling, and changes in temperature.

Function

- Observe the patient undertaking a functional task (e.g., taking a drink, removing their t-shirt) to gain insight into how their impairments and pain affect them.
- Functional outcome measures may be considered to supplement the assessment (Ashford et al., 2013).

Palpation

- Palpate the sternoclavicular, acromioclavicular, and glenohumeral joints and along the length of the bones to identify regions of pain, allodynia and hypersensitivity.
- Local palpation of peripheral nerves as well as upper limb neurodynamic testing can help indicate whether neural mechanosensitivity is a contributing factor (Nee & Butler, 2006).

Spasticity

- Assessment of spasticity in the shoulder can be challenging, particularly in the presence of reduced range of movement and pain. The Modified Ashworth or Ashworth scales are the most commonly used tools for grading spasticity based on resistance to passive movement at a joint, though they are acknowledged to have limited validity and reliability (Pandyan et al., 1999). The Tardieu or modified Tardieu scales were developed to improve construct validity but still face reliability challenges (Meseguer-Henarejos et al., 2018).
- Needle or surface electromyography (EMG) can provide useful additional information to confirm muscle spasticity and is best used when recording other parameters, such as the angle and speed of joint movement (Pandyan et al., 2006). This can, however, be time-consuming in clinical environments, even if the equipment is available.
- Importantly, when assessing spasticity, it is necessary to distinguish between increased muscle tone (i.e., spasticity) and other factors, such as mechanical shortening of muscle or joint structures. It is also important to determine if increased muscle tone is true spasticity or spasm related to shoulder pain. These factors inform clinical decision making and treatment selection.

Range of movement

Active range of movement

- Measure the active range of movement in shoulder flexion, abduction, internal and external rotation. Measure and note the angles at which pain is experienced.
- Observe the quality of movement, co-ordination between the joints of the shoulder complex, and note any signs of muscle imbalance.
- Observe rotator cuff activation by determining whether the patient's humeral head can be maintained within the glenoid fossa during active movement without external support or aids.

Passive range of movement

- Measure the passive range of movement in shoulder flexion, abduction, internal and external rotation. Measure and note the angles at which pain is experienced.
- In the cases of proximal upper limb weakness and therefore reduced stability of the glenohumeral joint, the assessor should take extreme care when assessing passive range of motion, ensuring the humeral head is centred within the glenoid fossa throughout. Repeated and excessive passive elevation above



90 degrees should be avoided. If this action is necessary for assessment or treatment purposes, the assessor should ensure the humeral head remains centred within the fossa whilst simultaneously externally rotating the humerus. This minimises the risk of damage to soft tissues underneath the coracoacromial arch.

Sensation

- Assess light touch and proprioception throughout the upper limb in a dermatomal distribution. Note for regions with allodynia or hypersensitivity.

Neglect

- Assess for signs of neglect, particularly within their personal and peri-personal space.

Reflexes

- Assess reflexes of both upper limbs.

Appendix 3: Pain assessment tools

Pain type	Scale type	Examples
Acute pain	Pain scales	Categorical scales use words to describe pain intensity, e.g. a verbal descriptor scale (where the patient uses their own words to describe their pain), or four- or five-point descriptors (none, mild, moderate, severe and excruciating). Numerical rating scales require patients to numerically score (verbally or via pictorial format) their pain on a scale of 0 to 10 with 0 representing 'no pain' and 10 being the 'worst pain imaginable'. Use of a vertical (rather than horizontal) scale is recommended as patients in this group may present with neglect and/or visual field loss. The Visual Analogue Scale (VAS) is continuous scale of pain with a 100 mm line and verbal anchors of 'no pain' on the left and 'worst pain' on the right. The score is the distance (in mm) starting from the left to the mark.
	Evaluation of functional impairment(s) relating to pain	The Functional Activity Scale (FAS) is a three-level categorical score designed to be applied at the point of care (Scott & McDonald, 2008). The patient is asked to perform or is taken through the activity (e.g. personal care, turning in bed) or physiotherapy (e.g. joint mobilisation). The ability to complete the activity is then assessed as: A (no limitation), B (mild limitation) or C (significant limitation). This score can be used to evaluate effectiveness of analgesia during functional tasks and trigger interventions if required. It has not been independently validated (Schug et al., 2020).



Chronic pain	Multidimensional pain	The Brief Pain Inventory (BPI) Scale was originally developed for cancer pain and is validated for several chronic pain syndromes (M. I. Bennett, 2009). It is a 17-item self-rating scale which includes a topographical representation of pain location, intensity over time and currently, degree of pain relief from treatment, and interference in seven domains (Daut et al., 1983). The McGill Pain Questionnaire (MPQ) assesses three major dimensions: sensory-discriminative, motivational-affective, and cognitive-evaluative (Melzack, 1987). It also includes a pain intensity component. It is available in a short-form version. The total score is a sum of ranked scores. Research has demonstrated high reliability and validity (Fillingim et al., 2016).
	Mood	Hospital Anxiety and Depression Scale (HADS) (Bjelland et al., 2002): Comorbid mental health status affects pain experience, treatment effectiveness and risk of chronicity. The HADS is highly validated in the assessment of anxiety and depression, although it was not developed specifically for pain.
	Pain-related functional interference	The Pain Disability Index (PDI) (Pollard, 1984) measures pain interference across seven domains (e.g. social activity, occupation, self-care) on an 11-point numerical rating scale.
	Pain beliefs	The Pain Self-Efficacy Questionnaire (PSEQ) (Dubé et al., 2021) assesses confidence in performing daily activities. An aggregate score predicts response to self-management and likelihood of returning to work.
	Health-related quality of life	The European Quality of Life Instrument (EQ-5D) (Rabin & De Charro, 2001) includes five domains: mobility, self-care, usual activity, pain and mood, measured with a five-point descriptor scale of impact intensity. It is not a pain-specific measure and scores can be affected by other comorbidities. It is typically not sensitive enough to detect response to treatment at lower values (Bendinger & Plunkett, 2016).
Neuropathic pain	Specific neuropathic pain scales	The Leeds Assessment of Neuropathic Symptoms and Signs (LANSS) has five symptom items and two clinical assessment items. A symptom-only form is available (M. Bennett, 2001).
		The Douleur Neuropathique en 4 Questions (DN4) has ten items – seven symptomatic and three from clinical examination (Bouhassira et al., 2005).
		Pain DETECT has nine self-reported items which do not require clinical examination. It yields a probability score for neuropathic pain (Freynhagen et al., 2006).



Shoulder pain specific	Shoulder Q and SPIN	Shoulder Q is a structured questionnaire designed for patients with cognitive and/or communicative deficits to assess the presence and severity of shoulder pain at different time points (rest, movement and at night) (Lynne Turner-Stokes & Diana Jackson, 2006; Turner-Stokes & Rusconi, 2003). A verbal/numerical or visual graphic rating scale is used to assess the pain severity. It also contains additional question on factors impacting on pain, and treatments that alleviate pain (Cicely Saunders Institute of Palliative Care, 2026b). The Scale of Pain Intensity (SPIN) is a simple six-point visual scale, designed to be used with either verbal or pictorial cues to assess pain intensity and location in patients with cognitive and/or communication impairments (Cicely Saunders Institute of Palliative Care, 2026a).
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Appendix 4: Service evaluation

A core set of outcomes used to evaluate and audit individual services may include:

- Active and passive ranges of movement of the shoulder (abduction, flexion, external rotation)
- Spasticity measurement where applicable (abduction, flexion, external rotation)
- Goal attainment scaling
- Pain assessment tools
- Functional assessment
- Adverse events to treatment

Whilst this list is not exhaustive, it provides an initial framework which individual services can adapt to suit their own context.

Outcomes should ideally be collected at the start of a treatment course, at expected peak timing following specific treatments (for example, two weeks following botulinum toxin delivery), and at the end of a treatment course.

Appendix 5: Opioid trial

Adapted from the Faculty of Pain Medicine's Opioids Aware online resource (Faculty of Pain Medicine, 2026).

- Detailed guidance on how to conduct an opioid trial is available in the Faculty of Pain Medicine's Opioids Aware online resource (Faculty of Pain Medicine, 2026).
- The aim of an opioid trial is to establish whether the patient achieves a clinically meaningful reduction in pain together with an improvement in function using opioid therapy.
- Identifying optimal long-term dosing and managing opioid side-effects is not the purpose of the trial and should be addressed after opioid-responsiveness has been demonstrated.
- The duration of the opioid trial will depend on the periodicity of the patient's pain: if the patient has constant pain, then an opioid trial may be concluded in up to two weeks. If the patient has intermittent episodes with severe flare-ups of pain, the trial should be of a duration which allows the observation of its effect on two or three episodes of increased pain.



- Where possible the opioid trial should be conducted using oral immediate release morphine. Different doses within a specified range may be explored e.g. morphine 5-10 mg. Under appropriate clinical supervision, the 'trial doses' are increased gradually if there are no concerns regarding opioid-related adverse effects, up to a maximum of 20 mg.
- Opioids are unlikely to be beneficial long term if a clinically meaningful reduction in pain is not achieved following a single 20 mg dose of immediate release morphine.
- It is recommended to use readily measurable outcomes to assess the response to a trial (see Appendix 3), including reduction in self-reported pain intensity (of at least 30%) and the ability to achieve specific functional improvement (including sleep if impaired by pain).
- Patients should be encouraged to keep a diary during the opioid trial. This should include a twice-daily report of pain intensity, comments on sleep, a note of activity level and how any of these are changed following the dose of opioid, as well as side-effects.
- If the patient reports reduction in pain but experiences side-effects which impede the attainment of functional goals, it is appropriate to explore different dosing regimens, agents or formulations alongside active management of side effects.
- It is important to note that a successful short-term opioid trial does not predict long-term efficacy.



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