Principles of chronic pain management

Principles of chronic pain management

Non-pharmacological treatment This involves a multidisciplinary approach targeting the biopsychosocial model of health (Figure 23.8). Early assess - ment and engagement with physiotherapy and exercise are key contributors in successful management. Psychological inter - ventions such as counselling, cognitive behaviour therapy and mindfulness are recognised strategies for pain control. ‘Pain management prog rammes’ lay out a logical structure for this. - Pharmacological treatment Drugs in chronic non-malignant pain Paracetamol and NSAIDs are the mainstays of musculoskel - etal pain treatment. The tricyclic antidepressant drugs and anticonvulsant agents are often useful for the pain of nerve injury , although side e ff ects can prove troublesome and reduce compliance. Both pregabalin and gabapentin r educe sponta - neous neuronal activity by their action on the α δ subunit of the 2 calcium channel. They are now routinely used for managing - neuropathic chronic pain. In more severe and debilitating non-malignant chronic pain, opioid analgesic drugs are used in slow release oral preparations (morphine and oxycodone) and transcutaneous patches (fentanyl and buprenorphine). - - - s - -

Physical Genetic health vulnerabilities Biological Disability Drug Temperament effects IQ Mental Peers Social skills health Social Psychological Family relationships Coping skills School Trauma Family circumstances Self-esteem Figure 23.8 Biopsychosocial model of health.

Commonly used terms in chronic pain Tapentadol, with its dual action on the opioid and noradren aline (norepinephrine) selective reuptake inhibition pathway , may provide relief in patients with both a neuropathic and nociceptive element to their pain. Combinations of drugs often prove useful to achie ve the optimum of e ffi cacy with minimal side e ff ects. Treatment of pain dependent on sympathetic nervous system activity Even minor trauma and surgery (often of a limb) can provoke excessive sympathetic adrenergic activity , inducing vasocon striction and abnormal nociceptive transmission. This can lead to chronic burning pain, allodynia, trophic changes and resultant disuse. Management includes antineuropathic pain medications - (pregabalin, gabapentin, amitriptyline) as part of m ultimodal analgesia with a multidisciplinary pain management approach. This includes considerab le input from psychological services and targeted physiotherapy . Interventional treatment may include local anaesthetic injection of the stellate ganglion for upper limb symptoms. Percutaneous chemical lumbar sympa - thectomy with local anaesthetic is used for relief of rest pain in advanced ischaemic disease of the legs. Interventional pain management for chronic pain - Local anaesthetic and steroid injections can be e ff ective around an inflamed nerve and they reduce the cycle of constant pain transmission with consequent muscle spasm. Transforaminal

Term De /f_i nition Allodynia Pain due to a stimulus that does not normally provoke pain. Allodynia involves a change in the quality of a sensation, whether tactile, thermal or of any other sort Analgesia Absence of pain in response to stimulation that would normally be painful Central sensitisation Increased responsiveness of nociceptive neurones in the central nervous system to their normal or subthreshold afferent input. The net effect is that innocuous stimuli will be interpreted as painful Epidural space The space (or potential space) between the ligamentum /f_l avum (or vertebral wall) and the dura, just outside the spinal canal, extending from the foramen magnum to the sacrum. Leads and catheters may be placed in this space via a needle Hyperalgesia Abnormally heightened sensitivity to pain. For pain evoked by stimuli that usually are not painful, the term allodynia is preferred, while hyperalgesia is more appropriately used for cases with an increased response at a normal threshold or at an increased threshold Hypoalgesia Decreased sensitivity to painful stimuli. Hypoalgesia can be caused by exogenous chemicals such as opioids, as well as by chemicals produced by the body in phenomena such as fear- and exercise-induced hypoalgesia Intrathecal space The cerebrospinal /f_l uid- /f_i lled space around the spinal cord, protected by the dura mater, into which certain medicines may be delivered to achieve their most potent effect Nociception Sensory response to certain harmful or potentially harmful stimuli. Nociception triggers a variety of biological and behavioural responses and may also result in a subjective experience of pain Neuropathic pain Neuropathic pain is de /f_i ned as pain caused by a lesion or disease of the somatosensory nervous system Nociceptive pain Pain that arises from actual or threatened damage to non-neural tissue and that is due to the activation of nociceptors Noxious stimulus An actual or potential tissue-damaging event Off-label When a prescription drug is prescribed for uses other than what Australia’s Therapeutic Goods Administration, the USA’s Food and Drug Administration or the UK’s Medicines and Healthcare products Regulatory Agency has approved and published in the drug’s package insert Pain An unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage Pain threshold The minimum amount of a stimulus with which pain begins to be felt. It is an entirely subjective phenomenon Paraesthesia Abnormal cutaneous sensations such as tingling, tickling, pricking or burning with no apparent physical cause. Often described as ‘pins and needles’ or of a limb ‘falling asleep’ Peripheral neuropathic pain Pain caused by a lesion or disease of the peripheral somatosensory nervous system

of nerve root irritation associated with or without minor disc prolapse, followed by active physiotherapy and rehabilitation to promote mobility . Nerve stimulation procedures such as acupuncture and transcutaneous nerve stimulation increase endorphin produc tion in the central nervous system. Nerve decompression cra niotomy rather than percutaneous coagulation of the ganglion is now performed for trigeminal neuralgia. Spinal cord stimulation (SCS) by dorsal column stimulation is now a recognised and e ff ective management of intractable neuropa thic pain (Figure 23.9). This involves placement of electrodes in the posterior epidural space to allow dorsal column stimulation through an implantable pulse generator inserted in the body . In the UK this has been recommended by National Institute for Health and Care Excellence (NICE) guidance for intractable neuropathic pain management. Robust evidence exists for its clinical and health economic benefit in failed back surgery syndrome, in which patients have undergone previous spinal surgery . Early use of SCS in surgery-naive patients might lead to better outcomes. National guidelines in the UK do not recommend disc replacements or spinal fusions in patients with lower back pain unless the latter are part of a trial, rendering a large part of the patient population ineligible for surgery . In these instances, SCS could prove to be an e ff ective solution. Principles of

chronic pain management

Non-pharmacological treatment This involves a multidisciplinary approach targeting the biopsychosocial model of health (Figure 23.8). Early assess - ment and engagement with physiotherapy and exercise are key contributors in successful management. Psychological inter - ventions such as counselling, cognitive behaviour therapy and mindfulness are recognised strategies for pain control. ‘Pain management prog rammes’ lay out a logical structure for this. - Pharmacological treatment Drugs in chronic non-malignant pain Paracetamol and NSAIDs are the mainstays of musculoskel - etal pain treatment. The tricyclic antidepressant drugs and anticonvulsant agents are often useful for the pain of nerve injury , although side e ff ects can prove troublesome and reduce compliance. Both pregabalin and gabapentin r educe sponta - neous neuronal activity by their action on the α δ subunit of the 2 calcium channel. They are now routinely used for managing - neuropathic chronic pain. In more severe and debilitating non-malignant chronic pain, opioid analgesic drugs are used in slow release oral preparations (morphine and oxycodone) and transcutaneous patches (fentanyl and buprenorphine). - - - s - -

Physical Genetic health vulnerabilities Biological Disability Drug Temperament effects IQ Mental Peers Social skills health Social Psychological Family relationships Coping skills School Trauma Family circumstances Self-esteem Figure 23.8 Biopsychosocial model of health.

Commonly used terms in chronic pain Tapentadol, with its dual action on the opioid and noradren aline (norepinephrine) selective reuptake inhibition pathway , may provide relief in patients with both a neuropathic and nociceptive element to their pain. Combinations of drugs often prove useful to achie ve the optimum of e ffi cacy with minimal side e ff ects. Treatment of pain dependent on sympathetic nervous system activity Even minor trauma and surgery (often of a limb) can provoke excessive sympathetic adrenergic activity , inducing vasocon striction and abnormal nociceptive transmission. This can lead to chronic burning pain, allodynia, trophic changes and resultant disuse. Management includes antineuropathic pain medications - (pregabalin, gabapentin, amitriptyline) as part of m ultimodal analgesia with a multidisciplinary pain management approach. This includes considerab le input from psychological services and targeted physiotherapy . Interventional treatment may include local anaesthetic injection of the stellate ganglion for upper limb symptoms. Percutaneous chemical lumbar sympa - thectomy with local anaesthetic is used for relief of rest pain in advanced ischaemic disease of the legs. Interventional pain management for chronic pain - Local anaesthetic and steroid injections can be e ff ective around an inflamed nerve and they reduce the cycle of constant pain transmission with consequent muscle spasm. Transforaminal

Term De /f_i nition Allodynia Pain due to a stimulus that does not normally provoke pain. Allodynia involves a change in the quality of a sensation, whether tactile, thermal or of any other sort Analgesia Absence of pain in response to stimulation that would normally be painful Central sensitisation Increased responsiveness of nociceptive neurones in the central nervous system to their normal or subthreshold afferent input. The net effect is that innocuous stimuli will be interpreted as painful Epidural space The space (or potential space) between the ligamentum /f_l avum (or vertebral wall) and the dura, just outside the spinal canal, extending from the foramen magnum to the sacrum. Leads and catheters may be placed in this space via a needle Hyperalgesia Abnormally heightened sensitivity to pain. For pain evoked by stimuli that usually are

not painful, the term allodynia is preferred, while hyperalgesia is more appropriately used for cases with an increased response at a normal threshold or at an increased threshold Hypoalgesia Decreased sensitivity to painful stimuli. Hypoalgesia can be caused by exogenous chemicals such as opioids, as well as by chemicals produced by the body in phenomena such as fear- and exercise-induced hypoalgesia Intrathecal space The cerebrospinal /f_l uid- /f_i lled space around the spinal cord, protected by the dura mater, into which certain medicines may be delivered to achieve their most potent effect Nociception Sensory response to certain harmful or potentially harmful stimuli. Nociception triggers a variety of biological and behavioural responses and may also result in a subjective experience of pain Neuropathic pain Neuropathic pain is de /f_i ned as pain caused by a lesion or disease of the somatosensory nervous system Nociceptive pain Pain that arises from actual or threatened damage to non-neural tissue and that is due to the activation of nociceptors Noxious stimulus An actual or potential tissue-damaging event Off-label When a prescription drug is prescribed for uses other than what Australia's Therapeutic Goods Administration, the USA's Food and Drug Administration or the UK's Medicines and Healthcare products Regulatory Agency has approved and published in the drug's package insert Pain An unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage Pain threshold The minimum amount of a stimulus with which pain begins to be felt. It is an entirely subjective phenomenon Paraesthesia Abnormal cutaneous sensations such as tingling, tickling, pricking or burning with no apparent physical cause. Often described as 'pins and needles' or of a limb 'falling asleep' Peripheral neuropathic pain Pain caused by a lesion or disease of the peripheral somatosensory nervous system

of nerve root irritation associated with or without minor disc prolapse, followed by active physiotherapy and rehabilitation to promote mobility . Nerve stimulation procedures such as acupuncture and transcutaneous nerve stimulation increase endorphin produc tion in the central nervous system. Nerve decompression cra niotomy rather than percutaneous coagulation of the ganglion is now performed for trigeminal neuralgia. Spinal cord stimulation (SCS) by dorsal column stimulation is now a recognised and e ff ective management of intractable neuropa thic pain (Figure 23.9). This involves placement of electrodes in the posterior epidural space to allow dorsal column stimulation through an implantable pulse generator inserted in the body . In the UK this has been recommended by National Institute for Health and Care Excellence (NICE) guidance for intractable neuropathic pain management. Robust evidence exists for its clinical and health economic benefit in failed back surgery syndrome, in which patients have undergone previous spinal surgery . Early use of SCS in surgery-naive patients might lead to better outcomes. National guidelines in the UK do not recommend disc replacements or spinal fusions in patients with lower back pain unless the latter are part of a trial, rendering a large part of the patient population ineligible for surgery . In these instances, SCS could prove to be an e ff ective solution. Principles of chronic pain management

Non-pharmacological treatment This involves a multidisciplinary approach targeting the biopsychosocial model of health (Figure 23.8). Early assess - ment and engagement with physiotherapy and exercise are key contributors in successful management. Psychological inter - ventions such as counselling, cognitive behaviour therapy and mindfulness are recognised strategies for pain control. 'Pain management prog rammes' lay out a logical structure for this. - Pharmacological treatment Drugs in chronic non-malignant pain Paracetamol and NSAIDs are the mainstays of musculoskel - etal pain treatment. The tricyclic antidepressant drugs and

anticonvulsant agents are often useful for the pain of nerve injury , although side e ff ects can prove troublesome and reduce compliance. Both pregabalin and gabapentin r educe sponta - neous neuronal activity by their action on the α δ subunit of the 2 calcium channel. They are now routinely used for managing - neuropathic chronic pain. In more severe and debilitating non-malignant chronic pain, opioid analgesic drugs are used in slow release oral preparations (morphine and oxycodone) and transcutaneous patches (fentanyl and buprenorphine). - - - s - -

Physical Genetic health vulnerabilities Biological Disability Drug Temperament effects IQ Mental Peers Social skills health Social Psychological Family relationships Coping skills School Trauma Family circumstances Self-esteem Figure 23.8 Biopsychosocial model of health.

Commonly used terms in chronic pain Tapentadol, with its dual action on the opioid and noradren aline (norepinephrine) selective reuptake inhibition pathway , may provide relief in patients with both a neuropathic and nociceptive element to their pain. Combinations of drugs often prove useful to achie ve the optimum of e ffi cacy with minimal side e ff ects. Treatment of pain dependent on sympathetic nervous system activity Even minor trauma and surgery (often of a limb) can provoke excessive sympathetic adrenergic activity , inducing vasocon striction and abnormal nociceptive transmission. This can lead to chronic burning pain, allodynia, trophic changes and resultant disuse. Management includes antineuropathic pain medications - (pregabalin, gabapentin, amitriptyline) as part of m ultimodal analgesia with a multidisciplinary pain management approach. This includes considerab le input from psychological services and targeted physiotherapy . Interventional treatment may include local anaesthetic injection of the stellate ganglion for upper limb symptoms. Percutaneous chemical lumbar sympa - thectomy with local anaesthetic is used for relief of rest pain in advanced ischaemic disease of the legs. Interventional pain management for chronic pain - Local anaesthetic and steroid injections can be e ff ective around an inflamed nerve and they reduce the cycle of constant pain transmission with consequent muscle spasm. Transforaminal

Term De /f_i nition Allodynia Pain due to a stimulus that does not normally provoke pain. Allodynia involves a change in the quality of a sensation, whether tactile, thermal or of any other sort Analgesia Absence of pain in response to stimulation that would normally be painful Central sensitisation Increased responsiveness of nociceptive neurones in the central nervous system to their normal or subthreshold afferent input. The net effect is that innocuous stimuli will be interpreted as painful Epidural space The space (or potential space) between the ligamentum /f_l avum (or vertebral wall) and the dura, just outside the spinal canal, extending from the foramen magnum to the sacrum. Leads and catheters may be placed in this space via a needle Hyperalgesia Abnormally heightened sensitivity to pain. For pain evoked by stimuli that usually are not painful, the term allodynia is preferred, while hyperalgesia is more appropriately used for cases with an increased response at a normal threshold or at an increased threshold Hypoalgesia Decreased sensitivity to painful stimuli. Hypoalgesia can be caused by exogenous chemicals such as opioids, as well as by chemicals produced by the body in phenomena such as fear- and exercise-induced hypoalgesia Intrathecal space The cerebrospinal /f_l uid- /f_i lled space around the spinal cord, protected by the dura mater, into which certain medicines may be delivered to achieve their most potent effect Nociception Sensory response to certain harmful or potentially harmful stimuli. Nociception triggers a variety of biological and behavioural responses and may also result in a subjective experience of pain Neuropathic pain Neuropathic pain is de /f_i ned as pain caused by a

lesion or disease of the somatosensory nervous system Nociceptive pain Pain that arises from actual or threatened damage to non-neural tissue and that is due to the activation of nociceptors Noxious stimulus An actual or potential tissue-damaging event Off-label When a prescription drug is prescribed for uses other than what Australia’s Therapeutic Goods Administration, the USA’s Food and Drug Administration or the UK’s Medicines and Healthcare products Regulatory Agency has approved and published in the drug’s package insert Pain An unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage Pain threshold The minimum amount of a stimulus with which pain begins to be felt. It is an entirely subjective phenomenon Paraesthesia Abnormal cutaneous sensations such as tingling, tickling, pricking or burning with no apparent physical cause. Often described as ‘pins and needles’ or of a limb ‘falling asleep’ Peripheral neuropathic pain Pain caused by a lesion or disease of the peripheral somatosensory nervous system

of nerve root irritation associated with or without minor disc prolapse, followed by active physiotherapy and rehabilitation to promote mobility . Nerve stimulation procedures such as acupuncture and transcutaneous nerve stimulation increase endorphin produc tion in the central nervous system. Nerve decompression cra niotomy rather than percutaneous coagulation of the ganglion is now performed for trigeminal neuralgia. Spinal cord stimulation (SCS) by dorsal column stimulation is now a recognised and e ff ective management of intractable neuropa thic pain (Figure 23.9). This involves placement of electrodes in the posterior epidural space to allow dorsal column stimulation through an implantable pulse generator inserted in the body . In the UK this has been recommended by National Institute for Health and Care Excellence (NICE) guidance for intractable neuropathic pain management. Robust evidence exists for its clinical and health economic benefit in failed back surgery syndrome, in which patients have undergone previous spinal surgery . Early use of SCS in surgery-naive patients might lead to better outcomes. National guidelines in the UK do not recommend disc replacements or spinal fusions in patients with lower back pain unless the latter are part of a trial, rendering a large part of the patient population ineligible for surgery . In these instances, SCS could prove to be an e ff ective solution.

Revision #1
Created 2025-12-31 15:11:12 UTC by Omar Ayman
Updated 2025-12-31 15:11:12 UTC by Omar Ayman