

## **ACUTE PAIN MANAGEMENT PART 2 ASSESSMENT AND MANAGEMENT ANAESTHESIA TUTORIAL OF THE WEEK 295**

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### **QUESTIONS**

Answer the following questions true or false:

1. Poor recognition and management of acute pain occurs commonly
2. Acute pain has no bearing on post-operative complications
3. Pain increases anabolic hormone production
4. The severity of acute post-operative pain may have been suggested as a risk factor for the development of chronic pain
5. In general, pain causes an increase in parasympathetic nervous activity
6. Nociception, and a patient's perception of pain are the same thing
7. If possible, pain should be assessed with the patient active
8. Pain should be assessed regularly during treatment
9. Patient comfort only relates to analgesia
10. Adverse effects of analgesic drugs need not be monitored during treatment
11. Intramuscular injection provides reliable drug absorption
12. Continuous IV opioid infusion carries the highest risk of serious adverse effects
13. Patient-controlled analgesia devices are only used to deliver opioid medication
14. Multi-modal analgesia aims to reduce opioid doses and adverse effects
15. Acute pain service teams have clinical responsibilities only

### **INTRODUCTION**

Acute pain can be described as that which occurs as the consequence of injury or disease, and resolves with healing. Chronic pain can then be defined as pain which persists beyond the time of healing. Acute pain is encountered in a wide variety of clinical situations, including post-operative patients, victims of trauma, and medical illness. This can make reporting of the overall incidence of acute pain very difficult, and estimates may underrepresent the problem.

However, the importance of effective pain management cannot be overstated. Acute injury and associated pain can lead to pathological consequences in both the short, and long term.

Several studies have shown that poor recognition of acute pain and inadequate pain management occurs commonly. The reasons for this persisting inadequacy are likely to be multifactorial and may include failure in assessment, underuse of effective analgesic techniques, poor protocol availability or application, and insufficient practitioner education.

This tutorial aims to:

- Explain the need for effective management of acute pain
- Describe the role and method of assessing acute pain
- Discuss modern analgesics and their application

## **WHY IS EFFECTIVE PAIN MANAGEMENT IMPORTANT?**

Acute pain is not just an unpleasant experience for the patient. It may have some bearing on patient outcomes such as post-operative complications and length of hospital stay.

Pain is thought to play a major part in the activation of the 'stress' response to injury. This leads to an increase in sympathetic nervous system activity, catabolic hormone release, impairment of immune function and increased coagulability.

The manifestations of this response can be seen in several systems, and can lead to complications detrimental to a patient's health.

Activation of the sympathetic nervous system can increase cardiovascular parameters such as heart rate, blood pressure and systemic vascular resistance. This increases workload, and therefore, myocardial oxygen demand. If oxygen demand exceeds delivery, which may itself be compromised by existing cardiopulmonary disease, then myocardial ischaemia or infarction may ensue.

Furthermore, changes in regional blood flow may decrease supply to the skin, and impair wound healing.

Immobility due to pain, and increased coagulation caused by the 'stress' response, can predispose the patient to thromboembolic complications.

Severe pain in the upper abdomen or chest can impair respiratory function and compromise the patient's ability to clear sputum and secretions. This may lead to atelectasis, hypoxaemia, and lower respiratory tract infections.

Increased levels of catabolic hormones can lead to increased protein breakdown and hyperglycaemia; the former may impair wound healing.

Immobility may also lead to muscle wasting, particularly in the elderly, and this may impair rehabilitation.

Unrelieved acute pain can have significant psychological consequences ranging from the impairment of sleep to the development of post-traumatic stress disorder (PTSD). Pain is a multi-factorial experience and is influenced by previous pain experiences, beliefs, thought processes, mood, culture and coping skills. Psychological factors may influence both the patient's response to pain, and to pain therapy, and so should be considered when managing acute pain. However, this aspect is often neglected.

Last, but certainly not least, is the possible development of chronic pain, from the acute pain state. Current thinking regards acute and chronic pain as a continuum, and this idea is reinforced by the progression from the former to the latter. A considerable percentage of surgical or trauma cases develop chronic pain states and the severity of acute post-operative pain in the first hours after surgery has been suggested as a significant risk factor. Therefore, effective acute pain management may play an important role in preventing the development of Persistent Post-Surgical Pain (PPSP).

## **ASSESSMENT OF PAIN**

Pain is a subjective experience, and its severity can be influenced by many factors including previous experience of pain, cultural background, coping mechanisms, fear, anxiety and depression. The patient's perception of pain therefore, is different from nociception.

The type of acute pain, and its cause, may affect the treatment chosen, and the response to this treatment. Acute pain may be nociceptive (somatic or visceral), neuropathic, or a combination of the two (mixed). Consideration of pain in terms of its nature and relationship to injury facilitates effective acute pain management.

From this, it can be realised that assessing pain is as challenging as it is important. An accurate, reproducible means of assessing pain is essential for successful management on an institutional scale.

Although individual experience of pain and response to treatment may vary greatly, the means of assessment must be applicable to all.

The main components of such an assessment include a pain history, a measure of severity and treatment response, and ideally consideration should be given to the psychological factors that contribute to the pain experience.

### **Pain History**

A pain history should include the character, intensity, location, underlying cause, associated symptoms and current analgesic use. In addition, the patient's ideas and concerns in relation to pain, and their expectations with regard to analgesia should be elicited. This history can be repeated after treatment has begun to monitor progress.

### **Measurement**

Given the subjective nature of pain, its measurement through self-reporting would seem the most valid technique. Assessment of function also forms an important part of measuring pain.

A number of uni-dimensional scales are available for the measurement of acute pain. The categorical scales include verbal (verbal descriptor scale VDS), numerical (Verbal Numerical Rating Scale VNRS) and visual (Visual Analogue Scale).

The VNRS is most commonly employed. This system uses a scale of zero to ten. A score of zero reflects 'no pain', whilst a score of ten describes the 'worst imaginable pain'. The patient is asked to score their pain using this scale. This scale does not require any equipment, and is easily repeatable. However, the patient must be able to understand the scoring system and communicate their answer.

The VAS is similar to the VNRS. A 10cm line with descriptors such as 'no pain' and 'worst pain imaginable' at opposite ends is shown to the patient. The patient is asked to mark on the line the point that best reflects their level of pain. The distance from 'no pain' to this mark is then measured in millimetres, giving a VAS score of 1-100. (see figure 1 below).

This scale requires a small amount of equipment, but can be adapted to measure other variables such as treatment side effects or pain relief.

**Figure 1.** Visual Analogue Scale (VAS)



The VDS is a quick and simple scale that uses different words to rate the severity of pain. An example would be a four-point scale containing the words 'no pain', 'mild pain, moderate pain, and 'severe pain'.

### **Assessment of Functional Pain**

If possible, pain should also be assessed with the patient active. The exact nature of the activity will vary depending on the patients circumstances and pre-existing disability. The functional activity score (FAS) ranks impairment caused by pain into three categories:

- A – no limitation,
- B – mild limitation,
- C – significant limitation

The resulting score is activity specific such that an appropriate activity may be identified and scored for a particular patient. Examples are deep inspiration in a patient following upper abdominal surgery, or walking in a patient following lower limb joint replacement.

### **Adverse effects**

In order to deliver effective yet safe analgesia, any on-going assessment of pain should include the identification of adverse effects associated with the analgesic drugs employed. Examples of such

effects would be nausea, vomiting, sedation or respiratory depression associated with opioids, or the possible hypotension or neurological injury that can occur with epidural anaesthesia.

Pain has been described as ‘the fifth vital sign’, a moniker that reflects the need for regular assessment and measurement during the treatment regimen. In this way, the response to treatment, and any incumbent adverse effects, can be gauged, and the regimen tailored appropriately.

Finally, it is important for both clinician and patient to realise that complete pain relief may not be possible, and that the aim is to establish patient comfort. This notion of comfort will vary significantly between patients and encompasses not only pain scores, but also side effects of analgesic drugs and functional ability.

## TREATMENT OF ACUTE PAIN

Acute pain can now be treated by a large variety of analgesic agents, applied in many different ways, in hospital or in the community. This allows the clinician, in consultation with the patient, to tailor an analgesic regime that is specific to that patient’s pain, analgesic requirements, and individual circumstances.

In order to treat pain effectively, several factors should be considered and understood. In addition to the history of the pain, its severity, cause, and effect upon the patient, thought should be given to the type of analgesic agent to be used, the most suitable method of delivery, and the frequency required. Consideration should also be given to the resources available for administration of these drugs, and the continued assessment of their beneficial and adverse effects.

## METHOD OF DELIVERY

Factors influencing the chosen method of delivery should include the patient’s preference, physical condition, aetiology and nature of their pain, and the characteristics of the chosen administration technique.

**Oral** administration is the most commonly recommended route. It is simple, cost-effective, well-tolerated and can be self-administered. However, onset time can be slow and this route does require a functioning gastro-intestinal tract.

The **rectal** route offers an alternative to the oral route, but offers unreliable absorption and requires specific patient consent if not self-administered.

The **intramuscular** route has been used on hospital wards as an alternative to the intravenous route, particularly for opioid medication, in the belief that it is safer. This belief is not supported by the literature. Drug absorption can be unpredictable, particularly in states of muscle hypoperfusion. It is also painful for the patient, and carries an infection risk.

An alternative to the intramuscular route is the **subcutaneous** route, which has been shown to be as effective as the intramuscular route in delivering opioid drugs, and is better tolerated by patients. It does however, only provide slow onset pain relief and may require a subcutaneous cannula to be used.

The preferred parenteral route when managing severe acute pain is the **intravenous** route. This route provides the fastest onset, and so doses can be given in a titratable fashion. This route requires a higher level of staff training, an intravenous cannula with subsequent infection risk, and carries the highest risk of adverse drug effects.

Other routes of administration that are commonly utilised for delivery of analgesic medication include the **transdermal** and **transmucosal** routes.

The former is commonly used to administer opioids in the management of both chronic and cancer pain. Unfortunately, the specific kinetics of slow onset, delayed absorption after patch removal, lengthy half-life and thus slow offset, makes this route inappropriate for the management of acute pain.

The transmucosal route includes sublingual, buccal or intranasal administration. There are a considerable number of preparations of fentanyl available for intra-nasal and sublingual use. However, they have been approved only for the management of breakthrough pain in patients with chronic or cancer pain. Transmucosal ketamine however, can be used for acute pain in the emergency department, and for procedural pain such as burns dressings changes.

### **Patient-Controlled Analgesia (PCA)**

This method of delivery was developed to overcome the variability in individual dose requirements and provides the added benefit of allowing the patient a certain degree of control over their pain management.

Analgesic drugs are delivered via a sophisticated infusion pump that can be activated by the patient to deliver a pre-determined bolus. These “demand” boluses are controlled by a lockout period, during which the device does not respond to further demands. This system acts as a control to prevent adverse effects or overdosing. As such, this allows the patient to adjust their own level of analgesia to their own comfort level, balanced against an individually acceptable severity of side effects.

The most common application of PCA is with an opioid drug such as morphine or fentanyl. Its use has been shown to improve analgesia and patient satisfaction when compared to more conventional methods of administration.

Protocols are standardised, but adjustable, as patients pain requirements and sensitivity to opioid medication may vary. The use of this device requires regular review from trained staff that can alter the PCA pump’s program to provide good analgesia for each patient.

Complications or adverse effects can arise through operator or patient error, or related equipment issues. Incorrect prescribing, programming or drug dilution can result in adverse and even fatal outcomes. Therefore, standardised drug concentrations and good staff education and training are essential for the safe employment of this technique.

Opioid PCA still carries a small risk of respiratory depression, albeit a smaller one than continuous IV infusion, or intermittent IM boluses. Other side effects include those common to opioid use and are not necessarily reduced by PCA use.

Drug delivery must only be controlled by the patient and not by a family member or unauthorised nursing staff. Significant adverse events have been reported due to such “PCA by proxy” use.

The concept of PCA can be applied to regional anaesthesia techniques such as epidural or nerve catheters, and to other routes of administration. Titration of oral analgesia to patient demand has been shown to be highly effective. Recently, a transdermal PCA delivery system, known as “iontophoretic transdermal delivery” has been developed to deliver fentanyl. It has been shown to be as effective and as safe as intravenous morphine PCA.

## **OPIOID ANALGESIA**

Systemic opioids are the treatment of choice in the management of moderate to severe acute pain. This class of drug comprises a large range of different agents and formulations. Morphine is considered the “gold standard” against which new opioids are compared.

Every agent acts by binding and activating opioid receptors within and outside the central nervous system. The mu-receptor (MOR) is considered the most important, and its activation produces both analgesia and unwanted side effects. Delta and Kappa opioid receptors may also be activated by opioid drugs, and contribute to these effects.

The unwanted side effects of opioid drugs are numerous and include nausea, vomiting, sedation, pruritus, reduced gastrointestinal motility or constipation, urinary retention and, occasionally, dysphoria. The most serious, but rare consequence is respiratory depression, which can lead to hypoxia and even death if left untreated.

Traditionally, opioids have been administered in hospital by the oral, subcutaneous and intramuscular route. However, more recently the intravenous route has been utilised in conjunction with both PCA and local protocols.

### **Oral opioids**

The oral route of administration is considered the route of choice in the absence of severe acute pain or any contraindications. It is well tolerated by most patients and can be easily continued in the outpatient setting. Oral opioids are as effective as parenteral opioids when given in appropriate doses.

Examples of oral opioids include codeine, tramadol, morphine, oxycodone and hydromorphone.

Codeine and tramadol are prescribed for the management of mild to moderate acute pain. Tramadol is a centrally-acting analgesic which works through other mechanisms in addition to mu-receptor activation. It has a lower risk of respiratory depression, constipation and sedation and is available as an immediate-release (IR) or sustained-release (SR) formulation. This allows more flexibility when prescribing dose and regimen.

Oral morphine and its alternative oxycodone are also available in IR and SR forms. The IR form can be employed in the early period of treatment and for breakthrough pain. Once pain is better controlled, conversion to the SR form can produce a more manageable and flexible regimen for the patient.

### **Intramuscular/Subcutaneous Opioids**

The intramuscular route has, until recently, been the mainstay of post-operative opioid administration for pain. It had become the norm for a standard dose, usually 10 milligrams (mg) every four hours, to be prescribed for almost every patient. This approach risked leaving some patients in pain whilst exposing others to the more serious side effect of respiratory depression. Current recommendation is to avoid this route if possible. Should this route be selected, then dosing should be based on age, weight and medical condition, whilst consideration should be given to a dose interval of one to two hours as required to increase flexibility.

Subcutaneous opioids can be administered intermittently or as a continuous infusion via an indwelling cannula. Absorption is similar to the IM route, and is favoured by patients. Morphine and hydromorphone are used preferentially as they cause little irritation to the skin.

### **Intravenous opioids**

Intravenous opioids can be given as bolus doses, continuous infusion, or via a patient-controlled-analgesia device. This is the route of choice for severe acute pain, particularly following surgery. This route carries a greater risk of respiratory depression with inappropriate dosing and so close monitoring and safety precautions should accompany its use.

Intermittent IV boluses provide a titratable, rapid, predictable and observable response to opioid medication and require close monitoring of pain scores and vital functions, so that repeat boluses may be given safely.

Continuous intravenous infusion avoids peaks and troughs of drug concentration in the blood but requires the use of reliable infusion devices, with frequent assessment of pain and adverse effects, to ensure the correct infusion rate for good analgesia. This method carries the highest risk of respiratory depression of all of the parenteral routes.

## **NON-OPIOID/ADJUVANT ANALGESIC DRUGS**

Several drugs other than opioids or local anaesthetic are used in the management of acute pain, either as an adjunct, or as the sole treatment.

### **Paracetamol/acetaminophen**

Paracetamol is often the first analgesic agent prescribed in the treatment of acute pain, and is one of the most widely used drugs in the world. It is both analgesic and anti-pyretic, but not anti-inflammatory.

Its pharmacological mechanism of action is not well understood, with proposed sites of action including central prostaglandin inhibition in the hypothalamus, modulation of the serotonergic anti-nociceptive system, and antagonism of the NMDA receptor.

Paracetamol's popularity is a result of its relative effectiveness, high tolerability, and minimal risk of side effects. It can be administered via the oral, rectal or intravenous route. It reduces opioid requirements in post-operative pain and is recommended as the first-line analgesic in the treatment of mild to moderate acute pain. Although the adverse effect profile is minimal, paracetamol is hepatotoxic if taken in excessive doses. Overdose has led to fulminant liver failure and death.

### **Non-steroidal anti-inflammatory drugs (NSAIDs)**

NSAIDs and the more recently developed COX-2 inhibitors (coxibs) are effective analgesics in the management of mild to moderate acute pain.

A range of NSAIDs provides a spectrum of analgesic, anti-inflammatory, anti-pyretic and anti-platelet effects, which varies from drug to drug. The mechanism of action centres on the inhibition of the enzyme cyclo-oxygenase (COX), and the subsequent reduction in inflammatory prostaglandins, prostacyclins and thromboxane A<sub>2</sub>, produced at the site of injury. These chemical mediators are linked to platelet function and have protective roles to play both in the intestinal mucosa and kidney; most adverse effects of these drugs are due to these mechanisms.

Non-selective NSAIDs inhibit both isoforms of the enzyme, COX-1 and COX-2, whilst the coxibs selectively inhibit COX-2. With regard to efficacy, both groups of drugs are similar. They can be administered via oral, rectal and intravenous routes, or even through the topical application of a gel.

Adverse effects include gastro-intestinal irritation and ulceration, renal toxicity, bronchospasm, impaired platelet function, headaches, dizziness, and even cardiac failure. Many of these effects are related to the inhibition of the COX-1 iso-enzyme. It follows therefore, that the coxibs have a better adverse effect profile than non-selective NSAIDs. Coxibs do not impair platelet function, do not cause bronchospasm in patients with aspirin-induced asthma, or increase the risk of gastric ulceration in short-term use. Their effect on renal function is uncertain and so should be used with care in those with pre-existing renal impairment, hypovolaemia, hypotension, or concurrent nephron-toxic medication.

Cardiovascular morbidity attributed to the use of non-selective NSAIDs and coxibs is the source of on-going debate. Whilst the short-term use of coxibs after non-cardiac surgery seems to be safe in this respect, their use after coronary artery bypass surgery is contraindicated. Finally, there is concern that both classes of drugs impair bone healing following orthopaedic surgery. Whilst this has not been shown conclusively, preferential short-term use of coxibs is recommended, and only in the absence of steroid use, smoking, or existing non-union of bone.

Overall, these compounds play an important role in the management of acute pain, as a component of multi-modal analgesia, and in the treatment of pain with an inflammatory component.

### **Nitrous Oxide**

Entonox is a 50:50 mixture of oxygen and nitrous oxide. This allows for safe delivery of the analgesic inhalational anaesthetic nitrous oxide in a sub-anaesthetic concentration. To enhance safety, it is usually given by self-administration via a face-mask or one-way demand mouth piece. Its rapid onset and short duration of action make this agent very useful for pain control in short procedures such as dressing changes, dental surgery, joint relocation and labour.

### **$\alpha$ -2 receptor agonists**

$\alpha$ -2 adreno-receptors are found on peripheral sensory nerve terminals, in the spinal cord and brain stem. Activation of these receptors potentiates the descending pathways in the spinal cord that inhibit pain transmission.

The  $\alpha$ -2 agonist most commonly used in clinical practice is **clonidine**.

Administered via oral, IM, IV, SC routes, this drug has been found to reduce opioid requirements whilst improving pain relief. Side effects include sedation, hypotension, bradycardia, dizziness, dry mouth and decreased bowel motility.

### **N-Methyl-D-Aspartate (NMDA) receptor antagonist drugs**

Persistent and repetitive input of painful stimuli from the periphery to the spinal cord can produce spinal cord neuron hyper-excitability. This process, referred to as central sensitisation, manifests as (*hyperalgesia*), and pain to non-noxious stimuli (*allodynia*). Central sensitisation occurs in all patients after acute injury, but appears to be reversed as the injury heals and acute pain settles. However, in some patients the condition becomes chronic.

The NMDA receptor is believed to play an important role in these processes, and indeed in pain transmission for many different types of pain. Antagonists of this receptor include the anaesthetic agent, Ketamine.

Ketamine is usually administered as an adjunct to opioid analgesia in the setting of acute pain, and can be given via oral, IV, SC, sublingual or transdermal routes. When used with an opioid PCA, it reduces opioid consumption, improves pain control and reduces nausea and vomiting. Ketamine also has a specific role in the management of procedural pain, neuropathic pain, the opioid-tolerant patient, and in pain that is poorly responsive to opioids.

Adverse effects of ketamine include psychotomimetic features such as dreaming, nightmares, hallucinations, agitation and delirium. These effects often lessen with co-administration with a benzodiazepine. Ketamine is an anaesthetic agent, and so large doses should be administered with care, by appropriately trained staff using appropriate monitoring equipment.

### **Calcitonin**

This peptide hormone plays a role in calcium homeostasis in the body. Salmon calcitonin, which has a higher potency than human calcitonin, has been shown to be effective in the treatment of acute pain caused by osteoporotic related vertebral fractures. It also reduces acute phantom limb pain. It is usually administered by IV infusion or SC injection and may cause nausea, vomiting, flushing and drowsiness.

### **Anticonvulsants and Antidepressants**

Anticonvulsants and antidepressants have been shown to be effective in a variety of chronic neuropathic pain states, and may also be used to treat acute forms of neuropathic pain, such as sciatica. The antidepressant most commonly used is the tricyclic amitriptyline, with analgesic effect seen after some days of a low dose regimen. These compounds inhibit the re-uptake of monoamines, such as norepinephrine and serotonin, into nerve terminals and modulate pain sensation via descending inhibitory pathways. The anticholinergic effects of TCAs account for the adverse effects of dry mouth, blurred vision, tachycardia, constipation and urinary retention associated with these drugs.

Serotonin-Noradrenaline Reuptake Inhibitors (SNRIs) such as duloxetine and venlafaxine are alternatives with a potentially better adverse event profile.

The  $\alpha$ -2- $\delta$  ligands gabapentin and pregabalin, although mostly used to treat neuropathic pain, are increasingly being used as a pre-operative medication. Their beneficial effects arise from their ability to reduce the central sensitisation of pain pathways that occurs after injury, while being anxiolytic at the same time. These two drugs have been shown to reduce post-operative pain, opioid requirements and opioid-related side effects. However, an ideal dosing regimen to achieve maximum benefit but avoid untoward effects (dizziness, drowsiness, sedation) is unknown. If given for longer periods peri-operatively, they may also prevent the development of persistent or chronic post-surgical pain states.

## **REGIONAL ANAESTHESIA**

Detailed description of regional anaesthetic techniques is beyond the scope of this article, but procedures such as epidural or spinal anaesthesia, peripheral nerve blocks and catheters can play a very effective role in acute pain management.

In essence, regional anaesthesia involves the blockade of pain transmission from the peripheral site of pain to the central nervous system through the targeted deposition of local anaesthetic agents and analgesic agents around individual nerves, nerve plexi, or the spinal cord. These techniques are commonly employed for treating post-surgery pain, but also have a role for treating other forms of

acute pain. They have been shown to improve pain scores post-operatively, reduce opioid requirements and adverse effects, and may aid rehabilitation.

Such procedures are not without risk of complications and thus should be performed by a skilled clinician, usually an anaesthetist, and require follow-up to detect complications, manage infusions, and ensure quality control.

## **MULTI-MODAL ANALGESIA**

Knowledge of pain pathways and mechanisms has supported the development of a variety of drugs that alleviate pain through different pharmacological action. From this, the modern concept of balanced or multi-modal analgesia has evolved. This approach advocates the use of more than one class of drug, with or without a regional anaesthetic technique, to provide superior analgesia whilst reducing individual drug doses and drug-related side effects.

This technique is often realised through the combination of opioid analgesics with non-opioid analgesics, or regional anaesthetic techniques, to lessen the required opioid dose. This strategy can mean better pain relief with fewer unwanted opioid effects such as nausea, vomiting or sedation. This concept is now widely accepted as the model for prescribing analgesics for acute pain management and is supported by a number of guidelines internationally.

A simple example of multimodal analgesia is the use of a non-steroidal anti-inflammatory drug (NSAID) with an opioid. The NSAID reduces the degree of inflammation and neural sensitisation at the site of injury. This peripheral action is complimented by the mu-receptor-mediated analgesia of the opioid acting on the central nervous system. This combination has been proven not only to produce improved analgesia, but also to reduce the incidence of opioid related adverse events through an opioid-sparing effect.

## **Acute Pain Service (APS)**

To address both the demand and need for effective acute pain management, the first anaesthesiology led acute postoperative pain service was developed in Seattle in 1986. This subsequently spawned similar services around the world.

Delivery of the APS involves a multidisciplinary team including anaesthetists, surgeons, physicians, nurses, pharmacists as well as physiotherapists, occupational therapists and other specialities as indicated by the patients underlying condition. This team takes on several clinical and organisational responsibilities including the education of staff and patients, delivery and supervision of current and new pain management techniques, research and audit

Whilst the introduction of acute pain services produces a reduction in pain scores and an improvement in the management of post-operative pain, it is as yet unclear as to whether this intervention reduces either the adverse effects of analgesia or post-operative morbidity and mortality.

## **SUMMARY**

Despite increased awareness of the importance of providing effective management of acute pain, there is still a significant deficit in its provision. Acute pain is not only unpleasant to experience, but may also have short and long term psychological and physiological consequences. Proper management should result in good analgesia and patient satisfaction. Early recognition and thorough assessment can provide the patient and clinician with sufficient information so that they may tailor an appropriate analgesic regimen and achieve this goal.

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## MCQ Answers

1. T
2. F
3. F
4. T
5. F
6. F
7. T
8. T
9. F
10. F
11. F
12. T
13. F
14. T
15. F