



ACCORDING TO
INTERNATIONAL
ASSOCIATION FOR THE
STUDY OF PAIN (IASP),
pain is a sensory and
emotional experience
associated with actual or
potential tissue damage

IASP describes that pain is always a personal experience that is influenced to varying degrees by biological, emotional, psychological and social factors, sometimes life experience, and individual personalities too influences the pain experience

TYPES OF PAIN

Based on duration of pain³

Acute Pain Shortterm and sharp

A normal response to an injury or medical condition.
It starts suddenly and is usually short-lived

Chronic Pain Longlasting and recurrent

Continues beyond the time expected for healing.
It generally lasts for longer than 3 months

Based on the physiology and duration of action³



Nociceptive

Neuropathic

Tissue damage related

Nerve-damage related

BURDEN OF PAIN

According to the Global Pain Index, 93% survey participants suffered from body pain in the year 2019²



83%

Muscle ache



73%

Joint pain



61%

Tendon/ligament/bone pain



49%

Pinched nerve



42%

Arthritis



35%

Rheumatism



38%

Osteoarthritis

Ensuring effective pain management is essential in enhancing the quality of life for individuals dealing with pain

Establishing the goals of treatment



- It is not always possible to achieve pain-free status, and this should be explained clearly to patients and their family
- A typical goal of treatment is to maintain or improve function

How we respond to drugs changes as we get older



Using a multi-disciplinary approach to pain management



Good pain management is finding a balance of therapies



Personalized Pain management: Patient-specific factors play a significant role in determining the most suitable medication and dosage regimen for pain management

There are several factors which influence the choice of medication for pain management -

Patient's pain intensity and type of pain



Age-related physiological changes



The severity and nature of pain experienced



Evaluation of the patient's medication profile is essential to identify potential drug interactions



Presence of underlying medical conditions



Considering concomitant medications is crucial in order to avoid unwanted interactions



HOLISTIC PAIN MANAGEMENT

ESTABLISHING THE NEED

WHAT IS HOLISTIC PAIN MANAGEMENT?

APPROACHES OF HOLISTIC PAIN MANAGEMENT

ADVANTAGES OF HOLISTIC PAIN MANAGEMENT

Multidisciplinary and holistic approach to manage pain by multimodal treatment modality results in improved outcomes (1/2)



PAIN IS UNDERESTIMATED

Prevalence and societal burden of chronic pain are under-estimated, treatment is not always instituted and/or adequate¹



UNMET NEED

Unmet need in the treatment paradigm exacerbates the condition such that lifetime prevalence of suicide attempts in people with chronic pain ranges from 5%-



ELDERLY AFFECTED

Treatment gap specifically has impacted the elderly with 68% of women and 38% of men aged 70 experiencing pain lasting ≥6 months³



MULTIDISCIPLINARY TEAM APPROACH

Optimal management of pain requires the structured and recognized education of pain specialists, pain medicine, and a holistic multidisciplinary team approach with appropriate behavioral therapy¹

Multidisciplinary and holistic approach to manage pain by multimodal treatment modality results in improved outcomes (2/2)



CLINICALLY EFFECTIVE AND COST EFFICIENT

Comprehensive multidisciplinary and holistic management utilizing a range of strategies and specialist treatments, has shown to be a clinically effective and cost-efficient alternative to usual care¹⁻⁴



GUIDELINES REQUIRED

Universal clinical guidelines and defined treatment pathways are required for the efficient management of chronic pain⁵



IMPROVED QUALITY OF LIFE

Benefits reported by patients extend not only to pain relief but also to improvements in physical functioning, quality of life, emotional distress, behavioral outcomes and self-esteem⁴⁻⁷



CONTINUUM OF PAIN

The characterization of pain as a temporal process, beginning with an acute stage, may progress to a chronic state of variable duration (1/2)

American Academy of Pain Medicine emphasizes:

There are no arbitrary buckets of "Acute Pain" and "Chronic pain"



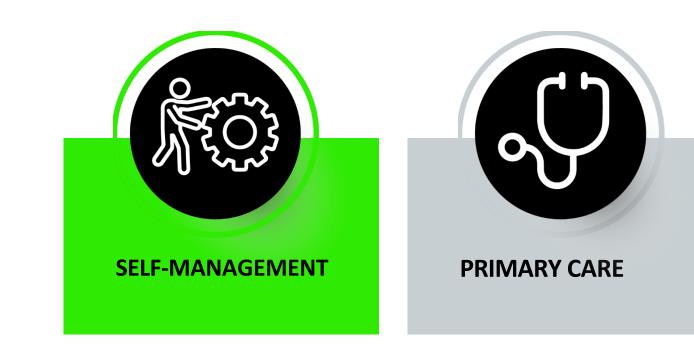
Many chronic painful conditions start early after an injury or surgery

Some of the patients may be predisposed (or vulnerable) to developing chronic pain with even a simple acute injury



The characterization of pain as a temporal process, beginning with an acute stage, may progress to a chronic state of variable duration (2/2)

Multidisciplinary and holistic approach to manage pain by multimodal treatment modality results in improved outcomes







Change Pain Chronic Advisory Board meeting of pain specialists describe:

"Pain chronification" as the process of transient pain progressing into persistent pain Pain processing changes as a result of an imbalance between pain amplification and pain inhibition

Genetic, environmental and biopsychosocial factors determine the risk, degree and time-course of chronification

Pain chronification - likely determinants that contribute to the risk of onset and maintenance of common chronic overlapping pain conditions (CPPCs) – Physiological and genetic factors

Genetic variability and environmental events that determine an individual's psychological profile and pain amplification status

Environmental contributions

- Physical trauma
- Infection
- Smoking

Psychological stressors

Cultural beliefs

High Physiological Distress

Mood

Anxiety

Depression Stress

response

Somatization

High State of Pain Amplification

Neuroendocrine function

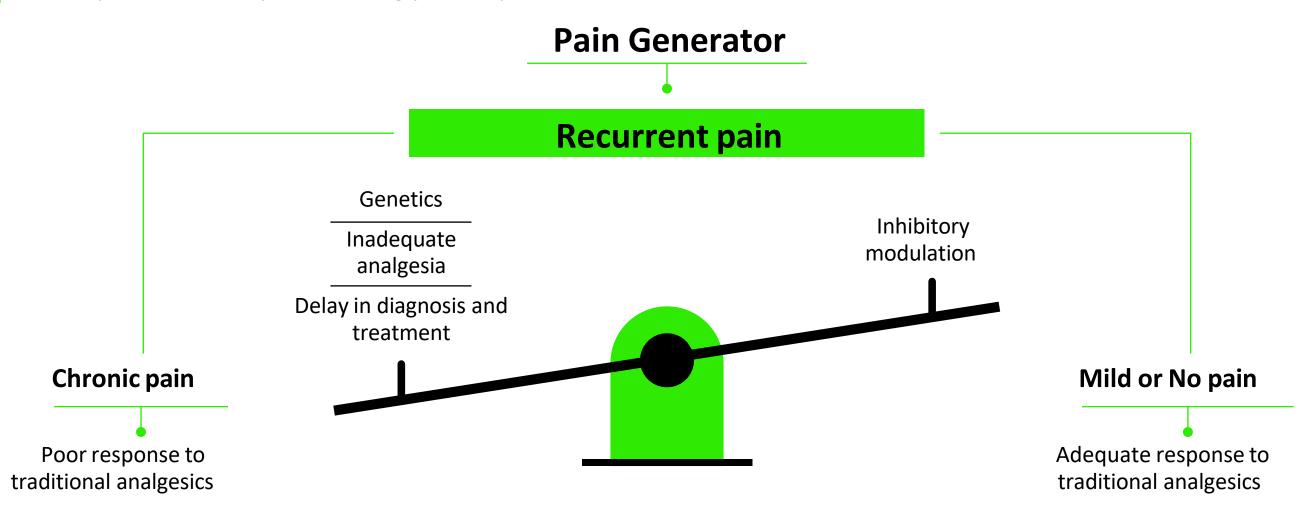
Impaired Pain regulation

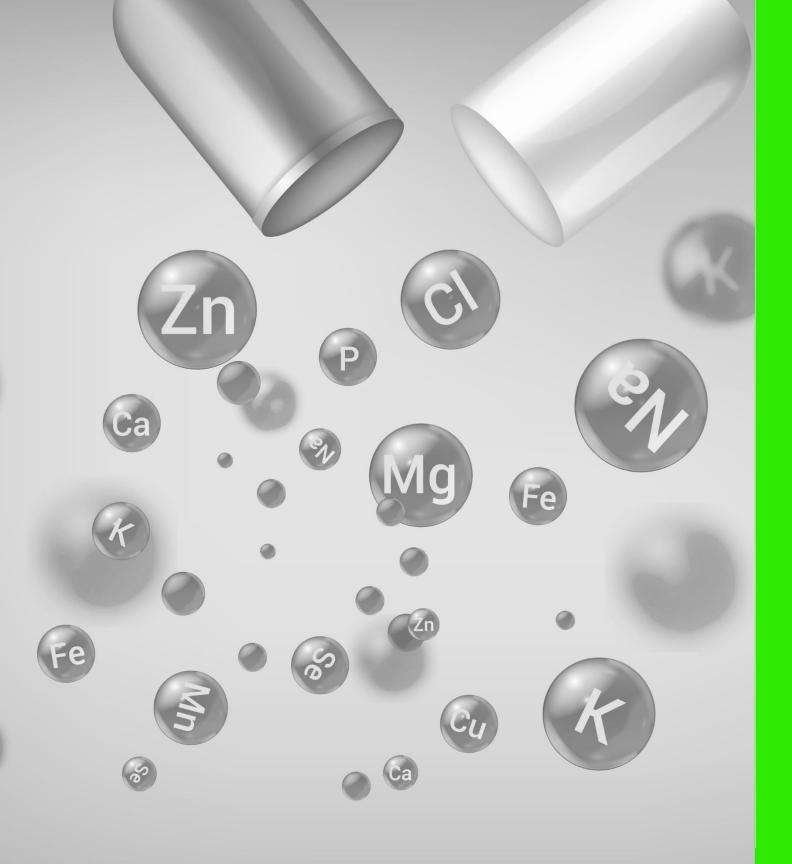
Pro-inflammatory state

Autonomic function

Pain chronification - likely determinants that contribute to the risk of onset and maintenance of common chronic overlapping pain conditions (CPPCs) – Physiological and genetic factors

From the physiological perspective, an imbalance between enhanced ascending nociceptive inputs and inadequate inhibitory descending pathways





PHARMACOLOGICAL WAYS TO MANAGE PAIN

Pharmacological methods of pain management - essential component of pain management strategies, should be used judiciously to achieve optimal pain relief while minimizing adverse effects

Classes of medications related to chronic pain management that offer better treatment decisions and combination therapy to manage different pain mechanisms

PARACETAMOL	NSAIDs	OPIOIDS	COMBINATION ANALGESICS	TOPICAL AGENTS
Analgesic and anti-pyretic effects Favorable suitability profile Useful in managing mild to moderate pain	Anti-inflammatory, analgesic, and antipyretic effects Block the COX enzymes that produce prostaglandins GI adverse events	µ-opioid receptor agonists Potent pain relievers -moderate to severe pain management Adverse effects: sedation, respiratory depression, and constipation High risk of dependence; addiction	Use of a number of drugs (analgesic or adjuvant) in combination to achieve the best pain relief in acute or chronic pain Different mechanisms of action allows modulating multiple transmission pathways Topical NSAIDS Recommended with paracetamol knee OA	Creams and patches that can be applied externally (for osteoarthritis of the knee or hand) Avoids systemic side effects For mild to moderate neuropathic or osteoarthritic pain, either as an adjunct or as an alternative

Guideline recommendations for pharmacological treatment of Osteoarthritis Pain

COUNTRY- GUIDELINES	ORAL NSAIDS	TOPICAL NSAIDS	PARACETAMOL/ ACETAMINOPHEN	OTHER PHARMACEUTICAL AGENTS
USA-ACR ¹	Level 1	Level 1	✓	C (Opioids)
Europe-SFR ²	Level 1	Level 2	✓	Level 1 (Opioids)
Europe-NICE ³	Level 2	Level 1	С	Level 1 (Topical capsaicin)
USA-AAOS ⁴	Level 1	Level 1	Level 1	(Glucosamine)
USA-VA/DoD ⁵	Level 2	Level 1	Level 2	Level 2 (Topical capsaicin)

Level 1 : Grade A, level I, or first choice, strong

Level 2 : Grade B, level II, or second choice, weak

C: Conditional recommendation

: Recommended

ABBREVIATIONS: AAOS: American Academy of Orthopaedic Surgeons; U.S. Department of Health and Human Services; NICE: National Institute for Health and Care Excellence; ACR: American College of Rheumatology; DoD: Department of Defense; VA: Department of Veterans Affairs; SFR: French Society of Rheumatology.

Guideline recommendations for pharmacological treatment of Acute Pain

Acute pain includes low back pain, neck pain, pain related to other musculoskeletal injuries

COUNTRY- GUIDELINES	ORAL NSAIDS	TOPICAL NSAIDS	PARACETAMOL/ ACETAMINOPHEN	OTHER PHARMACEUTICAL AGENTS
USA-CDC ¹	Level 1	Level 1	Level 1	Level 2 (Opioids)
USA-ACOEM ²	Level 1	NA	Level 1	NA
Europe-NICE ³	Level 1	NA	NA	Level 2 (Opioids)
Canada-IHE ⁴	Level 2	NA	Level 1	(Opioids)
USA-ACP:AAFP ⁵	С	Level 1	С	С

Level 1 : Grade A, level I, or first choice, strong

Level 2 : Grade B, level II, or second choice, weak

C: Conditional recommendation



ABBREVIATIONS: IHE: Institute of Health Economics; NICE: National Institute for Health and Care Excellence; CDC: Centers for Disease Control and Prevention; ACOEM: American College of Occupational and Environmental Medicine (ACOEM); ACP: American College of Physicians; AAFP: American Academy of Family Physicians.

Guideline recommendations for pharmacological treatment of Chronic & General pain

COUNTRY- GUIDELINES	ORAL NSAIDS	TOPICAL NSAIDS	PARACETAMOL/ ACETAMINOPHEN	OTHER PHARMACEUTICAL AGENTS
Chronic pain				
Global-WHO¹	С	Level 1	NA	Level 1 (Topical capsaicin)
UK-SIGN ²	Level 2	Level 1	✓	Level 2 (Opioids)
Europe-NICE ³	NA	NA	NA	C (Opioids)
General pain				
USA-HHS ⁴	Level 1	Level 1	Level 1	C (Opioids)
Australia-RACGP ⁵		NA NA	Level 1	(Opioids)

Level 1 : Grade A, level I, or first choice, strong

Level 2 : Grade B, level II, or second choice, weak

C: Conditional recommendation



ABBREVIATIONS: **WHO**: World Health Organization; **HHS**: U.S. Department of Health and Human Services; **SIGN**: The Scottish Intercollegiate Guidelines Network; **NICE**: National Institute for Health and Care Excellence; **RACGP**: The Royal Australian College of General Practitioners.

Guideline recommendations for pharmacological treatment of Migraine & Tension-type Headache

COUNTRY- GUIDELINES	ORAL NSAIDS	TOPICAL NSAIDS	PARACETAMOL/ ACETAMINOPHEN	OTHER PHARMACEUTICAL AGENTS
Migraine				
Australia-bpac ¹	Level 1	NA	Level 1	Level 1 (Aspirin)
Europe-NICE ²	Level 1	NA	Level 1	Level 1 (Aspirin)
Tension-type headache				
Australia-BPAC ¹	Level 1	NA	✓	Level 1 (Aspirin)
Europe: NICE ³		NA	✓	(Aspirin)

Level 1 : Grade A, level I, or first choice, strong

Level 2 : Grade B, level II, or second choice, weak

: Recommended

NA: Not applicable

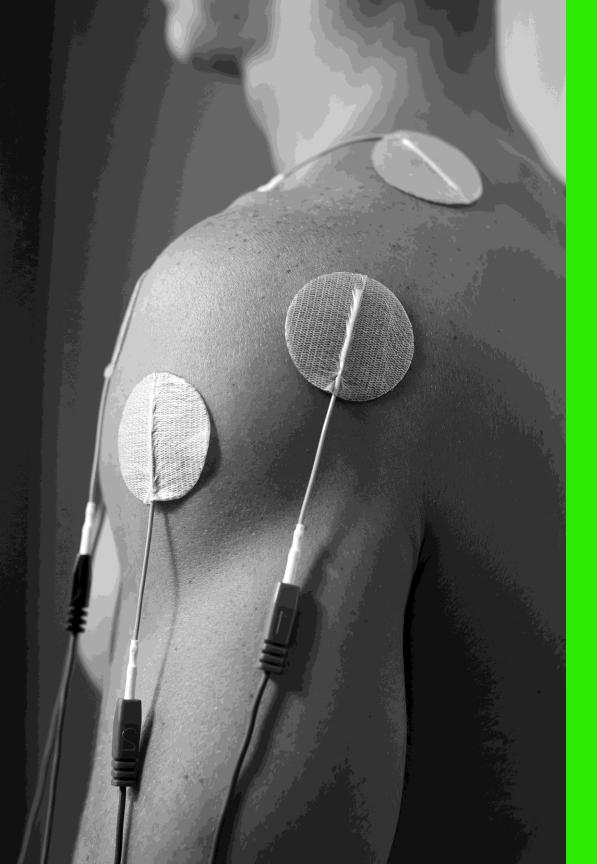
ABBREVIATIONS: NICE: National Institute for Health and Care Excellence; bpacNZ: Best Practice New Zealand

References: 1. New Zealand Guidelines Group (bpacNZ). Diagnosing and managing headache in adults in primary care. 2017 Available at: Link 2. SIGN 155: Pharmacological management of migraine. A national clinical guideline. 2022 update. Available at: Link 3. National Institute for Health and Care Excellence. Clinical Guideline [CG150]. 2015. Available at: Link.

Multimodal analgesia for pain management: The principle of multimodal analgesia is the use of number of drugs (analgesic or adjuvant) in combination to achieve the best pain relief in acute or chronic pain

Combining analgesics that act by different mechanisms of action allows modulating multiple transmission pathways and enables individual agents to act with potentially additive or synergistic effects¹

ESCEO	NICE	wно	EULAR
Topical NSAIDS recommended with paracetamol or SYSADOAs for knee OA when patients have insufficient pain relief ^{2,3} The combination of non-pharmacological and pharmacological intervention remains key to the management of knee OA and it is the basic principle in the ESCEO algorithm ^{2,3}	NICE 2014 guideline for osteoarthritis recommended "Topical NSAID and/or paracetamol; can be used with paracetamol in knee and hand Osteoarthritis ⁶ If the above medications are insufficient for pain relief, then consider adding opioid analgesics or substituting with (or in addition to paracetamol) an oral NSAID or COX 2 inhibitor ⁶	Paracetamol And/or NSAID e.g. ibuprofen, naproxen or celecoxib recommended for mild pain treatment ⁵ For severe and persistent pain: potent opioids (morphine, methadone, etc.) with or without non-opioid analgesics (paracetamol), and with or without adjuvants ⁵	NSAIDs may be used to relieve musculoskeletal signs and symptoms; local injections of glucocorticoids may be considered as adjunctive therapy
	Note: NICE 2022 do away with this recommendation citing that there is no strong evidence of benefit for paracetamol ⁷	ESCEO: European Society for Clinical and Economic Aspects of Osteoporosis and Osteoard National Institute for Health and Care Excellence; WHO: World Health Organization; EULA	



NONPHARMACOLOGICAL
WAYS TO
MANAGE PAIN

Non-pharmacological pain management (NPPM) is an intervention without the use of medications, complementary to medication treatments

The goals of non-pharmacological interventions are to decrease fear, distress and anxiety, and to reduce pain and provide patients with a sense of control.

CRYOTHERAPY	EXERCISE	ACUPUNCTURE	TRANSCUTANEOUS ELECTRIC NERVE STIMULATION (TENS)	COGNITIVE BEHAVIOUR THERAPY (CBT)
Therapeutic cold: applied directly to an injured area to reduce hemorrhage and vasodilation Decreases the local inflammatory response, edema production, and pain perception	Consists of passive movements, active exercises, stretching, and relaxation exercises Gradual stretching and strengthening exercises Patient education is mandatory about a therapeutic exercise regimen at home once therapeutic sessions have ceased	Depends on the use of thin metal needles that are inserted into specific body sites and stimulated manually or electrically Considered an invasive procedure and needs a professional physician Side effects - localized hyperemia, syncopal attacks, and hematoma	Involves the application of adhesive skin surface electrodes to the painful area Has been used to manage acute and chronic pain - postoperative pain, complex regional pain syndrome TENS has been shown to be effective in osteoarthritic and neuropathic pain	Treatment applies biopsychosocial approach to pain that targets behavioral and cognitive responses to pain CBT protocols involve psychoeducation about pain, behavior, communication, and cognitive restructuring for distorted and maladaptive thoughts about pain

Non-pharmacological recommendations for pain management

GUIDELINES	PSYCHOLOGICAL MANAGEMENT	COGNITIVE BEHAVIOURAL THERAPY	PHYSICAL THERAPY/ PHYSIOTHERAPY	EXERCISE	ACUPUNCTURE	MASSAGE
WHO¹	✓		✓			
ACR ²						
SIGN ³						
HHS ⁴			✓	~		
NICE ⁶			NA	*		NA
MOH ⁷			NA			✓
VA/DoD	NA	NA		NA		
Grade of Recommendation A	Grade of Recommendation B Grade	of nmendation C Yes N	A Not Available Recommendation Strength Neutral	Recommendation strength Weak		

ABBREVIATIONS: **WHO**: World Health Organization; **ACR**: American College of Rheumatology; **SIGN**: The Scottish Intercollegiate Guidelines Network; **NICE**: National Institute for Health and Care Excellence; **MoH**: Ministry of Health; **HHS**: U.S. Department of Health and Human Services; **DoD**: Department of Defense; **VA**: Department of Veterans Affairs.

References: 1. WHO guideline for non-surgical management of chronic primary low back pain in adults in primary and community care settings. Available at: Link; 2. ACR/AF 2019 Guideline for the Management of Osteoarthritis of the Hand, Hip and Knee. Available at: Link; 3. SIGN 136. Management of chronic pain. A national clinical guideline. August 2019. Available at: Link; 4. PAIN MANAGEMENT BEST PRACTICES INTER-AGENCY TASK FORCE REPORT. May 2019. available at: Link; 5. Chronic pain (primary and secondary) in over 16s: assessment of all chronic pain and management of chronic pain. NICE. April 2021. Available at: Link; 6. Ministry of Health (MoH) Malaysia: Pain as The 5th Vital Sign Guideline for the non-surgical management of hip & knee osteoarthritis. July 2020. Available at: Link

^{*}Exercise - Stretching, range of motion, flexibility, strengthening, general aerobic conditioning, quota-based reactivation, coordination balance, proprioceptive training, relaxation, postural stabilization, yoga

Herbals are equitable pain relievers as NSAIDs, have synergistic effects, and are dose-sparing without severe side effects



NSAIDS:

Mainstay treatment for chronic pain1
Uncertainty over safety
& sustainability^{1,2}



MOA:

Interaction with pro inflammatory cytokines IL-1a, IL-1b, IL-6 and TNF- α^2



HERBAL MEDICINES:

Many actives, >1 MoA Safer³



MOA:

inhibits
inflammatory
pathways like
NSAIDs, also
inhibits NF-kB²



HERBAL
INTERACTIONS
WITH
INFLAMMATION
MEDIATORS &
CARTILAGE
DESTRUCTION

rationale for treating OA complaints⁴

MoA: Mechanism of Action. NSAIDs: Non-Steroidal Anti-Inflammatory Drugs. OA: Osteoarthritis.



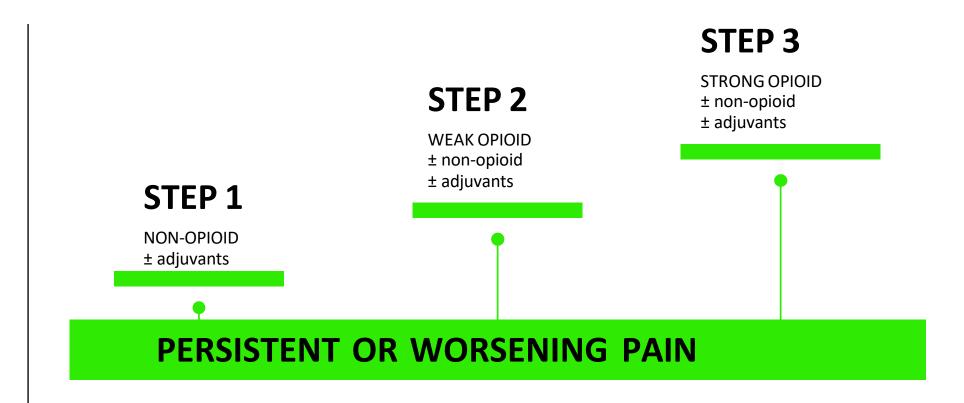
ROLE OF
EXISTING
ANALGESICS IN
THE NEW
OPIOID ERA

Pain management - the WHO Analgesic Ladder

The WHO analgesic ladder provides a general guide to pain management based on pain severity. However, it does not replace the need for individualised management based on careful assessment of an individual patient's pain

Opioid analgesic consumption shows alarming trends, particularly because of their potential for addiction, tolerance, and side effects¹

Patient education, non-opioids alternative and psychological treatments are recommended for management of chronic pain⁴



The Center for Disease Control and Prevention's guidelines 2016 recommends that only if the expected benefits for both pain and function outweigh the risks, clinicians should prescribe opioids at the lowest effective dose and for the shortest expected duration to treat the pain severe enough to require opioids²

When using opioids, it should be in combination with nonpharmacologic therapy and nonopioid pharmacologic therapy, as appropriate²

Choice of initial analgesic should take into account the cause and severity of pain

STEP 1

Start regular paracetamol



Dose reduction is advisable in many palliative care patients



And/or

NSAID e.g. ibuprofen, naproxen or celecoxib

Mild pain start at Step 1

STEP 2

If pain is persistent or worsening



Stop paracetamol if not helping pain



Start codeine 30-60 mg four times a day regularly



Moderate pain start at Step 2 or Step 3

STEP 3

On Maximum paracetamol and codeine, persistent or worsening pain



Stop paracetamol if not helping pain



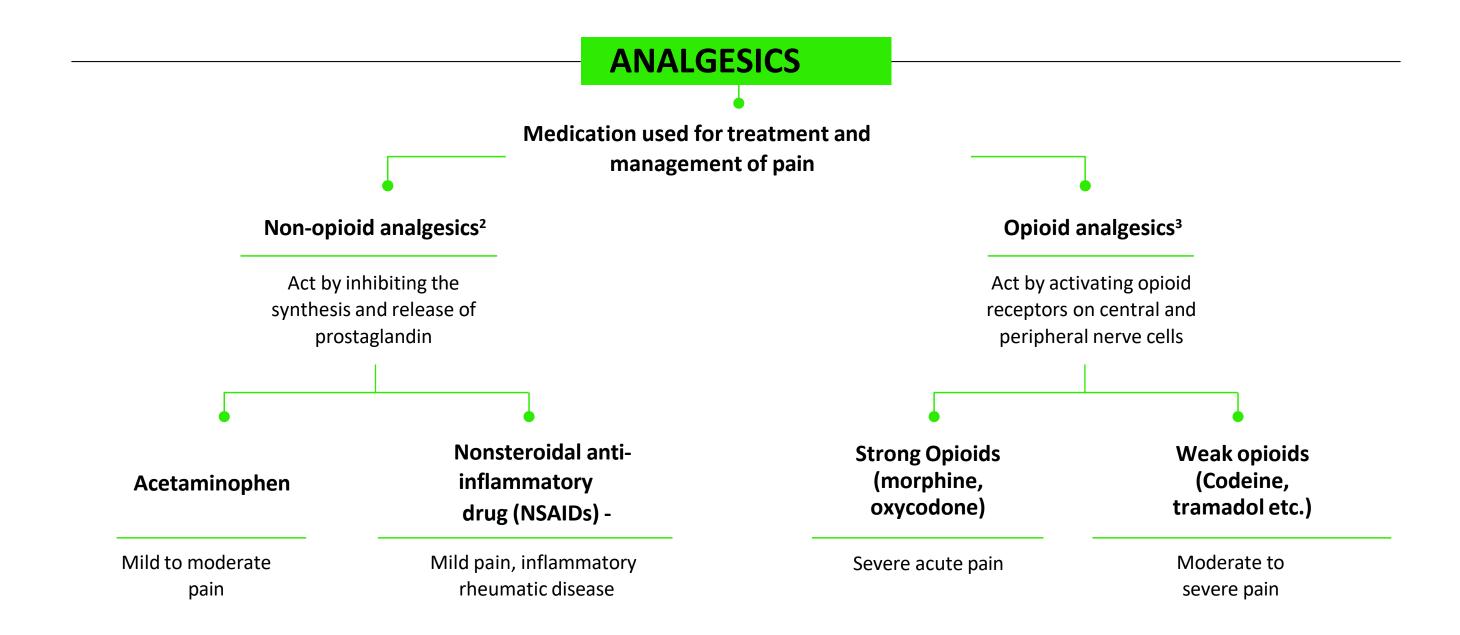
Stop codeine



Commence strong opioid e.g. oral morphine

Severe pain, start at step 3

Choice of initial analgesic should take into account the cause and severity of pain



^{1.} Global, regional, and national trends in opioid analgesic consumption from 2015 to 2019: a longitudinal study (thelancet.com). 2. Nonnarcotic Methods of Pain Management | New England Journal of Medicine (nejm.org).
3. Opioid Analgesics - StatPearls - NCBI Bookshelf (nih.gov).

Preference of non-opioids over opioids for pain management

Long term use of opioid for chronic pain management can lead to physical dependence, respiratory depression, sedation, and mental clouding

PARAMETERS	OPIOIDS	NON-OPIOIDS ³
General recommendation ¹	Recommended when pain signals are too severe to be controlled by non-narcotic analgesics.	Effectively relieve mild to moderate headache and pain of musculoskeletal origin (Acetaminophen and NSAIDs) - Moderate to severe pain (combined with Opioid)
PREFERENCE OVER OPIOID ANALO	GESICS (e.g., chronic pain indication)	
Myofascial Pain Syndrome⁵		+
Chronic low back pain, hip and knee osteoarthritis ⁴	_	+
Acute and chronic pain e.g., Low back pain ²		+
Chronic musculoskeletal pain (i.e. osteoarthritis) ²		+

Source

- 1. Opioid and Non-Opioid Analgesics (soberrecovery.com).
- 2. Alternatives to Opioids for Managing Pain StatPearls NCBI Bookshelf (nih.gov).
- 3. Nonnarcotic Methods of Pain Management | New England Journal of Medicine (nejm.org).
- 4. Effect of Opioid vs Nonopioid Medications on Pain-Related Function in Patients With Chronic Back Pain or Hip or Knee Osteoarthritis Pain: The SPACE Randomized Clinical Trial | Pain Medicine | JAMA | JAMA Network.
- 5. Alternatives to Opioids in the Pharmacologic Management of Chronic Pain Syndromes: A Narrative Review of Randomized, Controlled, and Blinded Clinical Trials PMC (nih.gov).

Combination Analgesics - Given the multiple pathways involved in the body's perception of pain, combination therapy is well suited for pain management



COMBINATION OF TWO ANALGESIC DRUGS HELPS TO:

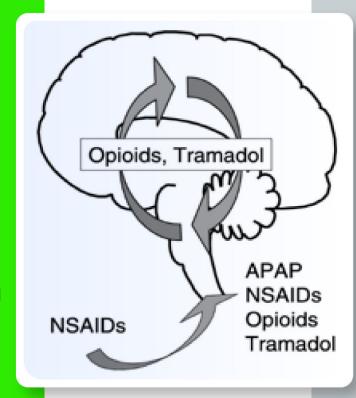
Overcome tolerability, efficacy and time-to-onset limitations of the component drugs

Synergistically increase their analgesic effect

Dose sparing effect - allow for reduced doses of the component drugs, reducing overall adverse effects with comparable analgesia

Different mechanisms of action may also provide multimodal coverage of a broad spectrum of pain

Enable the individual agents potentially to act in a greater than additive (synergistic) fashion





GUIDELINE RECOMMENDATION:

Adding a NSAID to acetaminophen has been shown to improve efficacy in acute pain states

The American Geriatrics Society (AGS). American Medical Directors Association (AMDA) recommend combining analgesics for elderly patients and long-term care patients, respectively

The use of topical NSAIDs (the active ingredient in Voltaren® 12H) in conjunction with paracetamol (the active ingredient in Panadol®) is supported by international guidelines - ACR, NICE



ROLE OF HCPS IN HOLISTIC PAIN MANAGEMENT

Gaps between HCPs and patients on pain management

PATIENT

69% say they wish doctors were better trained on how individual pain is for different patients



HCP

44% from Australia says discussing nonphysical aspects, such as emotional well-being or personal concerns, can be challenging to them

72% urge the need for greater health inclusivity like empowering health literacy and tackling access challenge



Communicating medical information

To assess and understand Pain

66% from USA don't feel always equipped to convey medical information in a clear and simple way to their patients

51% say they seek more empathy from others on their experience of pain



Discussing emotional aspect

50% from USA says if given 5 extra minutes, most recognize that they would be able to ask about patients' emotional well-being

Role of HCPs to help patient on holistic pain management

Knowing the gaps between HCPs and patients suggests the need of more personalized and compassionate view of pain:

Holistic assessment of pain includes social and emotional wellbeing

- Considering emotional and loneliness aspects of person while assessing pain¹
- Discussing impact of pain on mental wellbeing, make patient feel heard and respected²
- Need to convey the complex medical information in clear and simple way to patient²
- Provide comprehensive care to chronic pain patients³
- Consider patient education about the use of painkillers and opioids
- Provide alternative treatment options/ holistic approaches to patients that can produce real results



- Pain severity
- Other medication used
- Pain frequency
- Pain duration
- Previous treatments



- Lifestyle factors
- Impact of pain on daily activities
- Impact of pain on mobility
- Impact of pain on professional life



- Impact of pain on mental well being
- Emotional impact of the pain

HOLISTIC PAIN MANAGEMENT - KEY TAKEAWAYS



 IASP defines pain as a sensory and emotional experience associated with actual or potential tissue damage



 Patient-specific factors influencing personalized pain management include pain intensity, nature and type of pain, age-related physiological changes, underlying medical conditions, and patient's medication profile (including prescription of concomitant medications)



 Multidisciplinary and holistic pain management by multimodal treatment modality requires structured and recognized education of pain specialists, pain medicine, and a holistic multidisciplinary team approach with appropriate behavioral therapy



 Role of HCPs in holistic pain management includes individualized pain assessment, communicating complex medical information in a clear and simple manner to the patients, discussing with patients the impact of pain on their mental/emotional wellbeing, and considering both pharmacological and nonpharmacological/holistic approaches to pain management



 Incorporating a holistic approach to pain management is essential to achieve desired patient outcomes. Understanding the mechanisms of pain can provide a framework for a holistic approach to guide treatment decisions.