Pain

Musculoskeletal problems

- Pharmacists are frequently asked for advice about muscular injuries, sprains and strains.

- Simple practical advice combined with topical or systemic OTC treatment can be valuable.

- Sometimes patients who are already taking prescribed medicines for musculoskeletal problems will ask for advice.

What you need to know

- Age
  - Child, adult, elderly
  - Symptoms
  - Pain, swelling, site, duration
  - History
  - Injury
  - Medical conditions
  - Medication

Age

- Age will influence the pharmacist's choice of treatment, but other reasons make consideration of the patient's age important.

- In elderly patients, a fall is more likely to result in a fracture; elderly women are particularly at risk because of osteoporosis.

- Referral to the local casualty department for X-rays may be the best course of action in such cases.

Symptoms and history

- Injuries commonly occur as a result of a fall or other trauma and during physical activity such as lifting heavy loads or taking part in sport.

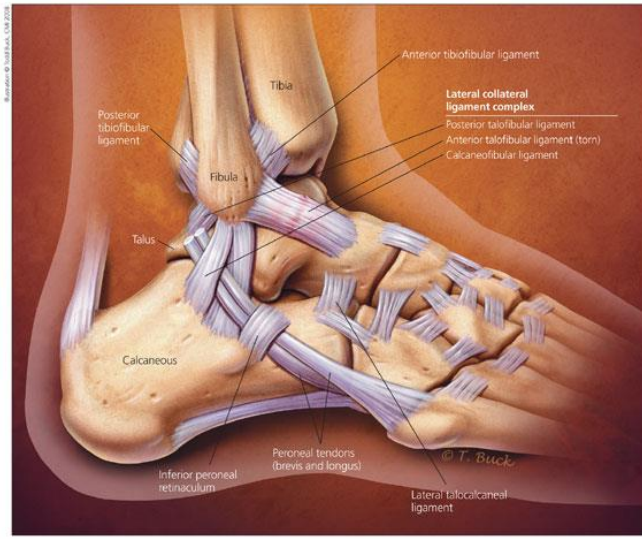
- Exact details of how the injury occurred should be established by the pharmacist.

Symptoms and history

- *Sprains and strains*
- *Muscle pain*
- *Bruising*
- *Head injury*
- *Bursitis*
- *Frozen shoulder*
- *Painful joints*
- *Back pain*
- *Repetitive strain disorder*
- *Whiplash injuries*

Sprains and strains

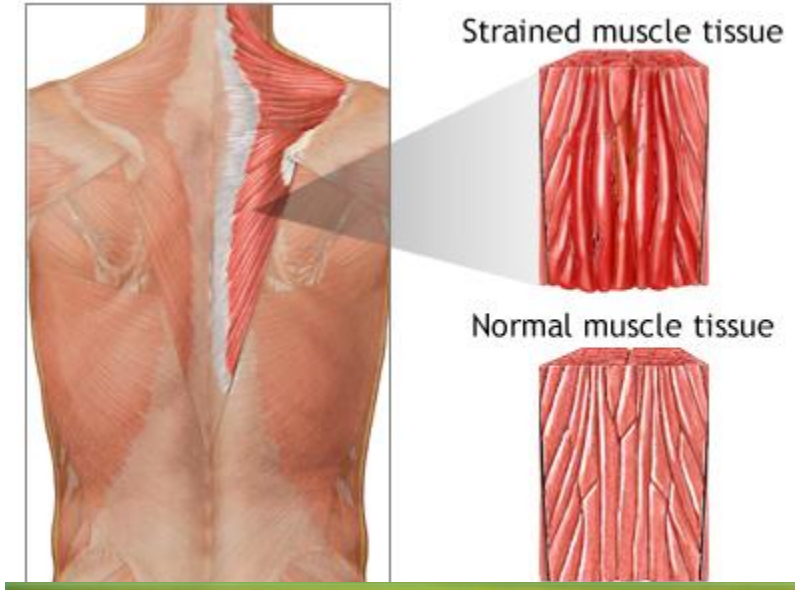
- *A sprain injury involves the overstretching of ligaments and/or* the joint capsule, sometimes with tearing.
- The most common sprain involves the lateral ankle ligament.
- Referral is the best course of action, so that to examine the affected area and consider whether a complete tearing of ligaments has occurred, particularly for knee injuries.
- With a partial tear the knee is often swollen and the patient experiences severe pain on movement.
- A complete tear may involve the tearing of the capsule itself. If this occurs, any blood or fluid can leak out into the surrounding tissues, so the knee may not appear swollen.

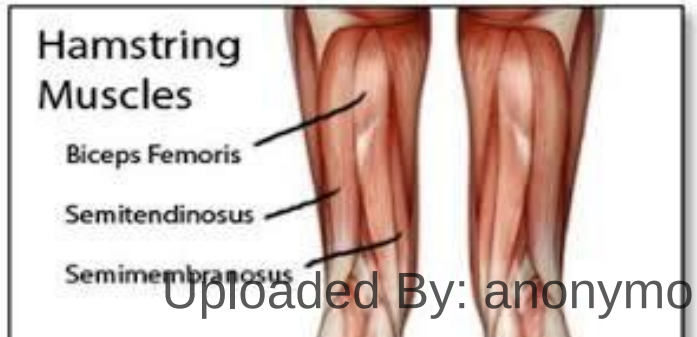


- *Strains are injuries where the muscle fibres are damaged* by overstretching and tearing.

- Sometimes the fibres within the muscle sheath are torn; sometimes the muscle sheath itself ruptures and bleeding occurs.

- Strains are most common in muscles that work over two joints, for example, the hamstring.





- When the strain heals, fibrosis can occur, and the muscle becomes shortened. The muscle is then vulnerable to further damage.

- after both sprains and strains.
  - Early mobilisation,
  - strengthening exercises
  - coordination exercises are all important

- The return to full activity must occur gradually.

Muscle pain

- Stiff and painful muscles may occur simply as a result of strenuous and unaccustomed work, such as
  - gardening,
  - decorating
  - exercise,

- the resulting discomfort can be reduced by treatment with OTC medicines.

Bruising

- Bruising as a result of injury is common and some products that minimize bruising are available OTC.

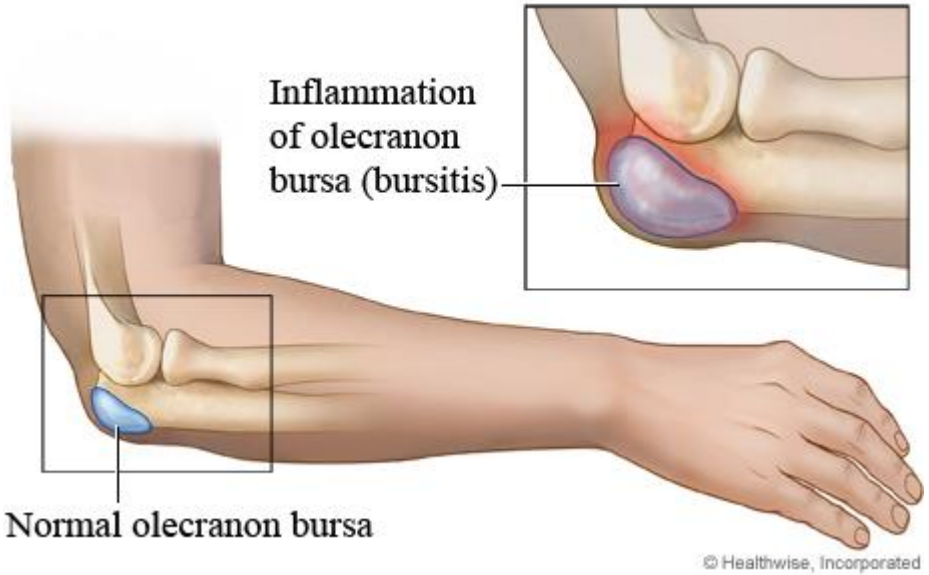
- The presence of bruising without apparent injury, or a description by the patient of a history of bruising more easily than usual, should alert the pharmacist to the possibility of a more serious condition.

- Spontaneous bruising may be symptomatic of an underlying blood disorder, for example, thrombocytopaenia or leukaemia, or may result from an adverse drug reaction or other cause.

Head injury

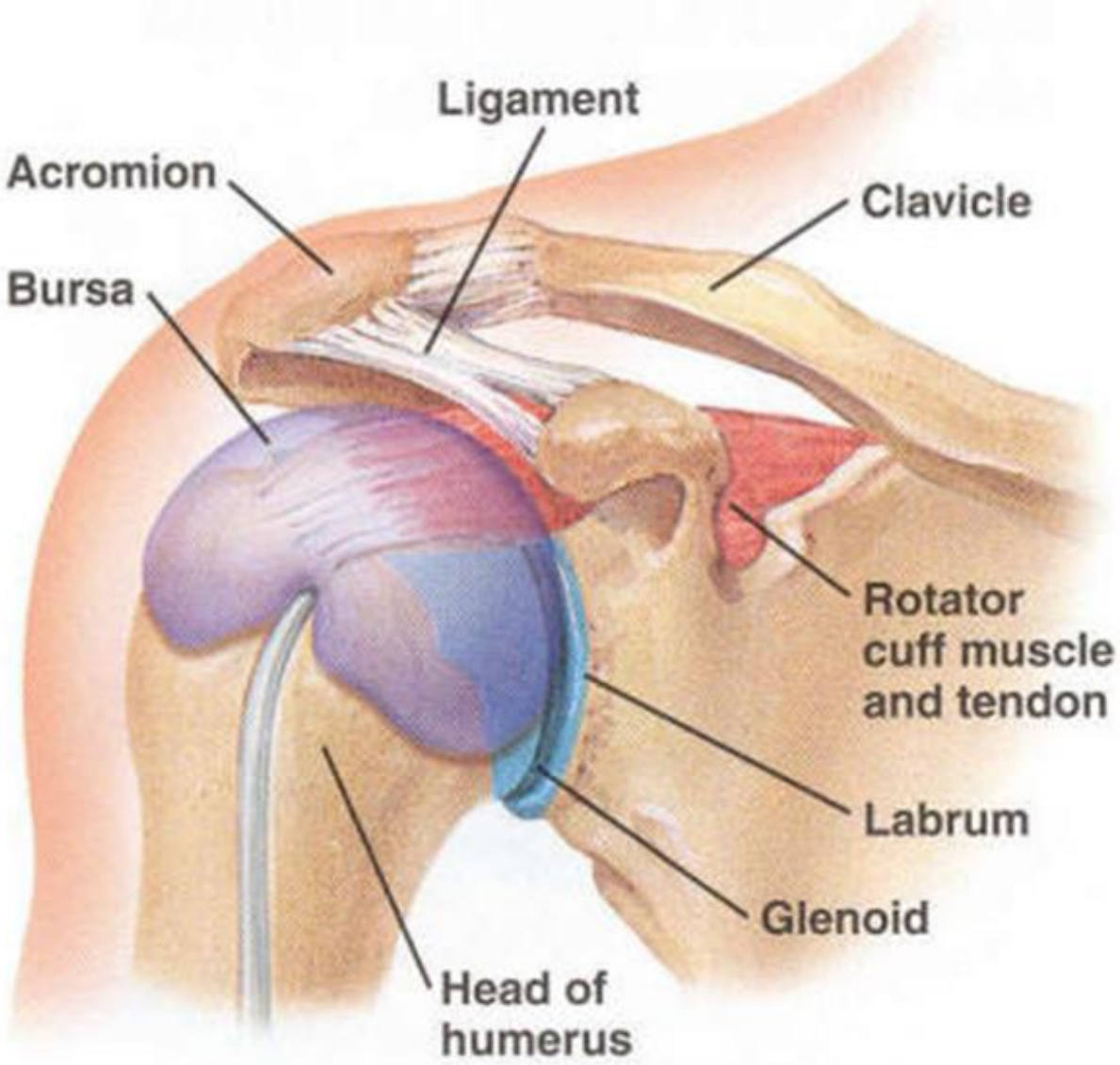
- Pain occurring as a result of head injury should always be viewed with suspicion and such patients, particularly children, are best referred for further investigation.

Bursitis



- Other musculoskeletal problems about which the pharmacist's advice might be sought include bursitis, which is inflammation of a bursa. (This is the name given to tissues around joints and where bones move over one another. The function of a bursa is to reduce friction during movement.)

- Examples of bursitis are housemaid's knee and student's elbow.



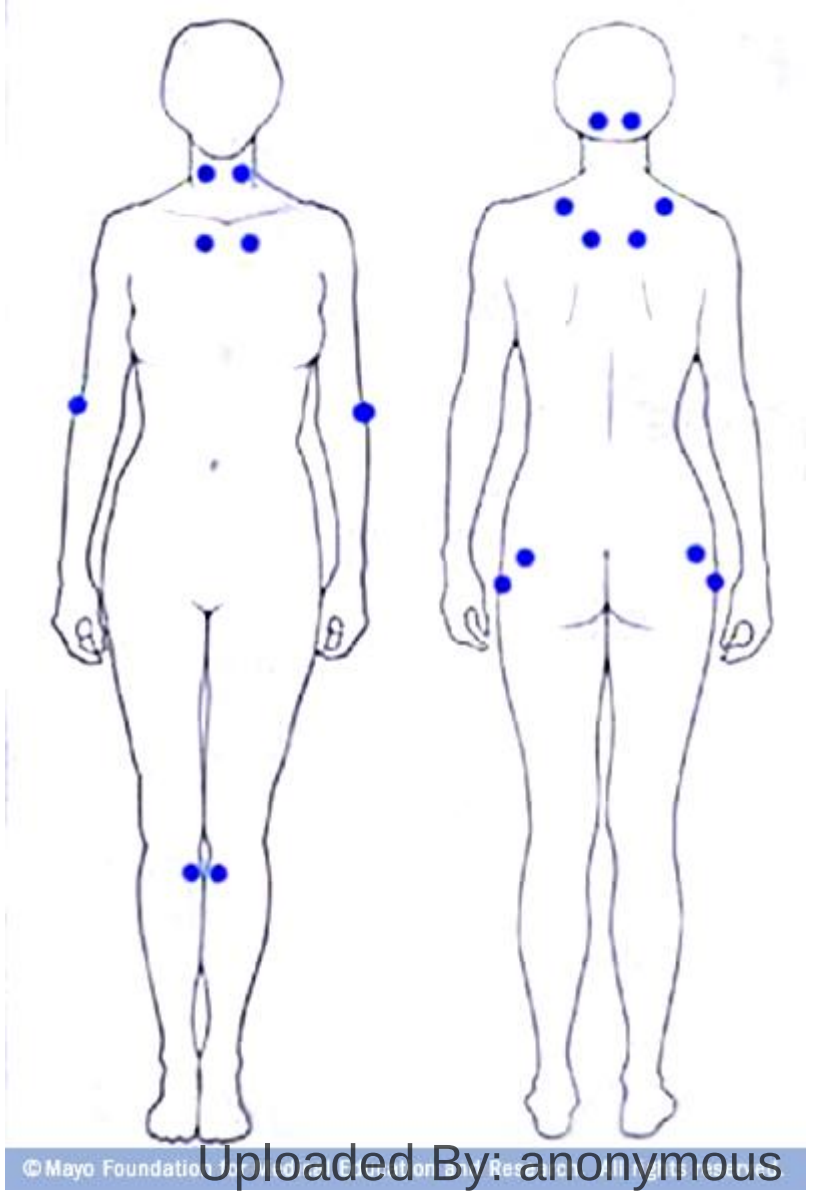
Fibromyalgia

- refers to chronic widespread pain affecting the muscles but not the joints.

- Tender spots can be discovered in the muscles and the condition can be associated with a sleep disturbance.
  - Tender points are pain points or localized areas of tenderness they hurt when pressed with a finger.

- Brain wave studies often show a loss of deep sleep.

- This condition may be precipitated by psychological distress and physical trauma.



- Referral to the GP for assessment would be advisable.

- An empathetic approach from the doctor is important as many patients have felt rejected or that their problems have not been taken seriously by the health professional.

- Medication (e.g. tricyclics, NSAIDs and *gabapentin)* is of limited benefit in these situations.

Frozen shoulder

- Frozen shoulder is a common condition where the shoulder is stiff and painful.
- It is more prevalent in older patients.
- The shoulder pain sometimes radiates to the arm and is often worse at night.
- Patients can sometimes relate the problem to injury, exertion or exposure to cold, but frozen shoulder may occur without apparent cause.
- The pain and limitation of movement are usually so severe that referral to the doctor is advisable.

Painful joints

- Pain arising in joints (arthralgia) may be due to arthritis, for which there are many causes.
- The pain may be associated with swelling, overlying inflammation, stiffness, limitation of movement and deformity of the joint.
- A common cause of arthritis is osteoarthritis (OA), which is due to wear and tear of the joint.
- This often affects the knees and hips, especially in the older population.

- Another form of arthritis is rheumatoid arthritis (RA), which is a more generalised illness (autoimmune).
- Other forms of arthritis can be caused by gout or infection, usually with signs of overlying inflammation and swelling.
- A joint infection is rare but serious and occasionally fatal.
- It is often difficult to distinguish between the different causes and it is therefore necessary to refer to the doctor except in mild cases.

Back pain

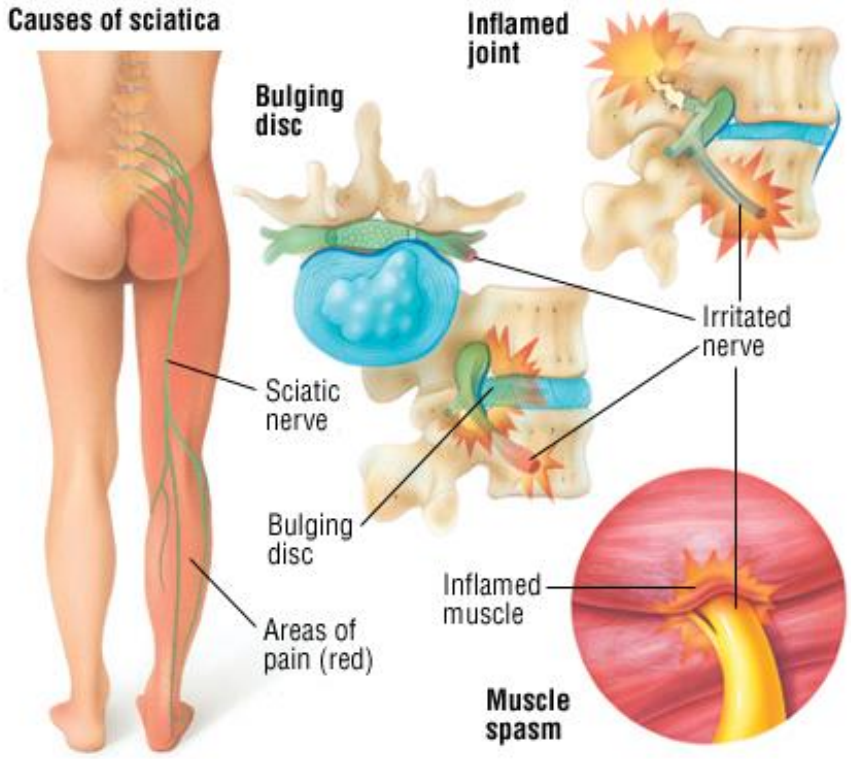
- Lower back pain affects 60–80% of people at some stage in their lives and is often recurrent.

- Non-serious acute back problems need to be treated early, with mobilisation and exercise thought to be particularly important in the prevention of chronic low back pain.

- Acute back pain is generally regarded as lasting less than 6 weeks, subacute for 6–12 weeks and chronic longer than 12 weeks.

- The main cause is a strain of the muscles or other soft structures (e.g. ligaments and tendons) connected to the vertebrae.

- Sometimes it is the cushion between the bones (intervertebral disc) which is strained and which bulges out (herniates) and presses on the nearby nerves (as in sciatica).



- Lower back pain that is not too severe or debilitating and comes on after gardening, awkward lifting or bending may be due to muscular strain (lumbago) and appropriate advice may be given by the pharmacist.

- Bed rest is not recommended for simple low back pain.

- The emphasis is on maintaining activity, supported by pain relief.
- There is evidence from RCTs that advice to stay active results in increased rate of recovery, reduced pain, reduced disability and reduced time off work compared with advice to rest.
- If there is no improvement within 1 week, referral is advisable.

- Pain that is more severe, causing difficulty with mobility or radiating from the back down one or both legs, is an indication for referral.

- A slipped disc can press on the sciatic nerve (hence sciatica), causing pain and sometimes pins and needles and numbness in the leg.

- Low back pain associated with any altered sensation in the anal or genital area or bladder symptoms requires urgent referral to the GP.

- Back pain that is felt in the middle to upper part of the back is less common, and if it has been present for several days, it is best referred to the doctor.

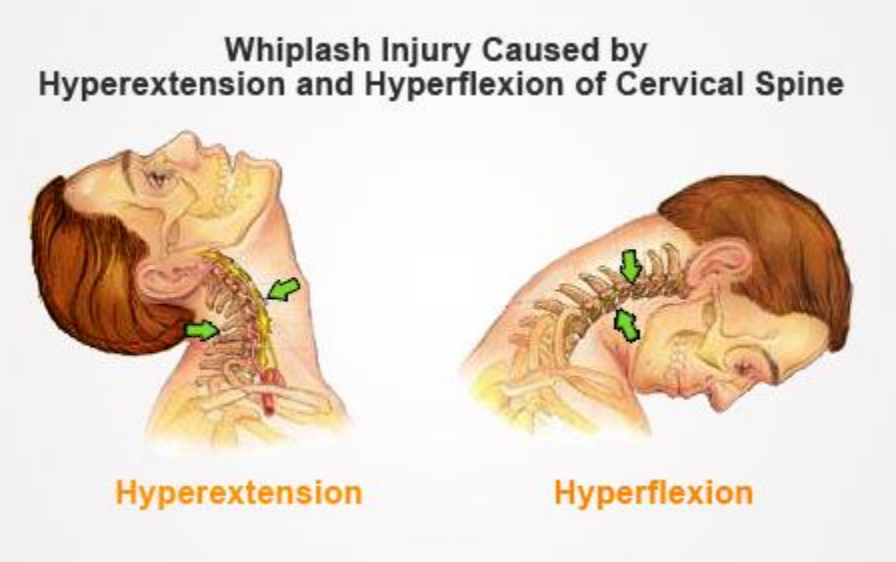
- Kidney pain can be felt in the back, to either side of the middle part of the back just below the ribcage (loin area).

- If the back pain in the loin area is associated with any abnormality of passing urine (discolouration of urine, pain on passing urine or frequency), then a kidney problem is more likely.

Repetitive strain disorder

- Repetitive strain disorder covers several arm conditions, mainly affecting the forearm.
- Tenosynovitis is the term that has been used to refer to conditions around the wrist, which sometimes occur in computer operators.
- The condition presents as swelling on the back of the forearm.
- There may be crepitus (a creaking, grating sound) when the wrist is moved.
- Sometimes the symptoms disappear on stopping the job, but they may return when the work is restarted.

Whiplash injuries



- Neck pain following a car accident can last for a long period – up to 2 years in some cases.
- Good posture is important and keeping both the back and the head straight has been shown to reduce pain and help recovery.
- A physiotherapist's advice would probably include the recommendation to sleep with only one pillow to facilitate extension of the neck.

Medication

- *Prescribed medication*
- Sufferers, for example, of RA or chronic back pain are likely to be taking painkillers or NSAIDs prescribed by their doctor.

- Although the recommendation of a topical analgesic would produce no problems in terms of drug interactions, if the patient is in considerable and regular pain despite prescribed medication, or the pain has become worse, referral back to the doctor would be appropriate.

- *Side effects.*
- In elderly patients, it should be remembered that falls may occur as a result of postural hypotension, dizziness or confusion as adverse effects from drug therapy.

- Any elderly patient reporting falls should be carefully questioned about current medication, and the pharmacist should contact the doctor if an adverse reaction is suspected.

When to refer

Suspected fracture

- Possible adverse drug reaction: falls or bruising
- Head injury
- Medication failure
- Arthritis
- Severe back pain
- Back pain (and/or pins and needles/numbness) radiating to leg
- Back pain in the middle/upper back (especially in the older patient)

Treatment timescale

- Musculoskeletal conditions should respond to treatment within a few
- days. A maximum of 5 days treatment should be recommended, after
- which patients should see their doctor.

Management

- A wide range of preparations containing systemic and topical analgesics is available
- The oral analgesic of choice would usually be an NSAID, such as *ibuprofen,* provided there were no contraindications.
- Taking the analgesic regularly is important to obtain full effect and the patient needs to know this.
- Topical formulations include creams, ointments, lotions, sticks and sprays.

Topical analgesics

- There is a high placebo response to topical analgesic products.

- This is probably because the act of massaging the formulation into the affected area will increase blood flow and stimulate the nerves, leading to a reduction in the sensation of pain.

Counterirritants and rubefacients

- Counterirritants and rubefacients cause vasodilatation, inducing a feeling of warmth over the area of application.
- Counterirritants produce mild skin irritation, and the term rubefacient refers to the reddening and warming of the skin.
- The theory behind the use of topical analgesics is that they bombard the nervous system with sensations other than pain (warmth and irritation) and this is thought to distract attention from the pain felt.
- Simply rubbing or massaging the affected area produces sensations of warmth and pressure and can reduce pain.

- Massage is known to relax muscles and it has also been suggested that massage may disperse some of the chemicals that are responsible for producing pain and inflammation by increasing the blood flow.

- The mode of action of topical analgesics is therefore twofold:
  - one effect relying on absorption of the agent through the skin,
  - while the other on the benefit of the massage.

- There are many proprietary formulations available, often incorporating a mixture of ingredients with different properties.
- Most pharmacists and customers have their own favourite product.
- For customers who live alone, a spray formulation, which does not require massage, can be recommended for areas such as the back and shoulders.
- Generally, patients can be advised to use topical analgesic products up to four times a day, as required.

Methyl salicylate

- Methyl salicylate is one of the most widely used and effective counterirritants.
- Wintergreen is its naturally occurring form; synthetic versions are also available.
- The agent is generally used in concentrations between 10% and 60% in topical analgesic formulations.

Nicotinates

- *Nicotinates* (e.g. *ethyl nicotinate* and *hexyl nicotinate)* are absorbed through the skin and produce reddening of the skin, increased blood flow and an increase in temperature.

- *Methyl nicotinate* is used at concentrations of 0.25–1% to produce its counterirritant and rubefacient effects.

- There have been occasional reports of systemic adverse effects following absorption of *nicotinates,* such as dizziness or feelings of faintness, which are due to a drop in blood pressure following vasodilatation.

- However, systemic adverse effects are rare, seem to occur only in susceptible people and are usually due to use of the product over a large surface area.

Menthol

- *Menthol* has a cooling effect when applied to the skin and acts as a mild counterirritant.

- Used in topical formulations in concentrations of up to 1%, *menthol* has antipruritic actions, but at higher concentrations it has a counterirritant effect.

- When applied to the skin in a topical analgesic formulation, *menthol* gives a feeling of coolness, followed by a sensation of warmth.

Capsaicin/capsicum

- Capsicum preparations, for example, *capsaicin capsicum* and *capsicum oleoresin,* produce a feeling of warmth when applied to the skin.
- They do not cause reddening because they do not act on capillary or other blood vessels.
- Studies in patients with arthritis have also shown effectiveness.
- *Capsaicin* has few side effects. A small amount needs to be rubbed well into the affected area.
- Patients should always wash their hands after use; otherwise they may inadvertently transfer the substance to the eyes, causing burning and stinging.

Topical anti-inflammatory agents

- Topical gels, creams and ointments containing NSAIDs are widely used in the United Kingdom.
- Clinical trials have shown them to be as effective as oral NSAIDs in relieving musculoskeletal pain.
- There have been no comparative trials with counterirritants and rubefacients.

- *Ibuprofen, felbinac, ketoprofen* and *piroxicam* are available in a range of cream and gel formulations.

- The drug is absorbed into the bloodstream and appears to become concentrated in the affected tissues.

- Topical NSAIDs (except *benzydamine)* should not be used by patients who experience adverse reactions to *aspirin,* such as asthma, rhinitis or urticaria.

- Because of the higher likelihood of *aspirin* sensitivity in patients with asthma, caution should be exercised when considering recommending a topical NSAID.

Heparinoid and hyaluronidase

- *Heparinoid* and *hyaluronidase* are enzymes that may help to disperse oedematous fluid in swollen areas.
- A reduction in swelling and bruising may therefore be achieved.
- Products containing *heparinoid* or *hyaluronidase* are used in the treatment of bruises, strains and sprains.

Glucosamine and chondroitin

- There is some evidence that *glucosamine sulphate* and *chondroitin* improve the symptoms of OA in the knee and that *glucosamine* may have a beneficial structural effect on joints.

- The research shows that *glucosamine* may be as effective as NSAIDs in reducing pain. However, the quality of some trials is poor.

- Most trials used a daily dose of 1500 mg of *glucosamine.* Adverse effects are uncommon and include abdominal discomfort and tenderness, heartburn, diarrhoea and nausea.

- There is insufficient information about pharmaceutical quality and actual content of *glucosamine* to enable pharmacists to make informed choices between available products.

- Some are produced from natural sources (the shells of crabs and other crustaceans), while others are synthesized from glutamic acid and glucose.

- A licensed *glucosamine* product became available in 2007, initially limited to prescription use only.

- The 2008 NICE guideline suggested that patients wanting to try OTC glucosamine could be helped by advice on how to evaluate their pain before starting and to review at 3 months.

Practical points

- *First-aid treatment of sprains and strains*
- The priority in treating sprains and soft tissue injuries is to
  - apply compression,
  - cooling and
  - elevation
- immediately, and this combination should be maintained for at least 48 h.

- Although cooling has generally been the priority in the past, latest research evidence suggests that compression is the first priority.

- The aim of the treatment is to prevent swelling.
- If swelling is not minimised, the resulting pain and pressure will limit movement, lead to muscle wasting, cause pain and delay recovery.
- Ice packs by themselves will reduce metabolic needs of the tissues, reduce blood flow and result in less tissue damage and swelling, but will not prevent haemorrhage.

- The area should be wrapped around with a cotton wool pad and held in place with a crepe bandage.

- Once the injury has been protected and a compression bandage applied, an ice pack should be used.

- Its function is to produce vasoconstriction, thus preventing further blood flow into the injured area from the torn capillaries and, in turn, minimising further bruising and swelling.

- Proprietary cold packs are available, but in emergencies various items have been brought into service. For example, a bag of frozen peas is an excellent cold pack for the knee or ankle because it can be easily applied and wrapped around the affected joint.

- The affected limb should be elevated to reduce blood flow into
- the damaged area by the effect of gravity. This will, in turn, reduce
- the amount of swelling caused by oedema. Finally, the injured limb
- should be rested to facilitate recovery. The acronym RICE is a useful
- aide-memoire for the treatment of sprains and strains.
- **R** – Rest
- **I** – Ice/cooling
- **C** – Compression
- **E** – Elevation

Heat

- The application of heat can be effective in reducing pain.
- However, heat should never be applied immediately after an injury has occurred, because heat application at the acute stage will dilate blood vessels and increase blood flow into the affected area – the opposite effect to what is needed.
- After the acute phase is over (1 or 2 days after the injury), heat can be useful.
- The application of heat can be both comforting and effective in chronic conditions such as back pain.
- Patients can use a hot-water bottle, a proprietary heat pack or an infrared lamp on the affected area.
- Heat packs contain a mixture of chemicals that give off heat and the packs are disposable. Keeping the joints and muscles warm can also be helpful and wearing warm clothing, particularly in thin layers that can retain heat, is valuable.

Prevention of recurrent back pain

- Good posture, lifting correctly, a good mattress and losing excess weight can help.

- Paying attention to posture and body awareness is important, and classes to relearn good posture may help some patients (e.g. Feldenkrais method and Alexander technique).

- The additional pressure on the spine caused by excess weight may lead to structural compromise and damage (e.g. injury and sciatica).

- The lower back is particularly vulnerable to the effects of obesity, and lack of exercise leads to poor flexibility and weak back muscles.

Irritant effect of topical analgesics

- Preparations containing topical analgesics should always be kept well away from the eyes, mouth and mucous membranes and should not be applied to broken skin.

- Intense pain and irritant effects can occur following such contact.

- This is due to the ready penetration of the irritant topical analgesics through both mucosal surfaces and direct access via the broken skin.

- When preparations are applied to thinner and more sensitive areas of the skin, irritant effects will be increased and hence, the restrictions on the use of topical analgesics in young children recommended by some manufacturers for their products.

- Therefore, the manufacturer’s instructions and recommendations should be checked.

- Sensitisation to counterirritants can occur; if blistering or intense irritation of the skin results after application, the patient should discontinue use of the product.

Case 1

- Charan Gogna, a regular customer in his late 20s, comes into your
- pharmacy. He asks what you would recommend for a painful lower
- back following his weekend football game; he thinks he must have
- pulled a muscle and says he has had the problem before in the same
- spot. On questioning, you find out that he has not taken any painkillers
- or used any treatment. He is not taking any other medicines.

Case 2

- A middle-aged man comes into your shop. He is wearing a tracksuit
- and training shoes and asks what you can recommend for an aching
- back. On questioning, you find out that the product is, in fact, required
- for his wife, who was doing some gardening yesterday because the
- weather was fine and who now feels stiff and aching. The pain is in
- the lower back and is worse on movement. His wife is not taking any
- medicines on a regular basis but took two *paracetamol* tablets last
- night, which helped to reduce the pain.

Case 3

- An elderly female customer who regularly visits your pharmacy asks
- what would be the best thing for ‘rheumatic’ pain, which is worse now
- that the weather is getting colder. The pain is in the joints, particularly
- of the fingers and knees. On further questioning, you find out that she
- has suffered from this problem for some years and that she sees her
- doctor quite regularly about this and a variety of other complaints.
- On checking your patient medication records, you find that she is
- taking five different medicines a day. Her regular medication includes
- a combination diuretic preparation, sleeping tablets and analgesics for her arthritis (*co-dydramol* plus an NSAID). The joint pains seem to
- have become worse during the recent spell of bad weather.