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REVIEW ARTICLE

Management of common acute pain conditions in the outpatient clinic: a guide to the general practitioner

Tratamento de condições ambulatoriais comuns de dor aguda: um guia para o médico generalista

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ABSTRACT

BACKGROUND AND OBJECTIVES: Acute pain serves a critical role in warning and recovery processes of tissue injury, but may transition into chronic pain, especially if inadequately treated, resulting in profound long-term quality-of-life impairments and increased healthcare costs. Effective management of acute pain mitigates the risk of chronicity by disrupting the neuroplastic changes associated with pain sensitization. This paper reviews the current evidence and provides recommendations from a panel of pain medicine specialists for general practitioners regarding the management of common acute pain conditions in the outpatient setting: acute musculoskeletal pain, acute low back pain, herpes zoster, migraine and tension-type headache attacks. It also discusses the particularities of addressing acute pain among special populations, such as children, the elderly and pregnant women.

CONTENTS: Opioids retain an important role in addressing acute pain due to their rapid and effective relief across nociceptive, neuropathic, and mixed pain types. However, their use requires caution due to short-term side effects, tolerance issues, and the risk of addiction in long-term scenarios. Multimodal analgesia, integrating pharmacological and non-pharmacological approaches, represents a pivotal shift in pain management strategies.

CONCLUSION: General practitioners are encouraged to adopt individualized, multimodal approaches, balancing efficacy with safety, to improve functionality and patient outcomes in managing acute pain. These recommendations aim to equip frontline physicians with practical tools to address this complex condition effectively and reduce its long-term consequences.

KEYWORDS: Acute pain, Headache, Low back pain, Opioid analgesics, Neuralgia.

RESUMO

JUSTIFICATIVA E OBJETIVOS: A dor aguda desempenha um papel crítico nos processos de alerta e recuperação de lesões teciduais, mas pode evoluir para dor crônica se não for tratada de forma adequada, resultando em consequências negativas à qualidade de vida a longo prazo, e em custos elevados para os sistemas de saúde. O manejo eficaz da dor aguda reduz o risco de cronificação ao mitigar a ocorrência de alterações neuroplásticas associadas à sensibilização da dor. O objetivo deste estudo foi revisar as evidências disponíveis e apresentar recomendações de um painel de especialistas em medicina da dor para médicos generalistas sobre o manejo de condições comuns de dor aguda no contexto ambulatorial, incluindo: dor musculoesquelética, lombalgia aguda, herpes-zóster, enxaqueca e cefaleia tipo-tensão. Ele também discute as particularidades do manejo da dor em populações específicas, como crianças, idosos e gestantes.

CONTEÚDO: Opioides continuam a desempenhar um papel importante no alívio rápido e eficaz da dor nociceptiva, neuropática e mista, mas seu uso exige cautela devido a efeitos adversos a curto prazo, bem como problemas de tolerância e risco de dependência quando do uso prolongado. A analgesia multimodal, que integra abordagens farmacológicas e não farmacológicas, representa uma mudança significativa no paradigma atual de manejo da dor.

CONCLUSÃO: Os clínicos são incentivados a adotar abordagens individualizadas e multimodais, equilibrando eficácia e segurança, para promover a funcionalidade e obter desfechos clínicos satisfatórios no manejo da dor aguda. Estas recomendações visam equipar médicos generalistas com ferramentas práticas para abordar esta condição complexa e reduzir suas consequências a longo prazo.

DESCRITORES: Analgésicos opioides, Cefaleia, Dor aguda, Dor lombar, Neuralgia.

HIGHLIGHTS

- Effective acute pain management prevents chronicity by interrupting neuroplastic changes linked to pain sensitization.
- Opioids provide rapid relief for acute pain but require careful dosing due to risks of tolerance, side effects, and addiction in long-term use
- Multimodal analgesia, combining pharmacological and non-pharmacological methods, improves pain outcomes and reduces opioid reliance
- Non-pharmacological therapies, such as manual therapy and physical exercises, are essential in acute musculoskeletal and low back pain management
- Special considerations apply to pain management in elderly, children, and pregnant individuals due to varied physiological and pharmacological challenges

INTRODUCTION

Acute pain, a warning signal resulting from injuries or diseases, plays a fundamental role in protection and recovery of the human organism[1]. However, when not adequately treated, this type of pain can evolve into chronic pain, a debilitating condition that affects millions of people worldwide[2]. The transition from acute to chronic pain is not a linear process but a complex phenomenon influenced by various factors, including pain severity and duration[3], psychological and genetic factors[1] and effectiveness of acute pain management. In fact, lack of adequate treatment for acute pain can lead to neuroplastic changes that perpetuate pain, even after the resolution of the initial injury[4]. Treating acute pain not only alleviates immediate suffering but also plays a crucial role in preventing chronic pain. By interrupting the chain of events that lead to pain sensitization and chronicity, early and effective treatment of acute pain can improve quality-of-life, reduce long-term drug use, and reduce healthcare costs[5].

This expert-led literature review on acute pain management highlights the crucial role early treatment plays in preventing chronic pain. Research indicates that untreated or poorly managed acute pain often leads to maladaptive neural changes, resulting in pain sensitization and chronicity. By prioritizing effective acute pain management, healthcare professionals can mitigate these risks, thereby preserving patients' quality of life, reducing dependence on long-term analgesics, and alleviating the economic burden on healthcare systems. These findings justify further investigation of targeted therapies for acute pain as a strategic approach to curbing the global chronic pain epidemic. This article presents the main pharmaceuticals for outpatient acute analgesia, discusses the role of opioids in this context, and explores multimodal analgesia, translating evidence from the operative to the outpatient setting. It addresses acute musculoskeletal pain, acute low back pain with and without sciatica, acute Herpes Zoster, and type-tension headache and migraine attacks, in addition to discussing the treatment of pain in special populations such as the elderly, children and adolescents, and pregnant and breastfeeding women

CONTENTS

Main drugs for outpatient acute analgesia

The most important drugs recommended for acute analgesia available in Brazil are presented in Table 1.

The role of opioids for acute analgesia

Opioids are important allies in controlling acute pain, including nociceptive (somatic or visceral), neuropathic, and mixed types, from various etiologies[6,7]. They offer rapid and effective relief, and can be prescribed while adjuvants have not yet taken effect[6]. Among the common side effects of opioids, constipation is the most prevalent, followed by nausea, vomiting, urinary retention, dry mouth, sedation, dizziness, and tolerance[8]. Less commonly, cognitive alterations, delirium, hyperalgesia, myoclonus, pruritus, falls, cardiac, immunological, or hormonal changes, sleep disturbances, and euphoria may occur[8].

Overall, opioids have a good safety profile in the short-term[6,9]. Although there are concerns about respiratory depression, this complication is considered rare when prescribed carefully[10]. It is recommended to start with the lowest possible dose and gradually increase it as needed to achieve the best pain relief while minimizing adverse effects[6]. In general, initial dosing should not exceed 50mg of oral morphine-equivalent (MME), and usually doses superior to 90MME do not provide clinically significant benefit to most patients with non-cancer pain (Table 2)[11,12]. On the other hand, opioid efficacy is not well established in the long run, and may be undermined by tolerance[13]. Also, long-term use is associated with significant side-effects in 78% of patients, of which 7,5% are considered to be severe, and leading to treatment drop-out in 14,1%[13,14].

Notably, it is estimated that 2% to 5% may develop addiction with long-term use of these drugs[14]. Therefore, special attention should be given to individuals with current or previous substance use disorders (including alcohol, tobacco, z-drugs and benzodiazepines), those with a family history of addiction, and patients with severe psychiatric disorders (including personality disorders), due to the high risk of abuse, misuse, and addiction related to opioids[11].

Multimodal analgesia: translating the evidence from the transoperative to the outpatient setting

Taking into consideration the complexity and diversity of biological mechanisms underlying pain[1], as well as the shortcomings of an analgesic strategy centered on opioid use, a conceptual shift in the framework of acute pain management has been undertaken in the past few decades[15]. The use of multiple analgesic strategies, of distinct natures (e.g., pharmacological and non-pharmacological) and with differing mechanisms of action, defined as multimodal analgesia, has been increasingly recommended[15]. Evidence stemming from perioperative pain management has shown that this strategy may lead to larger pain reduction, reduced opioid use, shorter hospital stays, and less side-effects[16,17]. While most studies address post-surgical pain, data from these research may be useful to guide outpatient care. For example, a meta-analysis of results from seven trials, the bulk of which including patients with acute post-operative dental pain (a clinical setting which approximates acute pain outpatient care), the combination of paracetamol 650mg to tramadol 75mg resulted in better analgesia (NNT 2.6, 95%CI 2.3-3.0), when compared to isolated tramadol 75mg (NNT 9.9, 95%CI 6.0-17), without significant increase in reported side-effects[18]. Furthermore, simple physical interventions, such as massage therapy, specific accuracy, joint manipulation and transcutaneous electrical nerve stimulation have been shown to provide significant analgesia for acute musculoskeletal pain[19], and may be useful to reduce drug consumption, improve pain outcomes and return to functionality.

Table 1. Main drugs recommended for acute analgesia available in Brazil.

Drugs	Available presentations	Recommended doses and posology	Most common adverse events	Observations
Dypirone	Tablets 500 and 1000mg Amp. 2mL (500mg/mL) Solution 500mg/mL Suppository 300mg	500-1000 mg every 4-6h (500-1000mg 6-8h for the elderly) Injectable: 2-5ml/day IV/IM Children: 20-25mg/kg every 6h (Maximum dose: 500mg) Newborns: 10-15mg/kg every 6h	Injectable dipyrone can cause transient hypotension; Allergic reactions; bone marrow aplasia (rare)	Avoid high doses in patients with severe renal and/or hepatic insufficiency.
Paracetamol	Tablets 500 and 750mg Solution 200 mg/mL Amp. 10mg/mL (50mL – Ameniflac ® and 100mL – Halexminophen ®)	500-750mg every 6h (Maximum dose: 4 g/day) Elderly: 500-1000mg every 6-8h (Maximum dose: 2 g/day) Children: 10-15mg/kg 4/4h (Maximum dose: 100mg/kg)	Hepatotoxicity (high doses, interactions with hepatotoxic drugs, alcoholics)	Avoid high doses in patients with severe renal and/or hepatic insufficiency.
Viminol	Tablets 70mg	70-140mg Every 8h	Sedation, drowsiness, nausea, vomiting, addiction (low risk)	Avoid use in patients at risk at risk of addiction (psychiatric patients, illicit drug users, alcoholics) Requires A2 prescription (ANVISA)
Diclofenac	Tablets 50 and 100mg Amp. 75mg/3mL Cream 10mg/g	50mg each 8-12 hs	Skin rash, epigastralgia, gastrointestinal bleeding, hypertension, edema, acute renal injury, cerebrovascular events	Avoid prolonged use in the elderly, in cases of cardiovascular diseases, chronic renal diseases, risk of bleeding (use of anticoagulants) and high gastrointestinal risk.
Ibuprofen	Tablets 400 and 600mg	400mg each 4-6h 600mg each 8h Children: 4-10mg/kg every 6-8h	Skin rash, epigastralgia, GI bleeding, hypertension, edema, acute renal injury, cerebrovascular events	Avoid prolonged use in elderly, chronic cardiovascular diseases, chronic renal diseases, risk of bleeding (use of anticoagulants) and high gastrointestinal risk.
Tenoxican	Tablets 20 and 40mg	20-40mg each 24h	Skin rash, epigastralgia, gastrointestinal bleeding, hypertension, edema, acute renal injury, cerebrovascular events	Avoid prolonged use in the elderly, in cases of chronic cardiovascular diseases, chronic renal diseases, risk of bleeding (use of anticoagulants) and high gastrointestinal risk.
Celecoxib	Caps. 100 and 200mg	100-200mg every 12 h	Skin rash, epigastralgia, GI bleeding, hypertension, edema, acute renal injury, cerebrovascular events	Avoid prolonged use in the elderly, in cases of chronic cardiovascular diseases, chronic renal diseases, risk of bleeding (use of anticoagulants) and high gastrointestinal risk.
Naproxen	Tablets 200, 500 and 550 mg	250-550mg Every 12h Children: 5mg/kg every 12h	Skin rash, epigastralgia, gastrointestinal bleeding, hypertension, edema, acute renal injury, cerebrovascular events	Avoid prolonged use in the elderly, in cases of chronic cardiovascular diseases, chronic renal diseases, risk of bleeding (use of anticoagulants) and high gastrointestinal risk
Ketorolac	Tablets 10mg	Up to 65 years-old: Single dosing: 10- 20mg Multiple dosing: 10mg every 6-8h (Maximum dose 60mg/day) Over 65 years-old: Single dose: 10 a 20mg Multiple dosing: 10mg Every 6-8hs (Maximum dose 40mg/dia)	Skin rash, epigastralgia, GI bleeding, hypertension, edema, acute renal injury, cerebrovascular events	Avoid prolonged use in the elderly, in cases of chronic cardiovascular diseases, chronic renal diseases, risk of bleeding (use of anticoagulants) and high gastrointestinal risk.
Meloxican	Tablets 7.5 and 15mg	15mg/day	Skin rash, epigastralgia, gastrointestinal bleeding, hypertension, edema, acute renal injury, cerebrovascular events	Avoid prolonged use in the elderly, in cases of chronic cardiovascular diseases, chronic renal diseases, risk of bleeding (use of anticoagulants) and high gastrointestinal risk.
Ketoprofen	Caps. 50mg Caps. LP 150mg Caps LR 100mg and 200mg Solution: 20mg/mL Amp EV: 1mg/mL Amp. IM: 50mg/mL Gel: 25mg/mL	50mg every 8h 150mg twice a day 100mg every 12h or 200mg once a day 50 drops every 6-8h 100-300mg/day 100mg twice or thrice a day Twice or thrice a day (up to 15g/day) Up to 7 days	Skin rash, epigastralgia, gastrointestinal bleeding, hypertension, edema, acute renal injury, cerebrovascular events	Avoid prolonged use in the elderly, in cases of chronic cardiovascular diseases, chronic renal diseases, risk of bleeding (use of anticoagulants) and high gastrointestinal risk. Attention to skin care
Loxoprofen	Tablet 60mg Patch 100mg	60-120mg every 8h (maximum dose: 180mg/day) 1 patch per day	Skin rash, epigastralgia, GI bleeding, hypertension, edema, acute renal injury, cerebrovascular events	Avoid prolonged use in the elderly, in cases of chronic cardiovascular diseases, chronic renal diseases, risk of bleeding (use of anticoagulants) and high gastrointestinal risk. Avoid prolonged use in the elderly, in cases of chronic cardiovascular diseases, chronic renal diseases, risk of bleeding (use of anticoagulants) and high gastrointestinal risk.

Table 1. Continued...

Drugs	Available presentations	Recommended doses and posology	Most common adverse events	Observations
Dexametasone	Tablets 2 and 4mg Amp. IV and IM 2-4mg/mL	2-4mg every 6h (Maximum dose: 16mg/day)	Hyperglycemia, mental confusion, insomnia, hypertension, suppression of immune response, Cushing's syndrome, risk of fractures and osteoporosis, increased intraocular and arterial pressure, muscle weakness	
Baclofen	Tablet 10mg	5 -20mg every 8h	Dizziness, drowsiness, sweating, insomnia, dry mouth, vomiting, diarrhea	Increased risk of falls. Indicated in painful conditions associated with muscle spasticity
Cyclobenzaprine	Comp. 5,10,15mg Caps. 15mg (Mitrul ®)	5-10mg once or twice a day 15mg once a day	Cognitive dysfunction, sedation, delirium, orthostatic hypotension, dry mouth, blurred vision, constipation and urinary retention, cardiovascular effects	Central action muscle relaxant, molecular structure similar to tricyclics, use should be very careful in elderly, side effects similar to tricyclics, avoid use with serotonergic drugs due to risk of serotonin syndrome Elderly: Long half-life about 12 to 24hs, consider another option
Tizanidine	Tablet 2mg	2-4mg thrice a day	Dry mouth, asthenia, dizziness, drowsiness	Short duration, lower risk of adverse effects, indicated in spasticity. Adjust dose in renal and hepatic insufficiency
Codeine Codeine+ paracetamol	Tablet 30 and 60 mg Solution 3 mg/mL Tablet 500/7,5 and 500/30mg	30-60 mg Every 4-6h (Maximum dose: 360mg/day) Elderly: 30-60mg every 6-8h 1 tablet every 4h or 2 tablets every 6h	Sedation, mental confusion, blurred vision, dry mouth, skin itching, constipation, urinary retention, addiction	10% of the population does not respond to codeine (cytochrome P450 polymorphism). Attention in patients with chronic renal disease
Tramadol	Tablets and caps 50-100 mg Solution 100mg/mL Tablets LP 50-100mg	50-100mg every 4-6hs (Maximum dose: 400mg/day) Eldery: 50-100mg every 6-8h 50-100mg every 12h	Sedation, mental confusion, blurred vision, dry mouth, skin itching, constipation, urinary retention, addiction	May cause reduction of seizure threshold, avoid use in individuals with brain tumors or neurological conditions with predisposition to epileptic activities; risk of serotonin syndrome when associated with serotonin modulators; risk of hypoglycemia in the presence or absence of hypoglycemic agents and hyponatremia.
Tramadol+ paracetamol	Tablets 37,5/325mg	1-2 tablets every 4-6hs Eldery: 1 tablet Every 6-8h		Association with paracetamol: Avoid high doses in patients with severe renal and/or hepatic insufficiency
Rramadol+ diclofenac	Tablets 25/25mg; 50/25mg	1 tablet every 8h		Association with diclofenac: Avoid prolonged use in elderly, chronic cardiovascular diseases, chronic renal diseases, risk of bleeding (use of anticoagulants) and high gastrointestinal risk.
Morphine	Tablets 10 and 30mg Amp. IV, SC 2 and 10 mg /mL Caps XR. 30, 60 and 100 mg	5-200mg every 4h 1 caps every 12h	Sedation, mental confusion, blurred vision, dry mouth, skin itching, constipation, urinary retention, addiction	Attention in patients with chronic renal disease
Oxycodone Oxycodone+ Naloxone	Tablets XR de 10, 20 and 40 mg Tablets 5/2,5mg; 10/5mg; 20/10mg; 40/20mg	1 tablet every 12h	Sedation, mental confusion, blurred vision, dry mouth, skin itching, constipation, urinary retention, addiction	Stable concentration in 24-36hs
Buprenorphine	Transdermal patches 5, 10, 20, 30 and 40mg	5-20 mg every 7 days (Restiva®) 20-40 mg every 3 days (Transtec®)	Sedation, mental confusion, blurred vision, dry mouth, skin itching, constipation, urinary retention, addiction	Stable concentration in up to 48hs. Compared to other opi oids, it has a good safety profile with low incidence of adverse effects in elderly, frail individuals and with polypharmacy

Acute musculoskeletal pain

Musculoskeletal pain is the most frequent type of pain within the Brazilian population[20], and encompasses several acute conditions commonly seen in daily practice: joint pain, tendonitis and myofascial pain syndrome[9]. The assessment of these conditions should particularly include the evaluation of ergonomics (particularly during work and sleep) and lifestyle habits, physical activity, as well as their particular interference in the individual functionality[9,21].

The management of this type of pain should be approached multidimensionally, involving both pharmacological and non-pharmacological approaches, within an interdisciplinary focus. It should be highlighted that adequate management may reduce the risk of the development of structural and functional changes, that eventually result in a chronic course[9].

The pharmacological treatment should follow the Analgesic Ladder proposed by the World Health Organization (WHO) in 1986 and updated in the following years (Figure 1)[22]. This strategy was developed with the primary goal of standardizing and optimizing pain treatment, especially in hospital settings[22]. It provides a practical guide for the selection and dosage of analgesic drugs, aiming to relieve pain effectively and safely[22]. For mild pain, treatment begins with non-opioid analgesics, which can be

supplemented with adjuvants[22,23]. If the pain persists, it progresses to weak opioids, with or without the initial drugs. Moreover, If pain is still not controlled, strong opioids should be considered[22,23].

This figure presents the updated version of the World Health Organization Analgesic ladder, the latter of which was originally proposed in 1986. While pain severity may guide the selection of the starting treatment step in acute pain and acute crisis of chronic pain, treatment of chronic pain should begin at the initial step, and progress to the next ones in case of refractoriness. In this updated version, an additional fourth step was included, recommending the consideration of analgesic and neuromodulation procedures to optimize analgesia in refractory or severe cases, and to reduce opioid requirements.

Table 2. Oral morphine milligram equivalent doses for frequently prescribed opioids in Brazil.

Opioids	Conversion Factor
Codeine	0.15
Tramadol	0.2
Morphine	1.0
Oxycodone	1.5
Tapentadol	0.4
Buprenorphine[A]	70
Methadone[B]	
< 30MME	2
31-99 MME	4
100-299 MME	8
> 300	Consult with pain specialist

MME – oral morphine milligram equivalent; Conversion factors based on Dowell[11], unless otherwise specified; [A]Conversion factor based on reference study[63]; [B]Conversion factor based on reference study[12].

Paracetamol[9,23] pyrone and nonsteroidal anti-inflammatory drug (NSAID) are first-line drugs for managing mild to moderate acute pain[9,23]. These analgesics present a low risk of side effects and good tolerability, being indicated for pain related to muscle injuries and inflammations. Frequently used NSAIDs and their respective efficacy in treating acute pain according to the Oxford Pain Group are presented in Table 3[24]. Adjuvant drugs act synergistically with the other analgesics, favoring pain relief[9,23]. This therapeutic class is quite broad and, in the context of acute musculoskeletal pain, may include corticosteroids, antispasmodics, and muscle relaxants, among others[9,23].

Furthermore, musculoskeletal pain requires a broad approach to treatment beyond drug, primarily to avoid potential chronicity[9,21]. Therefore, physical, psychological, and social rehabilitation is relevant, raising patient awareness of ergonomic, emotional, and psychosocial aspects[9,21].

Moreover, recently pain neuroscience education has gained increasing interest in the treatment of chronic musculoskeletal pain and may also be promising in acute settings, despite the lack of research to date[25,26]

It involves raising patient awareness, focusing on changing daily habits and routines that may influence the frequency and intensity of pain[25,26]. Recent research has shown it to be effective when combined with exercises, acting to reduce pain intensity,

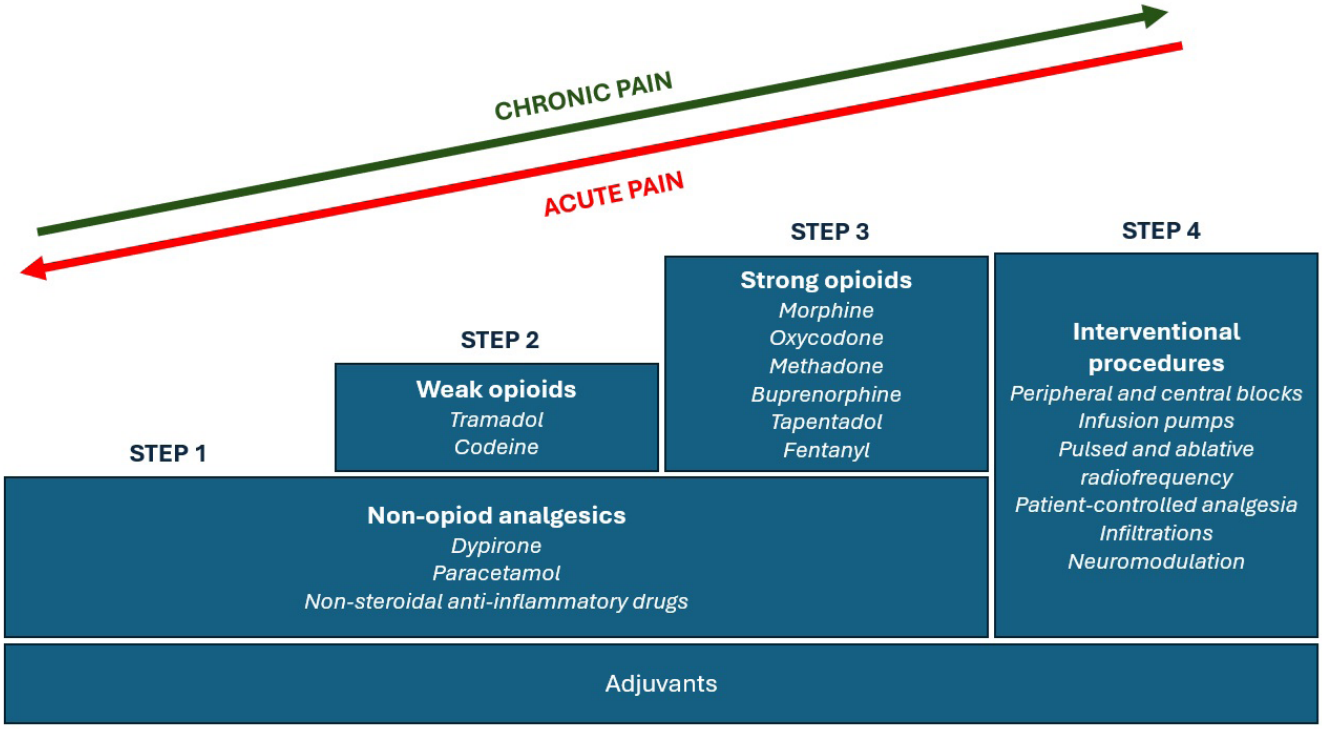

Figure 1. Updated World Health Organization Analgesic Ladder.

Table 3. Frequently used non-steroidal anti-inflammatory drugs in the outpatient setting and their efficacy in treating acute pain.

Drugs	Dose	Percent of patients with at least 50% pain relief	NNT (95%CI)
Diclofenac	100mg	67	1.9 (1.6 – 2.2)
	50mg	63	2.3 (2.0 – 2.9)
Ibuprofen	600mg	79	2.4 (2.0 – 4.2)
	400mg	56	2.4 (2.3 – 2.6)
	200mg	45	2.7 (2.5 – 3.1)
Ketorolac	20mg	57	1.8 (1.3 – 2.2)
	10mg	50	2.6 (2.3 – 3.1)
Naproxen	550mg	46	3.0 (2.2 – 4.8)

Based on reference study[24]; NNT – Number necessary to treat for achieving ≥ 50% pain reduction; 95%CI – 95% Confidence Interval.

disability, kinesiophobia, and pain catastrophizing compared to exercises alone[25,26].

Acute low back pain with and without sciatica

Acute low back pain (lumbago) is one of the most common musculoskeletal conditions globally[27]. In the primary care context, most cases of acute low back pain are non-specific and have a favorable prognosis. The main causes include disc herniation, lumbar canal stenosis, facet pain, and myofascial syndrome. Additionally, a portion of patients may progress to chronic pain or have severe underlying causes (e.g., fractures, infections, neoplasms, or cauda equina syndrome), making diagnostic, treatment, and management strategies crucial in initial care[28].

In initial management, the diagnostic focus is to identify "red flags" that may indicate serious underlying pathologies, as well as to avoid unnecessary imaging in cases of non-specific low back pain[28]. International guidelines do not recommend routine imaging (X-ray, CT, or MRI) within the first 4-6 weeks of acute non-specific low back pain, in the absence of red flags[29]. There is strong evidence that early imaging rarely alters management or improves clinical outcomes[29].

Strategies for treating acute low back pain are based on symptom reduction, functional restoration, and chronicity prevention, using a gradual and multimodal approach. It is important to clarify the benign and self-limiting nature of most cases of acute low back pain, and to encourage light physical activity within the individual limitations. Prolonged rest (beyond 48 hours) may delay recovery and increase risk of development of chronic pain[30]. Addressing psychosocial factors (e.g., fears related to pain, kinesiophobia, occupational stress) is also paramount as they can perpetuate the condition[30].

The role of pharmacological treatment is limited in this condition. NSAIDs are considered as first-line therapy, as they lead to reduction in moderate functional improvements, although mild analgesia when compared to placebo. Additionally, the combination of vitamins B1, B6 and B12 with diclofenac has been observed to significantly improve the analgesic efficacy of this NSAID in treating acute low back pain and may be considered given its low-risk profile, although further studies are necessary to confirm these findings and their generalizability to other NSAIDs[31-33]. Paracetamol is not recommended, since systematic reviews have not demonstrated superior efficacy to placebo in acute low back pain[34]. Muscle relaxants (i.e., cyclobenzaprine, tizanidine): may provide modest short-term relief but are associated with adverse effects such as sedation and dizziness[34]. Moreover, opioids are not recommended routinely. They should be reserved for short-term use, in cases of severe and refractory pain, requiring strict supervision due to the potential risk of dependence and tolerance[34].

On the other hand, non-pharmacological therapies should always be considered. Manual therapy (e.g., spinal manipulation, mobilization) and superficial heat therapy (warm compresses) can provide modest short-term symptomatic relief[30]. Physical therapy with emphasis on gradual exercises and postural guidance can also be beneficial[28]. Although structured exercises have not been found to lead to clinically significant benefit in the short term (up to 6 weeks), staying active remains fundamental for overall rehabilitation and recurrence prevention[30].

The management of acute sciatica should be similar to acute low back pain in general. However, intense radicular pain may require epidural corticosteroid injections for temporary pain relief, even though functional long-term benefit is limited[35]. Discectomy may hasten sciatica pain improvement, but 1 year follow-up results tend to be comparable to conservative treatment[36].

Most individuals will improve in 4 to 6 weeks. If this does not occur, or red flags appear, it is important to consider imaging[30]. Urgent referral to specialists is warranted in cases of suspected serious aethiologies or progressive neurological deficits[28]. For patients with acute sciatica, a conservative approach is recommended for at least 6-8 weeks, unless there are severe or progressive neurological deficits. In these cases, surgery may be discussed[30].

Acute Herpes-Zoster

Herpes-zoster is a common medical condition, resulting from the reactivation of the Varicella Zoster virus lying latent in dorsal root and cranial nerve ganglia[37,38]. Its lifetime prevalence is estimated to range from 15% to 30% in the United States, being more common among the elderly[39]. It usually affects the middle thoracic dermatomes and the ophthalmic division (V1) of the trigeminal nerve; resulting in a typical skin rash (i.e. maculopapular lesions with vesicles), and usually severe pain (37,40). Allodynia,

pruritus and touch hypoesthesia are also commonly found[40]. It should be highlighted that, besides the acute symptomatic burden, herpes zoster may lead to significant complications, including cardio and cerebrovascular events, encephalitis, myelitis, retinitis and post-herpetic neuralgia[38,41]. The latter is defined as persistent local pain after 3 months since the beginning of the symptoms, and is reported to be the most frequent of these complications, occurring in up to a third of patients, especially the elderly and immunocompromised[42].

Acute management of this disease, and particularly of its painful symptoms, is frequently challenging, as it usually affects older individuals in whom changes in drug pharmacokinetics, metabolism, multimorbidity and polypharmacy are relevant aspects ("The elderly" topic section next). Its two main pillars are: antiviral treatment and pain management. Antiviral treatment involves oral guanosine analogues (Table 4) and should be ideally started within 72 hours of rash appearance, but can still be warranted outside this time window in case of development of new skin lesions, or if ophthalmic or neurologic complications are present[37]. For immunocompetent individuals with non-complicated herpes zoster (i.e., without ocular, otic, neurologic or other visceral involvement; nor extensive cutaneous manifestations, such as involving more than 2 contiguous dermatomes, or of bilateral and/or non-contiguous ones), treatment can be administered orally in the outpatient setting[38]. Adequate antiviral treatment reduces acute pain severity and duration, as well as the risk for most disease-related complications[38]. However, current evidence suggests it does not reduce the risk for developing post-herpetic neuralgia[43].

On the other hand, acute pain management strategy depends on pain severity, response to previous analgesic treatments, and individual aspects. Firstly, it is important to highlight that, although post-herpetic neuralgia is considered to be a typical prototype of neuropathic pain; nociceptive inflammatory pain is usually predominant in the early acute phases of the disease, giving way to more a more neuropathic component as it improves and the skin rash disappears. In this sense, mild to moderate pain should be managed with simple analgesics, NSAIDs with or without a weak opioid, such as tramadol[38]. Meanwhile, moderate to severe pain warrants use strong opioids[38]. In case initial pharmacologic treatment fails to bring significant pain improvement, a short corticosteroid course can be considered, usually with prednisone 60mg/day for 7 days. Gabapentin, pregabalin, tricyclic antidepressants[38] and, in the authors opinion, serotonin-noradrenalin reuptake inhibitors (e.g., duloxetine and venlafaxine) can also be considered. Topical analgesics, such as 5% lidocaine patches and creams may be recommended, when skin lesions have completely resolved. Finally, if pharmaceutical therapy still does not bring sufficient analgesia or are poorly tolerated, nerve blocks could be considered[38].

Type-tension headache and migraine attacks

Type-tension headache and migraine are the most prevalent types of primary headaches and, as a group, they affect over 3 billion people worldwide, being the second most common disease conditions and the third cause of years lived with disability globally[44]. However, acute treatment of these headache attacks is frequently overlooked. It is estimated that over 60% of people suffering from migraine have never used acute prescription pharmaceuticals[45]. Moreover, among individuals receiving them, 37.4% reported dissatisfaction with their treatment regimen[46]. This is particularly concerning if taken into consideration that adequate acute headache attack treatment does not only reduce the disease burden but may also play an important role in the risk for their evolution to chronic forms. In fact, among people suffering from episodic migraine, the risk for developing chronic daily headache (i.e., over 15 headache days per month), was found to be twice as large among those who reported poor outcomes with acute treatment[47].

It should be highlighted that acute headache treatment should be offered to all people suffering from migraine or tension-type headache[48-50], aiming at: i. fast and consistent freedom from pain and associated symptoms, without recurrence; ii. restored ability to function; iii. minimal need for repeat dosing or rescue drugs; iv. optimal self-care and reduced subsequent use of resources (e.g., emergency department visits); and, v. minimal or no adverse events[51].

For acute migraine treatment, first-line drugs include simple analgesics and NSAIDs[48,49]. If this is found to be insufficient, triptans should be prescribed (Table 5)[48,49,52]. If adequate pain relief cannot be obtained with optimized doses of the selected triptan in two out of three attacks, the switch to another triptan is recommended[49]. Notably, the combined use of NSAIDs and triptans, particularly of sumatriptan and naproxen, has been found to act synergically in improving pain outcomes, and can be recommended as an alternative to optimize results[49]. Triptans are contraindicated in patients with cardiovascular or cerebrovascular diseases, uncontrolled hypertension, hemiplegic

Table 4. Antiviral recommended for acute herpes zoster treatment in the outpatient setting.

Drugs	Dosage (adult)	Adverse effects	Notes
Acyclovir	800mg orally 5 times per day for seven days	Diarrhea, encephalopathy, erythema multiforme, headache, malaise, nausea, Stevens-Johnson syndrome, vomiting	Dose adjustments warranted in case of creatinine clearance ≤ 50mL/min
Valacyclovir	1000mg orally thrice a day for seven days		
Famciclovir	500mg orally thrice a day for seven days	Confusion, headache, nausea, Stevens-Johnson syndrome	Dose adjustments warranted in case of creatinine clearance ≤ 60mL/min

Based on reference study[37].

Table 5. Triptans recommended for treatment of migraine attacks available in Brazil.

Drugs	Initial dosing	Maximum daily dose	Notes
Sumatriptan	50-100mg (may repeat in ≥ 2h)	200mg	---
Zolmitriptan	2.5-5mg (may repeat in ≥ 2h)	10mg	---
Eletriptan	20-40mg (may repeat in ≥ 2h)	80mg	A minimum of 40mg is generally recommended due to higher efficacy Avoid if us of CYP3A4 inhibitor within 72h
Rizatriptan	5-10mg (may repeat in ≥ 2h)	30mg	Reduced dose (5mg per dose and 15mg/24h) is recommended in case of use of propranolol
Naratriptan	2.5mg (may repeat in ≥ 4h)	5mg	Slower onset and longer duration of effect May have lower efficacy, but better tolerability

Based on reference study[52].

migraine and migraine with brainstem aura[48]. Ergot derivates, such as dihydroergotamine, could be considered if all other available treatments do not yield adequate pain relief[49]. However, their variable bioavailability, high risk for drug interactions and overuse, and frequent side effects (e.g., nausea and vomiting) usually limit their use[49]. Opioids are strongly not recommended for management of migraine, as they have not been found to be superior to other treatment alternatives, and their overall risk-benefit ratio to be unfavorable in this setting[49,53]. Finally, in case of migraine attacks lasting for more than 72 hours (i.e., status migrainosus), parenteral treatment are often warranted within the emergency department settings, and may include: NSAIDs, chlorpromazine and other antidopaminergic agents, magnesium, steroids and peripheral nerve blocks[49]. The detailed management of status migranosus is beyond the scope of this article.

Additionally, some important considerations should be made for the management of migraine attacks in the outpatient setting. Firstly, antiemetic drugs should be offered to all individuals who suffer from nausea and/or vomiting that is not manageable with timely intake of acute attack drug[49,51]. The available oral antiemetic drugs most recommended for this purpose are: metoclopramide, domperidone, promethazine and chlorpromazine[49]. The combination of antiemetics with NSAIDs and/or triptans has been found to improve acute migraine treatment efficacy[49,51]. Also, if the individual experiences early vomiting during the attack, parenteral route and orally disintegrating tablets should be favored, if available[49]. Secondly, acute drugs should be used as early as possible, preferably while pain intensity is still mild, as this strategy has been consistently shown to improve outcomes[49]. Finally, patients should be recommended to restrict limiting simple analgesic and NSAID use to less than 3 days per week, and triptan, ergot derivates and combined analgesics (i.e., simple analgesics with caffeine) to less than 2 days per week, in order to reduce the risk of developing drug overuse headache[49]. It should be noted that, individuals with more than three headache days per month may warrant optimization of prophylactic treatment[51].

On the other hand, tension-type headache should be managed with simple analgesics or NSAIDs[50,54]. While the latter have been found to be more efficacious, the isolated use of the former could be considered in milder cases, given their favorable tolerability profile[50,54]. Although caffeine alone does not provide benefit in treating tension-type headache attacks, its combined use with paracetamol or NSAIDs has been shown to improve outcomes[54]. As for migraine, opioids are not recommended[50,54]. Furthermore, triptans, ergot derivates and muscle relaxants are not efficacious for this type of headache and should not be recommended[50,54].

Special populations

a. The elderly

The management of pain in elderly people is often challenging, as this population undergoes numerous biopsychosocial changes that may change drugs pharmacokinectics, including: increases in the body fat percentage (thus leading to larger distribution volumes for lipophilic drugs, such as opioids, which tend to accumulate and present with higher elimination half-lives); reduction in phase I hepatic metabolism; and reductions of renal clearance[55,56]. Furthermore, they often suffer from communication difficulties, cognitive decline, sensory deficits, multimorbidity, social and family insufficiency, and polypharmacy, adding a layer of complexity to the management[57]. Particularly, in Brazil, a study observed that 93.0% of the elderly were using at least one drug chronically, and that about 18.0% were in use of at least five[58]. Drug consumption, associated with a higher burden of diseases, as well as changes inherent to aging, produces side effects and drug interactions with serious consequences for patients in this age group[59]. These factors need to be carefully considered when new treatments are being introduced to minimize the risk of drug interactions and severe adverse reactions[55,56,59]. In this sense, a "start low and go slow" approach is generally recommended when introducing drugs, with frequent assessments of side effects and analgesic efficacy. Additionally, care should be taken when prescribing analgesic drugs as to changes in posology due to increases in drug half-life (Table 1). Finally, non-pharmacological treatments should be considered whenever possible.

b. Children and adolescents

Acute pain management in pediatrics is complex, as the pediatric age range encompasses infants to adolescents. Safe and effective pharmacological management requires an understanding of pharmacological principles within this population, taking into consideration age, pain severity, developmental stage, patient individuality, drug characteristics. On the other hand, untreated pain in children, especially in neonates, can have lasting consequences[60]. Studies indicate that repeated exposure to pain during the first days of life can lead to chronic sensitization to painful stimuli and changes in the central nervous system[60]. Children suffering from chronic pain are also at greater risk of developing emotional problems, mood disorders, and socialization difficulties[61].

Assessing pain in children is frequently challenging, as there may be no or poor verbal communication, and it may be expressed in other ways (e.g., withdrawal, minimizing pain due to fear, apathy, or aggression). In neonates and infants, clinical judgment combined with the use of age-appropriate scales is necessary, while simple assessment scales are useful in older children[9].

The management of acute and chronic pain in children is increasingly characterized by a multimodal or preventive analgesia approach, in which lower doses of non-opioid and opioid analgesics, such as NSAIDs, local anesthetics, N-methyl-D-aspartate antagonists, alpha-adrenergic agonists, and voltage-dependent calcium channel alpha-2 delta proteins are used, alone or in combination with opioids, to maximize pain control and minimize drug-induced adverse side effects[62]. Initial management of acute pain in pediatrics is based on the use of simple analgesics and NSAIDs (Table 1)[62]. Additionally, psychological pain management, such as distraction, hypnosis, and relaxation techniques, has shown efficacy in relieving acute and chronic pain in children[62].

c. Pregnant and breastfeeding women

Various anatomical and functional changes occurring during the gestational period can trigger, exacerbate, or modify a wide range of painful conditions, particularly musculoskeletal disorders[9]. In this context, the choice of the most appropriate therapeutic intervention for each situation is based on providing analgesia with minimal risk to the pregnant person and the fetus[9].

Whenever possible, non-pharmacological measures should be prioritized, avoiding or postponing pharmacological or surgical interventions. Drugs used during pregnancy may be present in the fetal circulation at birth, alter placental blood flow, and cause fetal damage by reducing the supply of oxygen and nutrients[9]. When determining pharmacological treatment, it is important to consider maternal gestational age, the placenta, and the fetus. Drugs with a high protein binding rate are excreted in small amounts in breast milk[9].

Dipyrone and paracetamol are among the non-opioid analgesics used during pregnancy and breastfeeding. Paracetamol at doses > 3 g/day for prolonged periods can cause liver and kidney damage in both the mother and the fetus[9]. The use of NSAIDs should be avoided from the third trimester onward, as they can prolong pregnancy, and can cause premature closure of the ductus arteriosus, neonatal pulmonary hypertension, fetal oliguria, oligohydramnios, facial dysmorphisms, disturbances in fetal homeostasis, and muscle contracture[9]. However, during breastfeeding, ibuprofen, diclofenac, ketoprofen, meloxicam, and mefenamic acid are compatible at usual doses. For detailed information on prescribing drugs during pregnancy and lactation, it is recommended to consult the risk classification based on the drug's potential to cause fetal malformations, developed by the US Food and Drug Administration, as well as the Australian Drug Evaluation Committee classification, which categorizes the risk of drugs used during pregnancy[9].

CONCLUSION

Although acute pain management is part of the daily practice, it can be frequently challenging, especially when addressing specific patient populations (i.e., neonates, children and the elderly). Nonetheless, adequate acute pain control is paramount to preventing the development of chronic pain, besides reducing the symptomatic burden of their underlying disease. To achieve that aim, adequate knowledge of the available pharmacological treatments, engagement in non-pharmacological approaches, implementation of multimodal analgesia strategies and therapy individualization are required.

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