



PROTOCOL-BASED MANAGEMENT OF 9 MOST COMMON PAIN STATES

What is pain management protocol?



DEFINITION

- **Defined** as precise and detailed plan for the study of pain and/or plan for pain management regimen¹



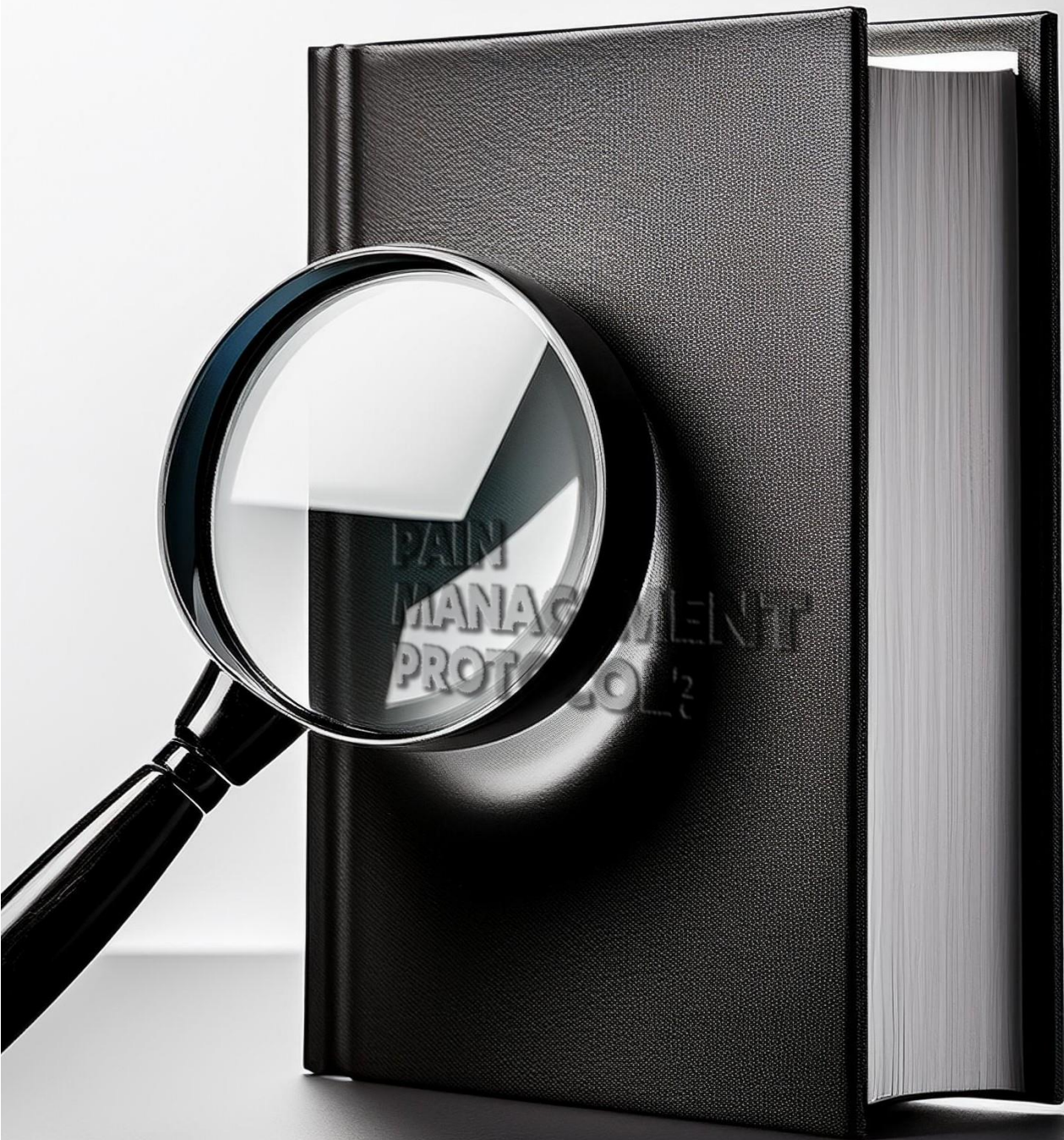
FORMULATION

- **Formulated** through a rigorous process involving critical evaluation of research studies, clinical practice guidelines, and consensus from expert panel²



IMPORTANCE

- **Guides** healthcare professionals in making decisions about pain care or treatment through detailed description of specific steps to be followed²
- **Raises** the standard of quality in patient care by providing a clear roadmap for treatment and minimizing medical errors²
- **Plays** a significant role in the continuous education of healthcare professionals, keeping them updated with the latest evidence-based practices²



HOW DO YOU READ PAIN MANAGEMENT PROTOCOL?

How do you read the pain management protocol?

Pain can be effectively managed by using the protocol's 3-steps approach:

STEP 1

ASSESS PATIENT'S SYMPTOMS

The first step is to do a total pain assessment. Start your assessment by asking patient some crucial questions about their pain history (such as pain onset, location, duration, intensity, and aggravating and relieving factors)



Next, assess the pain type based on etiology, anatomic location, temporal nature, and intensity

Lastly, identify patient's symptoms or circumstances requiring referral.

These may include but not limited to trauma, fever, weight loss, and neurogenic pain

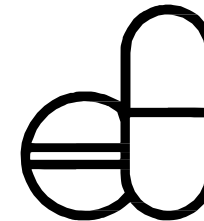


STEP 2

IDENTIFY TREATMENT CONSIDERATIONS

Initiate Step-2 to customize the treatment by asking questions related to current and previous medications (both prescribed and OTC- their doses, effectiveness, side effects, and patient preference for any specific treatment), concomitant illness, and aggravating or relieving factors

Consider potential drug-drug interactions between oral NSAIDs/paracetamol and other classes such as antidepressants, antihypertensives, antiepileptics, corticosteroids, etc.



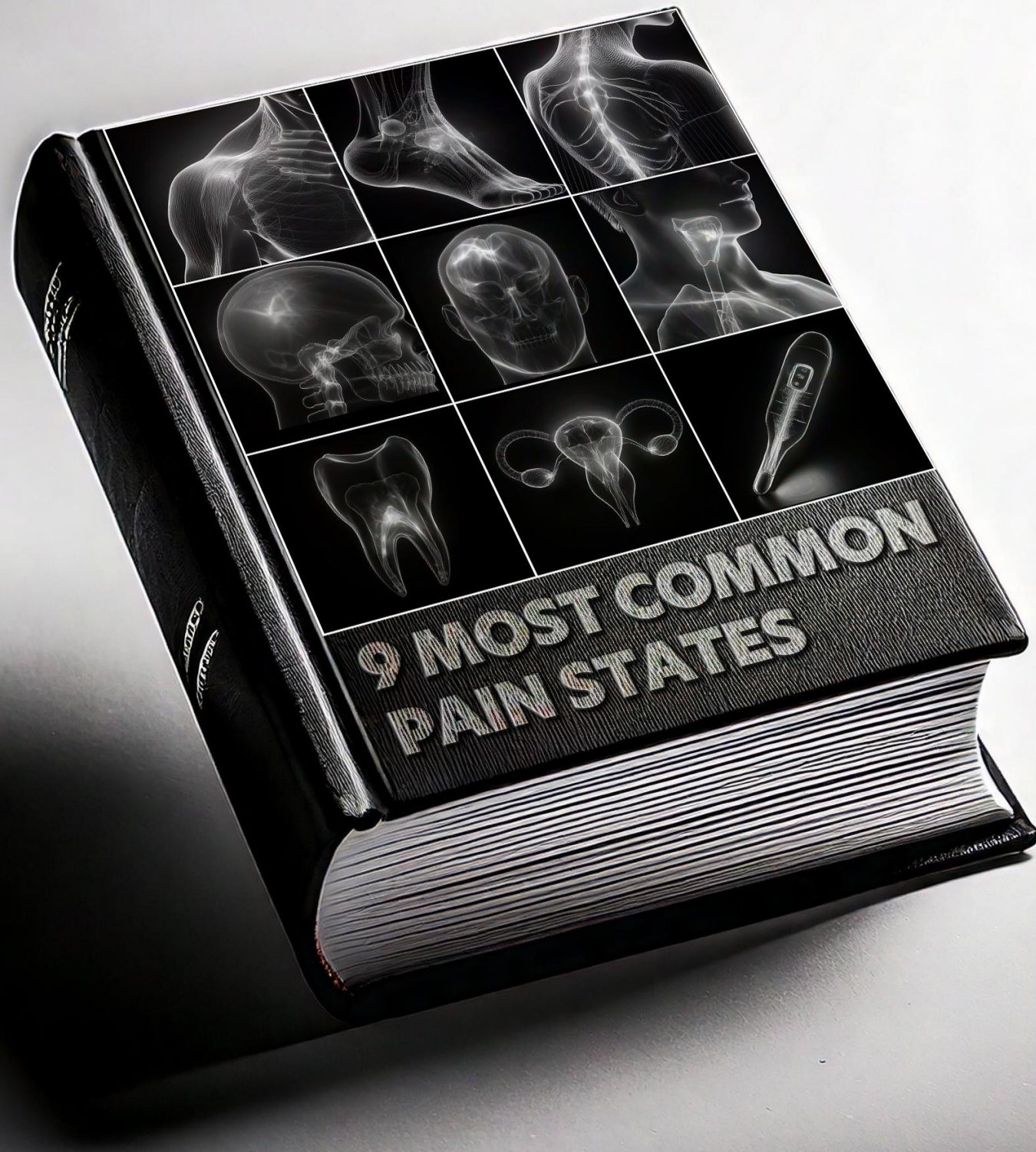
When selecting analgesics, consider comorbidities such as chronic kidney disease, liver disease, peptic ulcer disease, and cardiovascular disease

STEP 3

RECOMMEND TREATMENT

Finally, based on patient information gained from Step 1 and Step 2, recommend non-pharmacological and/or pharmacological treatment(s) for optimal pain management





PROTOCOL-BASED MANAGEMENT OF 9 MOST COMMON PAIN STATES

- | | |
|-------------------------------------|------------------------------------|
| 1) Musculoskeletal Pain | 5) Adult Migraine Pain |
| 2) Osteoarthritis Pain | 6) Adult Acute Sore Throat Pain |
| 3) Adult Non-specific Low Back Pain | 7) Adult Dental Pain |
| 4) Adult Headache Pain | 8) Period Pain |
| | 9) Fever in Children Aged <5 Years |

1 MUSCULOSKELETAL PAIN PROTOCOL

For the Management of Acute, Non-low back,
Musculoskeletal Injuries in Adults

STEP 1

ASSESS PATIENT'S SYMPTOMS

STEP 2

IDENTIFY TREATMENT CONSIDERATIONS

STEP 3

RECOMMEND TREATMENT

PUTS A
HALT ON LIFE
ONGOING
YOUNG OR OLD
BODYACHES
INTERRUPTS SLEEP
MALAISE
INCREASINGLY
BAD POSTURE
WITHDRAWN FROM ACTIVITIES
RESTRICTS
MOBILITY
AFFECTS SOCIAL LIFE
CHRONIC
ANGRY AND
IRRITABLE
FULL BODY ACHING
SORENESS
EXHAUSTING
STRAINED
FEELING WEAK
PERSISTENT
DISCOMFORT

STEP 1 ASSESS PATIENT'S SYMPTOMS

Ask questions (Pain history)







Ask your patient these 6 crucial questions¹⁻³

- 1. Onset of recent pain** (when did the pain start, what was the patient doing when pain started, and if the pain onset was sudden/gradual/an exacerbation of a chronic problem)
- 2. Aggravating and alleviating factors** (what makes pain better and worse, how does physical activity or position affect pain, and if any non-drug therapies or medications relieve pain)
- 3. Quality of pain experience** (ask patient to describe pain-sharp/dull/crushing/burning/tearing, or some other feeling, along with the pattern, such as intermittent, constant, or throbbing)
- 4. Location of pain** (where is pain felt in the body and if it radiates or moves to any other area)
- 5. Severity of pain** [ask patient to describe pain intensity at baseline and during acute exacerbations, use pain scale such as visual analog scale (VAS), numerical rating scale (NRS), verbal rating scale (VRS)]
- 6. Circumstances of original pain** [when did the original pain start, under what circumstances, duration, onset (sudden/gradual), frequency, if acute/chronic]

Assess pain type

**PAIN CLASSIFIED
BASED ON**

Duration

Location

Intensity

Etiology

Assess your patient's pain type based on these 4 factors¹³⁻¹⁵

- 1. Underlying etiology** (nociceptive/inflammatory/neuropathic/mixed pain/idiopathic)
- 2. Anatomic location** (somatic/visceral)
- 3. Temporal nature** (acute/chronic/acute exacerbation of a chronic pain syndrome)
- 4. Intensity** (mild/moderate/severe)

STEP 1 ASSESS PATIENT'S SYMPTOMS

Identify symptoms /circumstances requiring referral^{1,3,4}



1. **Red flags indicating more serious underlying conditions** [such as systemic illness (fever/weight loss), night pain causing insomnia, older age at new symptom onset, previous history of cancer, and duration of pain >3 months]
 2. **Emergency conditions** (spinal and leg pain with neurological symptoms and changes in bladder or bowel function, spinal pain with band-like referral, escalating pain and gait disturbance, and sudden onset of a hot swollen painful joint with multidirectional restriction in movement)
 3. **Other reasons** (escalating pain and progressive worsening of symptoms that don't respond to conservative management or medication)
-

STEP 2 IDENTIFY TREATMENT CONSIDERATIONS

Ask questions to customize musculoskeletal pain treatment



Ask your patient these 5 crucial questions:

1. Are you taking any prescribed and over-the-counter medicines? If yes, what are these and in what dose(s)?
2. Do you have any medical conditions?
3. How have you managed your musculoskeletal pain previously?
4. What are the triggers for your musculoskeletal pain?
5. What are the aggravating or relieving factors?

Assess medications to be used with caution with oral NSAIDs or paracetamol⁵⁻⁷



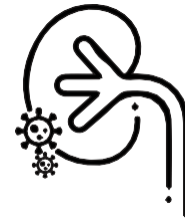
1. **Increased risk of bleeding** [Oral NSAIDs when used with some selective-serotonin reuptake inhibitors (SSRI), tricyclic antidepressants, acetylsalicylic acid (ASA), corticosteroids and warfarin]
2. **Decreased antihypertensive efficacy** [Oral NSAIDs when used with angiotensin converting enzyme (ACE) inhibitors, angiotensin II receptor blockers (ARBs), diuretics, and beta-blockers]
3. **Increased drug levels** (Oral NSAIDs when used with lithium and methotrexate)
4. **Increased risk of paracetamol toxicity** [Paracetamol when used with epilepsy medications (e.g. carbamazepine), other P450 enzyme inducers (e.g. isoniazid, rifampin), and alcohol]

STEP 2 IDENTIFY TREATMENT CONSIDERATIONS

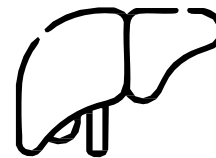
Assess analgesics to be used in patients with comorbidities⁵⁻¹¹



1. Chronic kidney disease (e.g. NSAIDs have nephrotoxic class effects and should be avoided in patients with symptoms of renal impairment)



2. Liver disease (e.g. NSAIDs can cause acute liver injury with variable severity)



3. Peptic ulcer disease (e.g. Chronic use of NSAIDs can cause serious upper gastrointestinal adverse reactions including peptic ulcer disease and gastrointestinal bleeding)



4. Cardiovascular disease (e.g. All non-aspirin NSAIDs may be associated with a potential increase in CV thrombotic risk, NSAIDs are contraindicated in patients who have undergone coronary artery bypass graft surgery)

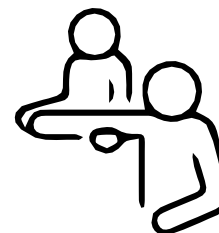


Ask questions about previous treatment

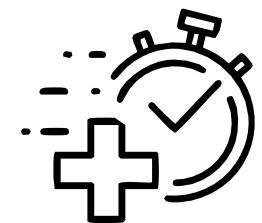


Ask your patient these 2 crucial questions about their previous treatment:

1. Talk about your previous treatment for musculoskeletal pain (What dose did you use, was it effective, and if you had any side effects from it)



2. Do you have any preference for any specific treatment?



STEP 3**RECOMMEND TREATMENT****Non-pharmacological recommendations for treatment of musculoskeletal pain^{1,2,12}**

1. **Physical modalities** [these include strengthening and conditioning exercises, local heat or cold therapy, manual therapies (spinal manipulation, massage, and mobilization techniques), stimulation techniques (acupuncture, transcutaneous electrical nerve stimulation), and percutaneous electrical nerve stimulation]
 2. **Psychosocial modalities** (these include patient education, stress reduction techniques, support groups, and biofeedback)
-

Pharmacological recommendations for treatment of musculoskeletal pain^{12,13,15-21}

1. **Non-opioid analgesics** [Topical NSAIDs (diclofenac) with or without menthol gel, oral paracetamol for mild to moderate pain (500-1000 mg) (maximum daily dose: 3-4 gms), oral NSAIDs (ibuprofen 400-800 mg; naproxen 250-500 mg; celecoxib 100-200 mg)]
2. **Opioid analgesics** (Oral morphine 15-60 mg, oral tramadol 50-200 mg, oral codeine 30-60 mg, and oral codeine 30-60 mg + oral paracetamol 300-1000 mg)
3. **Adjuvant analgesics** [Anticonvulsants (gabapentin 200-400 mg TID; pregabalin 75-300 mg BID), tricyclic antidepressants (amitriptyline 10-150 mg every 24 hrs; nortriptyline 25-100 mg every 24 hrs), and serotonin norepinephrine re-uptake inhibitor (duloxetine 60 mg every 24 hrs).

RESTRICTED
MOVEMENT
STIFFNESS
LOW MOOD
DISTRESS
PROBLEMS
WITH SLEEP
STIFFNESS
POSTURE
PROBLEMS
SPASMS
WEAKNESS
OF LEGS
DIFFICULTY IN
WALKING
LETHARGY
LOSS OF
APPETITE
NERVE PAIN

2

OSTEOARTHRITIS PAIN PROTOCOL

STEP 1

ASSESS PATIENT'S SYMPTOMS

STEP 2

IDENTIFY TREATMENT CONSIDERATIONS

STEP 3

RECOMMEND TREATMENT

STEP 1 ASSESS PATIENT'S SYMPTOMS

Ask questions (Pain history)



Ask your patient these 2 crucial questions:^{1,2,9}

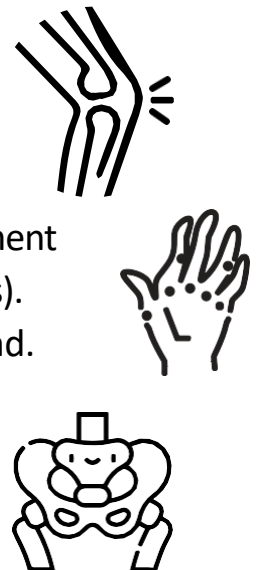
1. **Can you tell me about your OA symptoms?** [where is the pain located, do you have activity related joint pain which is improved by rest, do you have morning joint-related stiffness lasting longer than 30 minutes, is there a grinding/creaking/cracking that occurs while moving the joint, how severe is the pain on a scale from 0 (no pain) to 10 (most severe)]
2. **Do you have any other symptoms?** (patient may experience a variety of additional symptoms such as depression and anxiety, altered sleep, chronic widespread pain, and impaired coping skills)

Assess OA type



Assess your patient's OA type based on following criteria:¹⁰

1. **Knee** [Presence of ≥ 5 out of 9 factors (age > 50 years, joint stiffness < 30 minutes, crepitus, bony tenderness, bony enlargement, no palpable warmth, ESR < 40 mm/hour, RF $< 1:40$, Synovial fluid clear/viscous, or white blood cell count $< 2000/\text{mm}^3$)]
2. **Hand** [Presence of ≥ 3 out of 4 factors (Hard tissue enlargement of ≥ 2 of 10 selected joints, hard tissue enlargement of ≥ 2 distal interphalangeal joints, < 3 swollen metacarpophalangeal joints, deformity of ≥ 1 of 10 selected joints). Selected joints include 1st carpometacarpal and 2nd and 3rd distal and proximal interphalangeal joints of each hand.
3. **Hip** [Presence of ≥ 2 out of 3 factors (ESR < 20 mm/hour, femoral or acetabular osteophytes, joint space narrowing (superior, axial, and/or medial)]



STEP 1 ASSESS PATIENT'S SYMPTOMS

Identify symptoms /circumstances requiring referral



Identify your patient's symptoms/circumstances requiring referral such as:^{2,3}

1. Recent significant trauma
 2. Acute severe pain
 3. Rapid worsening of symptoms
 4. Minor trauma in elderly or osteoporotic patients (possible fracture)
 5. Fever or other signs of infection (hot swollen joint)
 6. Presence of rash
 7. Local or diffuse muscle weakness
 8. Symptoms of burning, numbness or tingling (possible neurogenic pain)
 9. Inflammation of joints and/or morning stiffness for >30 minutes (possible rheumatoid arthritis)
 10. Refer problematic joint pain for timely medical review, appropriate exercise (e.g. physiotherapists) and/or weight loss specialists (e.g. dietitians), and podiatrists for lower limb joint pain problems
-

STEP 2 IDENTIFY TREATMENT CONSIDERATIONS

Ask questions to customize OA pain treatment



Ask your patient these 4 crucial questions:

1. Are you taking any prescribed and over-the-counter medicines? If yes, what are these and in what dose(s)?
 2. Do you have any medical conditions?
 3. How have you managed your OA pain before?
 4. What are the aggravating or relieving factors?
-

Assess medications to be used with caution with oral NSAIDs or paracetamol^{4,11,12}



1. **Increased risk of bleeding** [Oral NSAIDs when used with some selective-serotonin reuptake inhibitors (SSRI), tricyclic antidepressants, acetylsalicylic acid (ASA), corticosteroids, warfarin and ginkgo biloba]
2. **Decreased antihypertensive efficacy** [Oral NSAIDs when used with angiotensin converting enzyme (ACE) inhibitors, angiotensin II receptor blockers (ARBs), diuretics, and beta-blockers]
3. **Increased drug levels** (Oral NSAIDs when used with lithium and methotrexate)
4. **Increased risk of paracetamol toxicity** [Paracetamol when used with epilepsy medications (e.g. carbamazepine), other P450 enzyme inducers (e.g. isoniazid, rifampin), and alcohol]

STEP 2 IDENTIFY TREATMENT CONSIDERATIONS

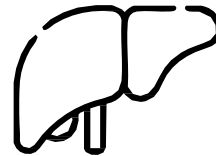
Assess analgesics to be used in patients with comorbidities⁴⁻⁸



1. Chronic kidney disease (e.g. NSAIDs have nephrotoxic class effects and should be avoided in patients with symptoms of renal impairment)



2. Liver disease (e.g. NSAIDs can cause acute liver injury with variable severity)



3. Peptic ulcer disease (e.g. Chronic use of NSAIDs can cause serious upper gastrointestinal adverse reactions including peptic ulcer disease and gastrointestinal bleeding)



4. Cardiovascular disease (e.g. All non-aspirin NSAIDs may be associated with a potential increase in CV thrombotic risk, NSAIDs are contraindicated in patients who have undergone coronary artery bypass graft surgery)



Ask questions about previous treatment



Ask your patient these 2 crucial questions about their previous treatment:

- 1. What have you used before to treat your OA pain?**
(What dose did you use, was it effective, and if you had any side effects from it)
- 2. Do you have any preference for any specific treatment?**

STEP 3

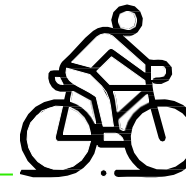
RECOMMEND TREATMENT

Non-pharmacological treatment recommendations for OA pain^{1,9,13}



Non-pharmacological treatment recommendations for your patient's OA pain include:

1. Therapeutic Exercises (tailored approach for local muscle strengthening, walking as an aerobic exercise, supervised cycling)



2. Weight Management (advice on weight loss for improved quality of life and physical function, support for ≥5% of body weight loss goal)



3. Devices (use of cane, tibiofemoral knee braces, walking aids, appropriate footwear, assistive devices and adaptations at home and work)



4. Self-efficacy and self-management programs [includes group sessions combining skill-building (goal-setting, problem-solving, positive thinking), education about the disease, medication effects and side effects, joint protection measures, and fitness/exercise goals and approaches]



5. Tai chi (traditional Chinese mind-body practice that combines meditation with slow, gentle, graceful movements, deep diaphragmatic breathing, and relaxation for patients with knee and/or hip OA)



6. Hand orthoses [support and protection for joints or body parts for patients with first carpometacarpal (CMC) joint OA]



STEP 3 RECOMMEND TREATMENT

Pharmacological treatment recommendations for OA pain of the hand, knee and hip^{1,9,14-16}



1. Non-opioid analgesics [Topical NSAIDs (Diclofenac is applied topically 2-4 times/day and is available OTC as a 1% gel formulation and by prescription as a cream (2.5%) and solution (1.5%, 2%); oral NSAIDs (ibuprofen, naproxen, diclofenac, meloxicam, and celecoxib)]

2. Topical Capsaicin (3-4 times/day and may take 2 or more weeks to reach maximal efficacy)

3. Paracetamol (325-650 mg, maximum dosage of 3-4 gm daily in divided doses)

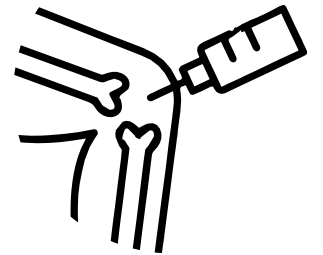


4. Duloxetine (to be initiated at 30 mg once daily for the first week, then increased to the maximum dosage of 60 mg once daily)

5. Tramadol (25 to 50 mg every 6 hours as needed, to a maximum of 400 mg daily)

6. Intraarticular glucocorticoid injection

7. Intraarticular steroids



EVER
PRESENT
SELF-CONSCIOUS
HOUSEBOUND
RESTRICTS
SOCIALIZING
GRADUAL DECLINE
DEPRESSING
LIMITS SIMPLE TASKS
FEELING
USELESS
SORE AND ACHING
WEARYING
LOOKING LIKE AN INVALID
CONSTANT
REMINDER
OF AGEING
WITHDRAW FROM ACTIVITIES
FRUSTRATING
STIFFNESS
CHANGES WHO I AM
IN DECLINE
I'M NOT MYSELF ANYMORE
ISOLATING

3

ADULT NON-SPECIFIC LOW BACK PAIN PROTOCOL

STEP 1

ASSESS PATIENT'S SYMPTOMS

STEP 2

IDENTIFY TREATMENT CONSIDERATIONS

STEP 3

RECOMMEND TREATMENT

STEP 1 ASSESS PATIENT'S SYMPTOMS

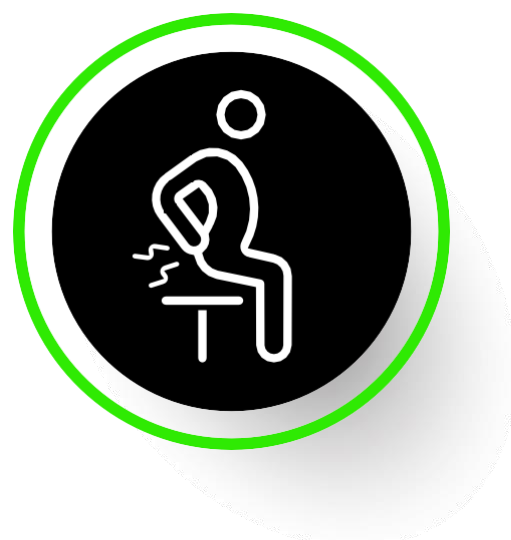
Ask questions (Pain history)



Ask your patient these 3 crucial questions¹⁻⁵

- 1. Can you tell me about your low back pain symptoms?**
[describe your pain (e.g. sharp, aching, burning), what is the exact location of your back pain?, when did the pain start and how long have you had the pain?, what were you doing when you first noticed the pain?, how severe is the pain?, what makes the pain worse or better?]
- 2. Do you have any other symptoms?**
[look for red flag symptoms requiring doctor referral, does chronic pain run in your family (e.g. arthritis or back pain)?]
- 3. Is it first or recurrent episode?**
(recurrent episodes are more painful with increased symptoms)

Assess Low back pain



Assess your patient's low back pain type:^{1,2,5,13}

(Low back pain is frequently classified and treated on the basis of symptom duration, potential cause, presence or absence of radicular symptoms, and corresponding anatomical or radiographic abnormalities)

- 1. Acute** (happens suddenly and usually lasts less than 4 weeks)
- 2. Sub-acute** (can come on suddenly or over time and lasts 4 to 12 weeks)
- 3. Chronic** (may come on quickly or slowly and lasts longer than 12 weeks and occurs daily)
 - Low back pain is usually nonspecific or mechanical.
 - Mechanical low back pain arises intrinsically from the spine, intervertebral disks, or surrounding soft tissues.
 - Acute low back pain is often nonspecific and therefore cannot be attributed to a definite cause.
 - Non-radicular low back pain typically does not radiate past the knee.
 - Radicular low back pain radiates from the back and hip into the legs, paresthesia (tingling, numbness), and/or weakness and is a result of nerve root impingement (compression).

STEP 1 ASSESS PATIENT'S SYMPTOMS

Identify symptoms /circumstances requiring referral^{1-4,6,12}



1. Pain that lasts longer than 6 weeks
2. Pain that radiates below the knee
3. Radicular pain that radiates into the legs in the distribution of a lumbar or sacral nerve root and is often accompanied by sensory and motor deficits
4. Major trauma or minor trauma in elderly
5. Fever, chills, night sweats, malaise, or undesired weight loss
6. Prolonged use of corticosteroids
7. Pain that occurs at night, awakens the patient from sleep, or is unrelenting despite appropriate analgesia and rest
8. Pain that is worsened by coughing, sitting and is relieved by lying supine
9. Patient who reports sudden or progressive onset of new urinary retention, fecal incontinence with low back pain

STEP 2 IDENTIFY TREATMENT CONSIDERATIONS

Ask questions to customize low back pain treatment



Ask your patient these 4 crucial questions:

1. Are you taking any prescribed and over-the-counter medicines? If yes, what are these and in what dose(s)?
 2. Do you have any medical conditions?
 3. How have you managed your low back pain before?
 4. What are the aggravating or relieving factors?
-

Assess medications to be used with caution with oral NSAIDs or paracetamol^{7,14,15}



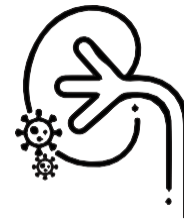
1. **Increased risk of bleeding** [Oral NSAIDs when used with some selective-serotonin reuptake inhibitors (SSRI), tricyclic antidepressants, acetylsalicylic acid (ASA), corticosteroids, warfarin and ginkgo biloba]
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STEP 2 IDENTIFY TREATMENT CONSIDERATIONS

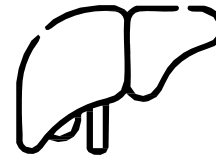
Assess analgesics to be used in patients with comorbidities⁷⁻¹¹



1. Chronic kidney disease (e.g. NSAIDs have nephrotoxic class effects and should be avoided in patients with symptoms of renal impairment)



2. Liver disease (e.g. NSAIDs can cause acute liver injury with variable severity)



3. Peptic ulcer disease (e.g. Chronic use of NSAIDs can cause serious upper gastrointestinal adverse reactions including peptic ulcer disease and gastrointestinal bleeding)



4. Cardiovascular disease (e.g. All non-aspirin NSAIDs may be associated with a potential increase in CV thrombotic risk, NSAIDs are contraindicated in patients who have undergone coronary artery bypass graft surgery)



Ask questions about previous treatment



Ask your patient these 2 crucial questions about their previous treatment:

- 1. What have you used before to treat your low back pain?**
(What dose did you use, was it effective, and if you had any side effects from it)
- 2. Do you have any preference for any specific treatment?**

STEP 3

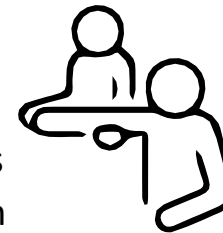
RECOMMEND TREATMENT

Non-pharmacological treatment recommendations for low back pain^{1-4,6,12,13,16}



1. Patient Education and Self-care

(use of handouts/counseling to empower patients with evidence-based information on low back pain management, advice on staying active, avoiding twisting and bending, avoiding bed rest as much as possible, and returning to normal activities as soon as possible)



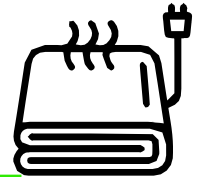
2. Exercise and Physical Therapy (for decreasing pain and strengthening muscles that support the back to improve mobility, posture, and positioning)



3. Lifestyle changes (moving the body properly especially during heavy lifting, pushing, or pulling; avoiding activities that cause or increase pain; practicing healthy habits such as exercise, relaxation, regular sleep, healthy diet, and quitting smoking)



4. Heat (use of heat wrap to reduce pain and disability)



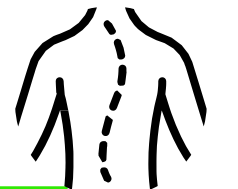
5. Massage (produces small to moderate effect on pain and function)



6. Acupuncture (reasonable option for patients who have an access)



7. Spinal manipulation (produces modest improvement in pain and function)



STEP 3

RECOMMEND TREATMENT

Pharmacological treatment recommendations for low back pain^{6,12,13,17,18-22}



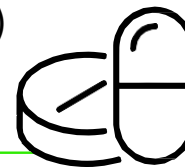
1. For Acute and Sub-acute Low Back Pain

Non-opioid analgesics

[Ibuprofen (400-800 mg every 8 hours as needed), naproxen (250–500 mg orally every 12 hours as needed), diclofenac (50-75 mg twice a day)]. Lowest dose for the shortest time possible is recommended



Paracetamol [650 mg every 6 hours as needed (maximum 3 grams per 24 hours)]. Suitable alternative for patients who are unable to take NSAIDs (i.e., due to allergy or other intolerance, chronic kidney disease, hypertension, peptic ulcer disease, or cardiovascular disease)



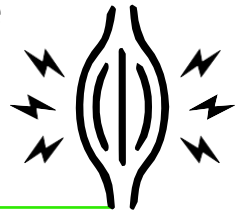
2. For Chronic Low Back Pain

NSAIDs (same as acute pain management)



Skeletal muscle relaxants

[Cyclobenzaprine (5 mg-10 mg orally three times daily as needed, with one of the doses taken at bedtime to help with sleep), Tizanidine (4 mg-8 mg orally three times daily as needed)]. Lowest effective dose and dosing frequency is recommended



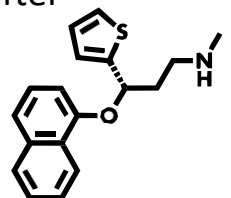
Tramadol [25-50 mg orally every 6 or 8 hours as needed, then increase the dose if necessary (e.g., tramadol 50-100 mg orally every 6 hours as needed)].

Lowest effective immediate release opioid dose for the shortest period possible is recommended.



Duloxetine (Started at 30 mg orally once daily, and after 1 week it is increased to 60 mg orally once daily, if tolerated).

Duloxetine is preferred over tramadol in patients with drug abuse or misuse concerns.



ENERGY
DEPLETING
EVER PRESENT
TENSE
SLEEP DEPRIVED
OVERWORKED
NERVOUS
WORK STRESS
DENIAL
EMBARRASSED
DON'T WANT TO SEEM WEAK
ONE TIME THING
ANXIOUS
TOO STRESSED
PREVIOUS BAD EXPERIENCE
JUST PUTTING
UP WITH IT
NO TIME
TOO BUSY TO
ADDRESS IT
TRIED TO
IGNORE IT
DIDN'T SEEM
IMPORTANT ENOUGH
ONE TIME THING

4

ADULT HEADACHE PAIN PROTOCOL

STEP 1

ASSESS PATIENT'S SYMPTOMS

STEP 2

IDENTIFY TREATMENT CONSIDERATIONS

STEP 3

RECOMMEND TREATMENT

STEP 1 ASSESS PATIENT'S SYMPTOMS

Ask questions (Pain history)



Ask your patient these 3 crucial questions:^{1,2}

1. **Can you tell me about your headache symptoms?**
[frequency of the headache (episodic or daily, number of days per month), location of the pain and if it radiates to any other location, severity of pain intensity on a 0-10 scale (0=no pain and 10=most severe), quality of pain (pressing, pulsating, stabbing, etc.)]
2. **Do you have any other symptoms?** (look for red flag symptoms requiring doctor referral)
3. **Have you previously been diagnosed with tension type, cluster type headaches or migraines?**

Assess headache type



Assess your patient's headache type:¹⁻³

1. **Tension-type headache** [bilateral pain, can be pressing/tightening (non-pulsating), mild or moderate intensity, not aggravated by daily routine activities, 30 minutes to continuous duration]
2. **Migraine** (with or without aura) [unilateral or bilateral pain, can be pulsating (throbbing or banging in young people aged 12 to 17 years), moderate or severe intensity, aggravated by daily routine activities, lasts for 4-72 hours in adults and 1-72 hours in young people aged 12 to 17 years]
3. **Cluster headache** [unilateral (around the eye, above the eye and along the side of the head/face), variable nature (can be sharp, boring, burning, throbbing or tightening), severe intensity, causes restlessness or agitation, 15-180 minutes duration]

STEP 1 ASSESS PATIENT'S SYMPTOMS

Assess headache type



Assess your patient's headache type:¹⁻³

4. Chronic headache [chronic migraine or chronic tension-type headache (at least 15 headache days per month for >3 months with the above clinical description, in the absence of medication overuse); chronic cluster headache (attacks occurring for more than 1 year without remission, or remission periods lasting <3 months)]

5. Medication overuse headache (MOH) [Clinical syndrome of the headache exacerbated by the acute-relief medication overuse is of the migraine and/or tension-type headache; Ergotamine/ triptans/opioids taken for 10 or more days per month, or 15 days for simple analgesics, for >3 months]

Identify symptoms /circumstances requiring referral¹



1. Consider further investigations and/or referral for patient presenting with headache and any of the following:

Worsening headache with fever, sudden-onset headache reaching maximum intensity within 5 minutes, new-onset neurological deficit, new-onset cognitive dysfunction, change in personality, impaired level of consciousness, recent (typically within the past 3 months) head trauma, headache triggered by cough/ trying to breathe out with nose and mouth blocked/ sneeze, headache triggered by exercise, orthostatic headache (headache that changes with posture), symptoms suggestive of giant cell arteritis, symptoms and signs of acute narrow angle glaucoma, a substantial change in the characteristics of their headache

2. Consider further investigations and/or referral for patient presenting with new-onset headache and any of the following:

Compromised immunity caused for e.g. by HIV or immunosuppressive drugs, age under 20 years and a history of malignancy, history of malignancy known to metastasize to the brain, vomiting without other obvious cause

STEP 2 IDENTIFY TREATMENT CONSIDERATIONS

Ask questions to customize headache treatment



Ask your patient these 5 crucial questions:

1. Are you taking any prescribed and over-the-counter medicines? If yes, what are these and in what dose(s)?
2. Do you have any medical conditions?
3. How have you managed your headache before?
4. What are the aggravating or relieving factors?
5. Is there a family history of headaches?

Assess medications to be used with caution with oral NSAIDs or paracetamol^{5,6,7}



1. **Increased risk of bleeding** [Oral NSAIDs when used with some selective-serotonin reuptake inhibitors (SSRI), tricyclic antidepressants, acetylsalicylic acid (ASA), corticosteroids, warfarin and ginkgo biloba]
2. **Decreased antihypertensive efficacy** [Oral NSAIDs when used with angiotensin converting enzyme (ACE) inhibitors, angiotensin II receptor blockers (ARBs), diuretics, and beta-blockers]
3. **Increased drug levels** (Oral NSAIDs when used with lithium and methotrexate)
4. **Increased risk of paracetamol toxicity** [Paracetamol when used with epilepsy medications (e.g. carbamazepine), other P450 enzyme inducers (e.g. isoniazid, rifampin), and alcohol]

STEP 2 IDENTIFY TREATMENT CONSIDERATIONS

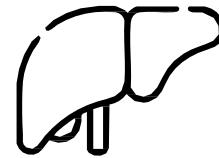
Assess analgesics to be used in patients with comorbidities^{5,8-11}



1. Chronic kidney disease (e.g. NSAIDs have nephrotoxic class effects and should be avoided in patients with symptoms of renal impairment)



2. Liver disease (e.g. NSAIDs can cause acute liver injury with variable severity)



3. Peptic ulcer disease (e.g. Chronic use of NSAIDs can cause serious upper gastrointestinal adverse reactions including peptic ulcer disease and gastrointestinal bleeding)



4. Cardiovascular disease (e.g. All non-aspirin NSAIDs may be associated with a potential increase in CV thrombotic risk, NSAIDs are contraindicated in patients who have undergone coronary artery bypass graft surgery)



Ask questions about previous treatment



Ask your patient these 2 crucial questions about their previous treatment:

- 1. What have you used before to treat your low back pain?**
(What dose did you use, was it effective, and if you had any side effects from it)
- 2. Do you have any preference for any specific treatment?**

STEP 3**RECOMMEND TREATMENT****Non-pharmacological treatment recommendations for headache (all types)^{1,12-14}**

- 1. Avoiding triggers** (common headache triggers include certain food items, lack of sleep, skipped meals, dehydration, secondhand smoke, strong odors like perfumes)

- 2. Use of Headache Diary to record the following for a minimum of 8 weeks:** (Frequency, duration and severity of headaches; any associated symptoms; all prescribed and OTC medications taken to relieve headaches; possible precipitants; relationship of headaches to menstruation)

- 3. Lifestyle changes** [avoiding skipping meals, especially breakfast; getting at least 7 hours of sleep every night; exercising for 30 minutes a day; drinking 6-8 glasses of water daily; Identifying and avoiding headache triggers (may include caffeinated foods and beverages, as well as many types of chips and other “junk” food)]

- 4. Resting in a cool, dark, quiet room as needed**

- 5. Using relaxation strategies to reduce stress**

- 6. Applying cold compresses to the forehead or temple areas**

STEP 3

RECOMMEND TREATMENT

Pharmacological treatment recommendations for headache (tension-type, cluster and MOH)^{1,2,4,8,15-24}



- 1. Acute treatment of tension-type headache** [paracetamol 500-1000 mg (maximum dose 4000 mg): Recommended as first line therapy by multiple guidelines; NSAIDS- ibuprofen 200-400 mg (maximum dose 2400 mg), naproxen sodium 250-500 mg (maximum dose 1000 mg), diclofenac 25-75 mg (maximum dose 150 mg), ketoprofen 25-50 mg (maximum dose 300 mg).
For all non-aspirin NSAIDS, use of lowest dose for the shortest period of time is recommended. Combination analgesics containing caffeine are drugs of second choice. Combining caffeine (65 to 200 mg) with ibuprofen and paracetamol increases efficacy, but possibly also the risk for developing medication-overuse headache]

- 2. Acute treatment of cluster headache** [sumatriptan 6 mg subcutaneous injection with significant relief within 15 minutes (maximum limit two 6 mg injections a day); high flow oxygen 100% at 7-15 liters/min for 15-20 mins, using a non-rebreathable mask for aborting acute attacks of cluster headache; oxygen is often used together with triptans in patients with multiple attacks]

- 3. Treatment of medication overuse headache (MOH)** (restricting acute headache medications to no more than 2 days in a week minimizes the potential of developing MOH; educational intervention; structured detoxification program)

LACK
OF SLEEP
STRESS INDUCED
PARALYSING
CLUSTER
CAN'T CONCENTRATE
HITS HARD
LASTS HOURS TO DAYS
DOUBLE
VISION
NAUSEATING
MIGRAINE
CAN'T FUNCTION
TENSION
INSUFFERABLE
BLINDING
CAN'T SEE PROPERLY
FEELING FAINT
NOT MYSELF ANYMORE
PHYSICALLY SICK

5

ADULT MIGRAINE PAIN PROTOCOL

STEP 1

ASSESS PATIENT'S SYMPTOMS

STEP 2

IDENTIFY TREATMENT CONSIDERATIONS

STEP 3

RECOMMEND TREATMENT

STEP 1 ASSESS PATIENT'S SYMPTOMS

Ask questions (Pain history)



Ask your patient these 3 crucial questions:^{1,2}

1. **Can you tell me about your headache symptoms?** [recurrent headache of moderate to severe intensity, unilateral and/or pulsating pain, duration of headache episode (is it 4 to 72 hours if untreated or unsuccessfully treated), if intensity of headache is disabling, if the onset of symptoms was at or around puberty]
2. **Do you have any other symptoms?** (sensitivity to light and/or sound, if headache is accompanied with nausea and/or vomiting, any visual disturbances with headache, look for red flag symptoms requiring doctor referral)
3. **Do you have a family history of migraine?**

Assess Migraine type^{2,13}



1. Migraine without aura:

- 1) At least 5 attacks that fulfil the criteria 2-5
- 2) Headache attacks that last 4-72 h when untreated or unsuccessfully treated
- 3) Headache has at least 2 of the 4 characteristics (unilateral location, pulsating quality, moderate or severe pain intensity, aggravation by/causing avoidance of routine physical activity such as walking or climbing stairs)
- 4) During headache, at least 1 of the 4 characteristics (nausea and/or vomiting, photophobia and phonophobia)
- 5) Not better accounted for by another ICHD-3 diagnosis]

2. Migraine with aura:

- 1) At least 2 attacks that fulfil criteria 2 and 3
- 2) One or more of the fully reversible aura symptoms (visual, sensory, speech and/or language, motor, brainstem, retinal)
- 3) At least 3 of the 6 characteristics (at least one aura symptom spreads gradually over ≥ 5 min, two or more aura symptoms occur in succession, each individual aura symptom lasts 5-60 min, at least one aura symptom is unilateral, at least one aura symptom is positive, the aura is accompanied with or followed by headache within 60 min)
- 4) Not better accounted for by another ICHD-3 diagnosis]

STEP 1 ASSESS PATIENT'S SYMPTOMS

Assess Migraine type^{2,13}



3. Chronic migraine:

- 1) Migraine-like or tension-type headache on at least 15 days per month for >3 months that fulfils criteria 2 and 3
- 2) Attacks occur in an individual who has had at least 5 attacks that fulfil the criteria for migraine without aura and/or for migraine with aura
- 3) On ≥8 days/month for >3 months, any of the criteria are met (criteria 3 and 4 for migraine without aura, criteria 2 and 3 for migraine with aura, believed by the patient to be migraine at onset and relieved by a triptan or ergot derivative)
- 4) Not better accounted for by another ICHD-3 diagnosis]

4. Medication overuse headache (MOH):

- 1) Headache on ≥15 days/month in an individual with a pre-existing headache disorder
- 2) Regular overuse for >3 months of one or more drugs that can be taken for acute and/or symptomatic treatment of headache (regular intake of one or more non- opioid analgesics on ≥15 days/month for ≥3 months or any other acute medication or combination of medications on ≥10 days/month for ≥3 months)
- 3) Not better accounted for by another ICHD-3 diagnosis]

*ICHHD: International Classification of Headache Disorders

Identify symptoms /circumstances requiring referral



Identify your patient's symptoms /circumstances requiring referral:²

1. **Patient History:** Thunderclap headache, Atypical aura, Head trauma, Progressive headache, Headache aggravated by postures or manoeuvres that raise intracranial pressure, Headache brought on by sneezing, coughing or exercise, Headache associated with weight loss and/or change in memory or personality, Headache onset at >50 years of age
2. **Physical Examination:** Unexplained fever, Neck stiffness, Focal neurological symptoms, Weight loss, Impaired memory and/or altered consciousness or personality

STEP 2 IDENTIFY TREATMENT CONSIDERATIONS

Ask questions to customize Migraine treatment



Ask your patient these 6 crucial questions:

1. Are you taking any prescribed and over-the-counter medicines? If yes, what are these and in what dose(s)?
2. Do you have any medical conditions?
3. How have you managed your headache before?
4. What are the triggers for your headache?
5. What are the aggravating or relieving factors?
6. Is there a family history of migraine?

Assess medications to be used with caution with oral NSAIDs or paracetamol^{3-5,14}



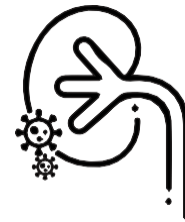
1. **Increased risk of bleeding** [Oral NSAIDs when used with some selective-serotonin reuptake inhibitors (SSRI), tricyclic antidepressants, acetylsalicylic acid (ASA), corticosteroids, warfarin and ginkgo biloba]
2. **Decreased antihypertensive efficacy** [Oral NSAIDs when used with angiotensin converting enzyme (ACE) inhibitors, angiotensin II receptor blockers (ARBs), diuretics, and beta-blockers]
3. **Increased drug levels** (Oral NSAIDs when used with lithium and methotrexate)
4. **Increased risk of paracetamol toxicity** [Paracetamol when used with epilepsy medications (e.g. carbamazepine), other P450 enzyme inducers (e.g. isoniazid, rifampin), and alcohol]

STEP 2 IDENTIFY TREATMENT CONSIDERATIONS

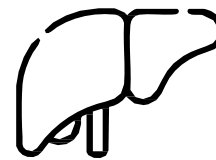
Assess analgesics to be used in patients with comorbidities⁵⁻⁹



1. **Chronic kidney disease** (e.g. NSAIDs have nephrotoxic class effects and should be avoided in patients with symptoms of renal impairment)



2. **Liver disease** (e.g. NSAIDs can cause acute liver injury with variable severity)



3. **Peptic ulcer disease** (e.g. Chronic use of NSAIDs can cause serious upper gastrointestinal adverse reactions including peptic ulcer disease and gastrointestinal bleeding)



4. **Cardiovascular disease** (e.g. All non-aspirin NSAIDs may be associated with a potential increase in CV thrombotic risk, NSAIDs are contraindicated in patients who have undergone coronary artery bypass graft surgery)



Ask questions about previous treatment



Ask your patient these 2 crucial questions about their previous treatment:

1. **What have you used before to treat your migraine headache?** (What dose did you use, was it effective, and if you had any side effects from it)
2. **Do you have any preference for any specific treatment?**

STEP 3

RECOMMEND TREATMENT

Non-pharmacological treatment recommendations for Migraine headache

Non-pharmacological treatment recommendations include:^{2,10}

- 1. Avoiding triggers** [Using a diary for identifying and avoiding important triggers, such as environmental triggers (weather changes, decreased atmospheric pressure, low temperature, and high humidity), sensitivity to odors (perfumes, cigarette smoke, and cleaning products), noise triggers (neighborhood noise from roads, railways, etc.)]
- 2. Good sleep hygiene practices** [Convenient bedrooms with fewer stimulations (such as television, cell phone, light, and noise), and waking at a specific time range in the mornings, even on weekends]
- 3. Dietary lifestyle modifications** [Preventing hunger and fasting, having regular meals, sticking to frequent meals (e.g. 5-6 small meals per day), consuming foods that provide a stable level of blood glucose (slow-digesting foods), cooking food rather than eating processed or fast foods, proper fluid intake and hydration, low-fat diet, using a food diary to identify food triggers (red wine and alcohol, chocolate, caffeine in products such as coffee, tea, cola, etc.)]
- 4. Regular and moderate exercise** [Aerobic exercises (such as cycling and walking) after careful warm-up. Avoid exercise during their headache attacks]
- 5. Stress management** (Coping with stressors, problem-solving, social support, changes in living situations and lifestyle, exercise, and avoiding certain situations that cause severe stress and anxiety)
- 6. Weight reduction to restore an ideal body weight** (Might be a useful intervention to control migraine attacks, especially in obese patients)
- 7. Patient education** is an important part of the management of hormonal migraine attacks

STEP 3 RECOMMEND TREATMENT

Pharmacological treatment recommendations for Migraine headache



Pharmacological treatment recommendations include:^{1,2,11,12}

1. **Offer acute medication** to everyone who experiences migraine attacks
2. **Use acute medications early in the headache phase of the attack**, as effectiveness depends on timely use with the correct dose
3. **Advise patients that frequent, repeated use of acute medication** may lead to medication-overuse headache
4. **Use NSAIDs as first-line medication** [aspirin (900-1000 mg oral); ibuprofen (400-600 mg oral) or diclofenac (50 mg oral soluble)]
5. **When NSAIDs are contraindicated, use Paracetamol** (1000 mg oral, good safety profile at therapeutic levels)
6. **For acute treatment of migraine in pregnancy, use Paracetamol** as first-line medication
7. **Use triptans as second-line medication** [sumatriptan (50 or 100 mg oral or 6 mg subcutaneous or 10 or 20 mg intranasal); zolmitriptan (2.5 or 5 mg oral or 5 mg intranasal); almotriptan (12.5 mg oral); eletriptan (20, 40 or 80 mg oral); frovatriptan (2.5 mg oral); naratriptan (2.5 mg oral); rizatriptan 10 mg oral tablet (5 mg if treated with propranolol) or 10 mg mouth-dispersible wafers]
8. **Consider combining triptans with fast- acting NSAIDs** to avert recurrent relapse
9. **Consider gepants** [ubrogepant (50 or 100 mg oral); rimegepant (75 mg oral) or diclofenac (50 mg oral soluble)] and ditans [lasmiditan (50, 100 or 200 mg oral)] as third-line medications.
10. **Use prokinetic antiemetics** (domperidone or metoclopramide) as adjunct oral medications for nausea and/or vomiting
11. **Avoid oral ergot alkaloids, opioids and barbiturates**

WEAK
UNSURE
UNAVOIDABLE
FRUSTRATING
ISOLATING
TIRED
INVISIBLE
MISUNDERSTOOD
WORRYING
LONELY
STRAINING RELATIONSHIPS
OVERTHINKING
ANXIOUS
CONSTANT PRESSURE
WORN DOWN
CHAOTIC
PERSISTENT
CAN'T FUNCTION
LIFE LACKS JOY
TAKES AWAY SIMPLE PLEASURES
I WANT TO CRY
I FEEL POWERLESS
A CONSTANT DRAIN



6

ADULT ACUTE SORE THROAT PAIN PROTOCOL

STEP 1

ASSESS PATIENT'S SYMPTOMS

STEP 2

IDENTIFY TREATMENT CONSIDERATIONS

STEP 3

RECOMMEND TREATMENT

STEP 1 ASSESS PATIENT'S SYMPTOMS

Ask questions (Pain history)



Ask your patient these 2 crucial questions:^{1,8,10}

1. **Can you tell me about your sore throat symptoms?**
(duration, severity, and if experiencing hoarseness, cough and fever)
2. **Other questions:**
 - Do you smoke? If yes, type of tobacco, number of cigarettes per day, and smoking duration
 - Did the sore throat begin after excessive vocal cord overload or after a long stay in a smoky room, or inhalation of chemical substances
 - Is the sore throat accompanied by other cold symptoms (headache, rhinitis, fever)?

Assess Sore throat type^{8,12-15}



1. **Symptoms suggestive of bacterial sore throat [Group A streptococcal (GAS) infection]:**
Fever, pain when swallowing, sore throat that can start very quickly and may look red, white patches or streaks of pus on the tonsils, red and swollen tonsils, tiny red spots on the roof of the mouth called petechiae, and swollen lymph nodes in the front of the neck.
2. **Viral sore throat symptoms:** Cough, runny nose, hoarseness (changes in voice that makes it sound breathy, raspy, or strained), and conjunctivitis (pink eye)

STEP 1 ASSESS PATIENT'S SYMPTOMS

Assess Sore throat type^{8,12-15}



- Assessment of patient's condition and the likelihood of streptococcal infection is suggested to be performed according to the **FeverPAIN*** or **CENTOR** (or McIsaac)** criteria. Higher scores suggest more severe symptoms and likely bacterial (streptococcal) cause.

* **FeverPAIN criteria** (Each criteria scores 1 point, maximum of 5): **F**ever (during the previous 24 hours), **P**urulence (pus on tonsils), **A**ttend rapidly (within 3 days after onset of symptoms), **S**everely Inflamed tonsils, **N**o cough or coryza (inflammation of mucus membranes in the nose)

Score and % likelihood of isolating streptococcus: 0 or 1= 13-18%; 2 or 3= 34-40%; 4 or 5= 62-65%

** **CENTOR criteria** (Each criteria scores 1 point, maximum of 4): Tonsillar exudate, Tender anterior cervical lymphadenopathy (abnormal enlargement of lymph nodes in the head and neck) or Lymphadenitis (enlargement in one or more lymph nodes, usually due to infection.), History of fever (over 38°C), Absence of cough

Score and % likelihood of isolating streptococcus: 0 to 2= 3-17%; 3 or 4= 32-56%; 4 or 5= 62-65%

Identify symptoms /circumstances requiring referral¹



Red flag symptoms or circumstances requiring referral: A sore throat that is severe or lasts longer than a week; difficulty in swallowing, breathing, and opening mouth; joint pain; earache; rash; fever higher than 101 F (38.3°C); blood in the saliva or phlegm; frequently recurring sore throats; a lump in the neck; hoarseness lasting more than two weeks; swelling in the neck or face.

STEP 2 IDENTIFY TREATMENT CONSIDERATIONS

Ask questions to customize sore throat pain treatment



Ask your patient these 4 crucial questions:

1. Are you taking any prescribed and over-the-counter regular medicines?
If yes, what are these and in what dose(s)?
2. Have you already taken any medicine to alleviate the symptoms?

Assess medications to be used with caution with oral NSAIDs or paracetamol^{3,16,17}



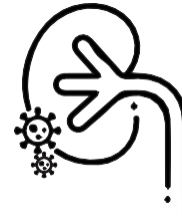
1. **Increased risk of bleeding** [Oral NSAIDs when used with some selective-serotonin reuptake inhibitors (SSRI), tricyclic antidepressants, acetylsalicylic acid (ASA), corticosteroids, warfarin and ginkgo biloba]
2. **Decreased antihypertensive efficacy** [Oral NSAIDs when used with angiotensin converting enzyme (ACE) inhibitors, angiotensin II receptor blockers (ARBs), diuretics, and beta-blockers]
3. **Increased drug levels** (Oral NSAIDs when used with lithium and methotrexate)
4. **Increased risk of paracetamol toxicity** [Paracetamol when used with epilepsy medications (e.g. carbamazepine), other P450 enzyme inducers (e.g. isoniazid, rifampin), and alcohol]

STEP 2 IDENTIFY TREATMENT CONSIDERATIONS

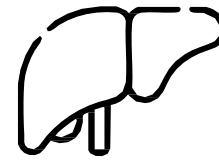
Assess analgesics to be used in patients with comorbidities³⁻⁷



1. Chronic kidney disease (e.g. NSAIDs have nephrotoxic class effects and should be avoided in patients with symptoms of renal impairment)



2. Liver disease (e.g. NSAIDs can cause acute liver injury with variable severity)



3. Peptic ulcer disease (e.g. Chronic use of NSAIDs can cause serious upper gastrointestinal adverse reactions including peptic ulcer disease and gastrointestinal bleeding)



4. Cardiovascular disease (e.g. All non-aspirin NSAIDs may be associated with a potential increase in CV thrombotic risk, NSAIDs are contraindicated in patients who have undergone coronary artery bypass graft surgery)



Ask questions about previous treatment



Ask your patient these 2 crucial questions about their previous treatment:

- 1. What have you used before to treat your sore throat pain?** (What dose did you use, was it effective, and if you had any side effects from it)
- 2. Do you have any preference for any specific treatment?**

STEP 3

RECOMMEND TREATMENT

Non-pharmacological treatment recommendations for sore throat pain^{1,8,9}

1. **Staying hydrated** through intake of large amounts of warm liquids is recommended. Fluids keep the throat moist and prevent dehydration (avoid caffeine and alcohol). Try warm, comforting beverages such as broth, caffeine-free tea or warm water with honey to soothe a sore throat.
2. **Gargling with antiseptic solutions** should be performed every 2-3 hours
3. **Avoiding** smoking, alcohol, and spicy, cold, or excessively hot food intake is recommended
4. **Rinsing mouth with warm water** prior to the topical administration of medicines for sore throat symptomatic relief (aerosols, sprays, lozenges),
5. **Medicines in the form of lozenges and candies** must be kept in the mouth until completely dissolved
6. **Using a cool-air humidifier** can help eliminate dry air that may further irritate a sore throat. Be sure to clean the humidifier regularly so it doesn't grow mold or bacteria. Or sit for several minutes in a steamy bathroom.
7. **Avoiding irritants** such as cigarette smoke and cleaning products that can irritate the throat is recommended

STEP 3

RECOMMEND TREATMENT

Pharmacological treatment recommendations for sore throat pain^{2,11-13, 16-21}

1. **Paracetamol 1000 mg up to four times per day** is recommended by major guidelines for the treatment of fever and pain
2. **Ibuprofen 400 mg up to three times per day** is recommended by major guidelines for the treatment of fever and pain
3. **Antibiotics for Group A Streptococcal Infection in patients without penicillin allergy** includes Penicillin V oral 250 mg four times daily or 500 mg twice daily for 10 days (dose modification is needed in patients with end-stage renal disease); Amoxicillin oral 50 mg per kg once daily (maximum= 1000 mg) or 25 mg per kg twice daily (maximum= 500 mg) for 10 days (lower dose recommended in patients with kidney disease)

*Avoid in individuals with immediate hypersensitivity to penicillin.

4. **Antibiotics for Group A Streptococcal Infection in patients with penicillin allergy** includes Cephalexin oral* 20 mg per kg per dose twice daily (maximum= 500 mg per dose) for 10 days (contraindicated in patients with known allergy to the cephalosporin group of antibiotics, lower dose recommended in patients with kidney disease); Cefadroxil oral* 30 mg per kg once daily (maximum = 1 g) for 10 days (contraindicated in patients with known allergy to the cephalosporin group of antibiotics, should be used with caution in the presence of markedly impaired renal function).

7

ADULT DENTAL PAIN PROTOCOL

STEP 1

ASSESS PATIENT'S SYMPTOMS

STEP 2

IDENTIFY TREATMENT CONSIDERATIONS

STEP 3

RECOMMEND TREATMENT

CANNOT
SWALLOW
CANNOT TALK
MISS WORK
IRRITABLE
COUGH
BAD BREATH
FATIGUE
DIFFICULTY
IN BREATHING
SHIVERS
ISOLATED FROM
LOVED ONES
CANNOT DO
PHYSICAL ACTIVITIES
SLEEP AFFECTED

STEP 1 ASSESS PATIENT'S SYMPTOMS

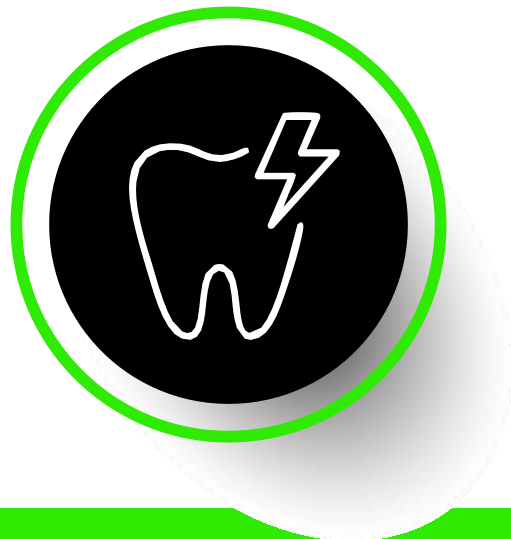
Ask questions (Pain history)



Ask your patient these 3 crucial questions:^{1,15}

1. **Can you tell me about your dental pain symptoms?** [Location (where is it paining?), Onset (when did the pain start?), Quality (can you describe pain? does the pain spread anywhere?), Other issues (do you have any other problems along with pain? any fever? does it pain more when you bite something? was the pain preceded by some trauma?), Pattern (how long does the pain last?), Stimuli (does anything worsen or improve it?), Severity (how bad is the pain?)]
2. **Do you have any other symptoms?** [Red flag symptoms that require doctor referral, (e.g. swelling, breathing difficulty etc.)]
3. **Have you undergone any dental procedures?** If so, which one and when? [Some symptoms may be related to post-procedural infection or inflammation (e.g. swelling, pus formation)]

Assess dental pain type^{1,2,15}



1. **Pulpal pain:** Causes [hypersensitivity due to cracked enamel, exposure of dentin due to wear/abrasion or fracture/dental procedure or other causes, exposure to dental trauma, pulpitis (inflammation of the pulp due to infection), systemic reasons (e.g. sickle cell anemia)], Pain stimuli [biting, hot or cold stimuli (thermal hypersensitivity), and lingering pain after pressing], Pain quality and intensity (sharp, shooting pain or dull, throbbing, poorly localized pain of variable duration; depends on severity)]

STEP 1**ASSESS PATIENT'S SYMPTOMS****Assess dental pain type^{1,2,15}**

2. **Periodontal pain:** Causes [periodontitis (inflammation due to trauma, infection, disease or post-operative), non-inflammatory cause (periodontal or radicular cysts, and tumors)], Pain stimuli (mechanical, thermal or chemical stimuli), Pain quality and intensity (mild to severe pain that ranges from pain only upon stimulation to a constant, unprompted pain that worsens upon stimulus, can radiate to other areas)]
 3. **Gingival pain:** Causes [gingivitis (inflammation due to trauma, infection, hypersensitivity or autoimmunity), malignancy], Pain quality and intensity [(Normally not painful, some pain may occur during acute inflammation (due to infection, trauma, and systemic or local immune reactions)] Non-odontogenic causes of pain may also present as dental pain. Such patients may describe pain as not being 'in' the tooth but as 'between, behind, or under' the tooth, and the gingivae may be sensitive to pressure.
-

Identify symptoms/circumstances requiring referral^{1-3,15,16}

1. **Red flag symptoms or circumstances associated with dental pain requiring referral:** Untreated periodontitis, dental injuries, post-extraction bleeding, alveolar osteitis, aphthous ulcers or mouth ulcers, trigeminal neuralgia, temporomandibular joint disorder, maxillary sinusitis, bruxism, cluster headaches, or neuropathic pain. Other reasons for referral include usual treatment options appearing ineffective, pain does not seem to be of neurological origin, unusual description of pain (for instance-stinging, burning, electric, pins and needles), pain triggered or increased by applying pressure on certain head or neck muscles, pain present along with hallucinations or delusions, or pain associated with unusual involuntary movements.

STEP 2 IDENTIFY TREATMENT CONSIDERATIONS

Ask questions to customize dental pain treatment



Ask your patient these 5 crucial questions:

1. Are you taking any prescribed and over-the-counter regular medicines? If yes, what are these and in what dose(s)?
2. Do you have any medical conditions?
3. What have you used before for your dental pain?
4. What are the aggravating or relieving factors?
5. Have you undergone any dental procedures recently?

Assess medications to be used with caution with oral NSAIDs or paracetamol^{4-6,12,17,18}



1. **Increased risk of bleeding** [Oral NSAIDs when used with some selective-serotonin reuptake inhibitors (SSRI), tricyclic antidepressants, corticosteroids, warfarin and alcohol]
2. **Decreased antihypertensive efficacy** [Oral NSAIDs when used with angiotensin converting enzyme (ACE) inhibitors, angiotensin II receptor blockers (ARBs), diuretics, and beta-blockers]
3. **Increased drug levels** (Oral NSAIDs when used with lithium and methotrexate)
4. **Increased risk of paracetamol toxicity** [Paracetamol when used with epilepsy medications (e.g. carbamazepine), other P450 enzyme inducers (e.g. isoniazid, rifampin), and alcohol]

STEP 2 IDENTIFY TREATMENT CONSIDERATIONS

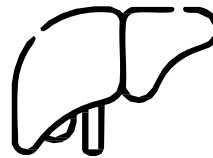
Assess analgesics to be used in patients with comorbidities^{4,7-11,19,20}



1. **Chronic kidney disease** (e.g. NSAIDs have nephrotoxic class effects and should be avoided in patients with symptoms of renal impairment)



2. **Liver disease** (e.g. NSAIDs can cause acute liver injury with variable severity)



3. **Peptic ulcer disease** (e.g. Chronic use of NSAIDs can cause serious upper gastrointestinal adverse reactions including peptic ulcer disease and gastrointestinal bleeding)



4. **Cardiovascular disease** (e.g. All non-aspirin NSAIDs may be associated with a potential increase in CV thrombotic risk, NSAIDs are contraindicated in patients who have undergone coronary artery bypass graft surgery)



Ask questions about previous treatment



Ask your patient these 2 crucial questions about their previous treatment:

1. **What have you used before to treat your dental pain?** (What dose did you use, was it effective, and if you had any side effects from it)
2. **Do you have any preference for any specific treatment?**

STEP 3**RECOMMEND TREATMENT****Non-pharmacological treatment recommendations for dental pain¹**

1. **Avoiding common stimuli** such as hot, cold, acidic and sweet drinks or food items.
2. **Use of desensitizing toothpaste** as a temporary option
3. **Use of warm salt water, a topical anesthetic or 0.2% chlorhexidine mouthwash** in the case of ulcers

Pharmacological treatment recommendations for dental pain^{11-14,21-27}

1. **For acute postoperative dental pain in adolescents, adults, and older adults undergoing simple tooth extraction(s):**
 - NSAIDs alone [Ibuprofen 400 mg (maximum dose= 2400 mg) or Naproxen 440 mg (maximum dose= 1100 mg). When pain is not relieved by ibuprofen, use naproxen]
 - When NSAIDs are contraindicated, use paracetamol 1000 mg (maximum dose= 4000 mg)
 - When NSAIDs alone are not sufficient, use NSAIDs plus paracetamol combination (Ibuprofen 400 mg + Paracetamol 500 mg or Naproxen 440 mg + Paracetamol 500 mg)

STEP 3**RECOMMEND TREATMENT****Pharmacological treatment recommendations for dental pain^{11-14,21-27}****2. For acute postoperative dental pain in adolescents, adults, and older adults undergoing surgical tooth extraction(s):** First-line therapy is same as for simple tooth extraction-

- NSAIDs alone (e.g., 400 mg ibuprofen or 440 mg naproxen sodium) or in combination with Paracetamol 500 mg.
- When NSAIDs are contraindicated, start the therapy with full therapeutic dose of Paracetamol 1000 mg.
- For inadequate postoperative pain control after first-line therapy with NSAIDs alone [NSAID (e.g. 400 mg ibuprofen or 440 mg of naproxen sodium) + 1 tablet of 325 mg of acetaminophen + 1 tablet of combination 325 mg of acetaminophen with an opioid (e.g., 5-7.5 mg of hydrocodone or 5 mg of oxycodone)].
- For inadequate postoperative pain control after first-line therapy with NSAIDs plus paracetamol 500 mg combination [Replace initial prescription with 1 tablet of NSAID (e.g. 400 mg of ibuprofen or 440 mg of naproxen sodium) + 1 tablet of 325 mg of acetaminophen + 1 tablet of combination 325 mg of acetaminophen with an opioid (e.g. 5-7.5 mg of hydrocodone or 5 mg of oxycodone)].
- For inadequate postoperative pain control after paracetamol 1000 mg for patients in whom NSAIDs are contraindicated [1 tablet of 325 mg of acetaminophen + 1 tablet of combination 325 mg of acetaminophen with an opioid (e.g., 5-7.5 mg of hydrocodone or 5 mg of oxycodone)] Routine use of delayed (i.e. just-in-case prescription for breakthrough pain) opioid prescriptions is not recommended.

SEVERE
SHARP
STABBING
RESTRICTS SOCIALLY
EMBARRASSING
DRAINING
ENERGY SAPPING
PROLONGED
TABOO
SUBJECT
DAYS OF DULL BACKACHE
DEBILITATING
HARD TO MOVE
AWKWARD
TO DISCUSS
STOMACH-TURNING
CRAMPING
MISUNDERSTOOD
STIFFENING
EXHAUSTING
DIFFICULT TO
CONCENTRATE
MOOD KILLING

8

PERIOD PAIN PROTOCOL

STEP 1

ASSESS PATIENT'S SYMPTOMS

STEP 2

IDENTIFY TREATMENT CONSIDERATIONS

STEP 3

RECOMMEND TREATMENT

STEP 1 ASSESS PATIENT'S SYMPTOMS

Ask questions (Pain history)



Ask your patient these 2 crucial questions:

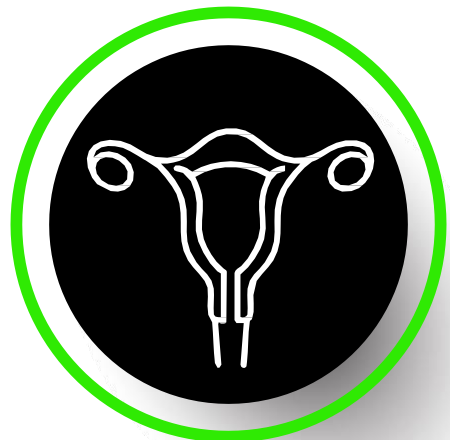
1. Can you tell me about your period pain (dysmenorrhea) symptoms?^{1-3,10}

[Type of pain (cramping/colicky/intense/constant or sporadic); Location (does it radiate to the inner thigh or back?; Onset (does the pain commence shortly prior to menstruation and continues for up to 72 hours, improving as menses progresses?); Associated symptoms (along with abdominal pain do you experience symptoms like nausea, vomiting, diarrhoea, fatigue, irritability, dizziness, bloating, headache, lower back pain and emotional symptoms?); Increase or decrease in appetite with period pain]

2. Other questions^{2,10}

[How long ago did menstruation begin and is the cycle regular?; When did menstruation become painful?; Are there any other symptoms? (depression, anxiety etc.); Do the symptoms occur only during menstruation or also at other times of the cycle?]

Assess period pain type



1. Primary Dysmenorrhea¹:

- Painful menstruation in the absence of pelvic pathology
- Pain characteristically begins when adolescents attain ovulatory cycles (usually within 6-12 months of menarche)
- Pathophysiology is related to prostaglandins and leukotrienes (both inflammatory mediators)

2. Secondary Dysmenorrhea¹:

- Painful menses due to pelvic pathology or a recognized medical condition
- Most common cause of secondary dysmenorrhea is endometriosis
- Other causes of secondary dysmenorrhea include adenomyosis, infection, uterine myomas, müllerian anomalies, obstructive reproductive tract anomalies, uterine polyps or ovarian cysts.

STEP 1 ASSESS PATIENT'S SYMPTOMS

Identify symptoms /circumstances requiring referral



1. Red flag symptoms or circumstances (with probable diagnosis/condition) associated with period pain requiring referral include^{1,4}

- Infertility, pain with intercourse, urination, or bowel movements (endometriosis)
- Sudden onset and resolution; if twisted, can cause ovarian torsion (ovarian cysts)
- Irregular vaginal bleeding (uterine polyps)
- Heavy, prolonged periods; constipation or difficulty emptying the bladder possible; more common in older people (uterine leiomyomas)
- Heavy bleeding, blood clots, pain with intercourse, abdominal tenderness; more common in older people (adenomyosis)
- Abdominal pain, fever, vaginal discharge and odor, pain with intercourse, bleeding after intercourse (pelvic inflammatory disease)
- History of surgery, infertility, bowel obstruction, painful bowel movements, pain with change in position (pelvic adhesions)
- Bloating, frequent urination, nausea (pelvic masses)

STEP 2 IDENTIFY TREATMENT CONSIDERATIONS

Ask questions to customize period pain treatment



Ask your patient these 2 crucial questions:

1. Are you taking any prescribed and over-the-counter regular medicines? If yes, what are these and in what dose(s)?
2. Have you already taken any medicine to alleviate the symptoms?

Assess medications to be used with caution with oral NSAIDs or paracetamol^{5,12,13}



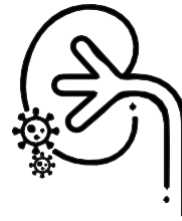
1. **Increased risk of bleeding** [Oral NSAIDs when used with some selective-serotonin reuptake inhibitors (SSRI), tricyclic antidepressants, acetylsalicylic acid, corticosteroids, warfarin, ginkgo biloba]
2. **Decreased antihypertensive efficacy** [Oral NSAIDs when used with angiotensin converting enzyme (ACE) inhibitors, angiotensin II receptor blockers (ARBs), diuretics, and beta-blockers]
3. **Increased drug levels** (Oral NSAIDs when used with lithium and methotrexate)
4. **Increased risk of paracetamol toxicity** [Paracetamol when used with epilepsy medications (e.g. carbamazepine), other P450 enzyme inducers (e.g. isoniazid, rifampin), and alcohol]

STEP 2 IDENTIFY TREATMENT CONSIDERATIONS

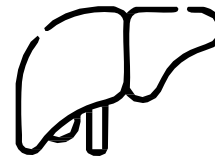
Assess analgesics to be used in patients with comorbidities⁵⁻⁹



1. Chronic kidney disease (e.g. NSAIDs have nephrotoxic class effects and should be avoided in patients with symptoms of renal impairment)



2. Liver disease (e.g. NSAIDs can cause acute liver injury with variable severity)



3. Peptic ulcer disease (e.g. Chronic use of NSAIDs can cause serious upper gastrointestinal adverse reactions including peptic ulcer disease and gastrointestinal bleeding)



4. Cardiovascular disease (e.g. All non-aspirin NSAIDs may be associated with a potential increase in CV thrombotic risk, NSAIDs are contraindicated in patients who have undergone coronary artery bypass graft surgery)



Ask questions about previous treatment



Ask your patient these 3 crucial questions about their previous treatment:

- 1. What have you used before to treat your period pain?**
(What dose did you use, was it effective, and if you had any side effects from it)
- 2. Do you have any preference for any specific treatment?**
- 3. Have you used any alternative treatments to relieve period pain?**

STEP 3**RECOMMEND TREATMENT****Non-pharmacological treatment recommendations for Period Pain****Non-pharmacological treatment recommendations include^{1,2}**

- 1. Regular exercise** is likely to improve symptoms of dysmenorrhea and should be recommended
 - 2. Complementary or alternative treatment:**
 - Local heat in the form of heated pads or patches (applied to lower abdomen)
 - High-frequency transcutaneous electrical nerve stimulation-TENS (involves the use of electrodes to stimulate the skin at various frequencies and intensities in an attempt to diminish pain perception)
 - Acupoint stimulation (acupressure and acupuncture)
 - Relaxation training
 - Dietary supplements for which there may be limited evidence to suggest a potential benefit include ginger, fenugreek, fish oil, fish oil plus vitamin B1, valerian, vitamin B1 alone, zataria, and zinc sulphate
-

STEP 3**RECOMMEND TREATMENT****Pharmacological treatment recommendations for period pain****Pharmacological treatment recommendations for primary dysmenorrhea include^{1-3, 5-10,14,15, 16}**

- 1. NSAIDs alone** [Ibuprofen (800 mg initially, followed by 400-800 mg every 8 hours as needed); Naproxen (440-550 initially, followed by 220-550 mg every 12 hours as needed); Mefenamic acid (500 mg initially, followed by 250 mg every 6 hours as needed); Celecoxib (for females older than 18 years old- 400 mg initially, followed by 200 mg every 12 hours as needed)]. NSAIDs are most effective when started 1-2 days before the onset of menses and continued through the first 2-3 days of bleeding.
- 2. Paracetamol** (500-1000 mg every 4-6 hours; maximum dose 4gm/day). Paracetamol is an analgesic of choice for dysmenorrhea patients who do not desire hormonal contraceptives and cannot tolerate NSAIDs for their gastrointestinal disturbance.
- 3. Hormonal contraceptives** [Combined hormonal contraceptives with 20-35 µg ethinyl estradiol; Progestin-only-contraceptives (Progestin implant, intramuscular or subcutaneous depot medroxyprogesterone acetate, and levonorgestrel-releasing intrauterine system (52 mg); Contraceptive transdermal patches or vaginal ring]. Hormonal contraceptives are usually recommended for dysmenorrhea females who need contraception, for whom the use of contraceptives is acceptable, or for those who cannot tolerate or are not responsive to NSAIDs.

Note: NSAIDs may be continued or added to hormonal therapy as needed.



9 FEVER IN CHILDREN AGED <5 YEARS

STEP 1

ASSESS PATIENT'S SYMPTOMS

STEP 2

IDENTIFY TREATMENT CONSIDERATIONS

STEP 3

RECOMMEND TREATMENT

STEP 1 ASSESS PATIENT'S SYMPTOMS

Ask questions (Pain history)



Ask the child's parent/caregiver these 7 crucial questions^{1,6}

1. Is the child older than 3 months?
 2. Is the child eating and drinking normally?
 3. Is the child behaving normally?
 4. Is the child breathing normally?
 5. Has the fever ($\geq 37.5^{\circ}\text{C}$) been present for more than 2 days?
 6. Has the child had convulsions?
 7. Are you very worried about the child's health?
- A 'NO' answer to any of questions 1-4 and/or a 'YES' to any of questions 5-7, indicates immediate referral to a doctor or clinic
 - All children younger than 3 months of age with a fever must be referred to a doctor

Assess life-threatening conditions, signs of dehydration, and infections/specific serious conditions as source of fever and their associated signs and symptoms



Assess the child for life-threatening conditions, signs of dehydration, infections/ serious conditions and their signs and symptoms^{1-3,7}

1. **Assess for any potentially life-threatening conditions** and refer immediately for emergency medical care. These include compromised airway, breathing or circulation; and decreased level of consciousness
2. **Assess for signs of dehydration:** Signs include prolonged capillary refill time (>3 sec), abnormal skin turgor, abnormal respiratory pattern, weak pulse, and cool extremities

STEP 1**ASSESS PATIENT'S SYMPTOMS****Identify symptoms /circumstances requiring referral**

Assess the child for life-threatening conditions, signs of dehydration, infections/ serious conditions and their signs and symptoms^{1-3,7}

- 3. Assess the risk of serious illness** in feverish children under 5 years based on parameters (skin/lips/tongue color, activity, respiration, hydration, and other) using traffic light color system (green-low risk, orange- intermediate risk, red- high risk)
- 4. Identify infections/specific serious conditions as source of fever and their associated signs and symptoms**
 - **Meningococcal disease** [Non-blanching rash, particularly with 1 or more of the following: an ill-looking child, lesions larger than 2 mm in diameter (purpura) , capillary refill time of more than or equal to 3 seconds, neck stiffness]
 - **Bacterial meningitis** (Neck stiffness, bulging fontanelle, decreased level of consciousness, convulsive status epilepticus)
 - **Herpes simplex encephalitis** (Focal neurological signs, focal seizures, decreased level of consciousness)
 - **Pneumonia** [Tachypnoea (respiratory rate more than 60 breaths per minute for age 0-5 months; more than 50 breaths per minute for age 6-12 months; more than 40 breaths per minute for age>12 months), crackles in the chest, nasal flaring, chest indrawing, cyanosis, oxygen saturation less than or equal to 95%]
 - **Urinary tract infection** [Painful urination (dysuria), more frequent urination, new bedwetting, foul smelling (malodorous) urine, darker urine, cloudy urine, frank hematuria (visible blood in urine), reduced fluid intake, shivering, abdominal pain or tenderness, previous history of confirmed urinary tract infection]
 - **Septic arthritis or osteomyelitis** (swelling of a limb or joint, not using an extremity, non-weight bearing)
 - **Kawasaki disease** (Fever for more than 5 days and at least 4 of: bilateral conjunctival injection, change in mucous membranes, change in the extremities, polymorphous rash, cervical lymphadenopathy)

STEP 1 ASSESS PATIENT'S SYMPTOMS

Identify symptoms /circumstances requiring referral



1. Children with fever must receive immediate medical attention if¹

- Color of skin, lips, or tongue turns blue
- Child does not respond to social signs, does not wake up when roused, or has a weak, high-pitched, or continuous cry
- There is grunting or chest draws into the body
- The skin looks dry
- Child is <3 months of age with a fever of >37.5°C
- Child has a colored rash, neck stiffness, or seizures.

STEP 2

IDENTIFY TREATMENT CONSIDERATIONS²⁻⁶

Medications limiting treatment:



- **Aspirin should not be used** for children or adolescents ≤ 18 years of age. It has been associated with Reye's syndrome and may increase the risk of bleeding in infections with bleeding risk
- **In asthmatic children with fever**, paracetamol does not seem to worsen asthma symptoms
- **Paracetamol should be avoided** in children with severe liver impairment
- **Ibuprofen should be avoided** in children with active GI ulceration or bleeding, and in children with a history of these disorders
- **Ibuprofen should be used** with caution in children with asthma
- **Ibuprofen should not be given** to children who are dehydrated or who have severe renal impairment
- **Paracetamol and Ibuprofen** are not recommended for the prophylactic management of fever, discomfort or pain associated with vaccines

Medical Conditions limiting treatment:



Caution is recommended using antipyretics in chronic diseases such as pre-existing hepatic and renal impairment or in cases of diabetes, cardiac disease and severe malnutrition.

STEP 3

RECOMMEND TREATMENT

Non-pharmacological treatment recommendations for fever in children aged <5



Non-pharmacological treatment recommendations include¹⁻⁶

1. **Use of alcoholic baths** is not an appropriate cooling method
2. **Advise parents/caregivers on right measurement of body temperature:**
 - Do not routinely use oral and rectal routes to measure body temperature of children aged 0-5 years
 - In infants under 4 weeks of age, measure body temperature with an electronic thermometer in the armpit
 - In children aged 4 weeks-5 years, measure body temperature by electronic thermometer or chemical dot thermometer in the armpit, or infra-red tympanic thermometer.
3. **Advise the parent on the management of fever at home:**
 - Tepid sponging is not recommended
 - Do not over-dress or under-dress or wrap the child in heavy blankets
 - Offer the child regular fluids (where a baby or child is breastfed the most appropriate fluid is breast milk)
 - Detect signs of dehydration by looking for sunken fontanelle, dry mouth, sunken eyes, absence of tears, or poor overall appearance,
 - Encourage the child to drink more fluids and consider seeking further advice if they detect signs of dehydration,
 - Identify a non-blanching rash (rash which does not fade under pressure)
 - Check the child during night
 - Keep the child away from nursery or school while the child's fever persists but to notify the school or nursery of the illness.

STEP 3**RECOMMEND TREATMENT****Non-pharmacological treatment recommendations for fever in children aged <5****Non-pharmacological treatment recommendations include¹⁻⁶****4. Give clear instructions on how to administer medication:**

- Warn parents not to exceed the prescribed dose or dosing interval
- Shake the bottle before pouring
- Never measure medicine using household teaspoon/tablespoon. Use only the measuring device provided
- Never allow children to drink medicines straight from the bottle
- Store all medicines out of the reach of children

5. Advise parents on the correct use of antipyretic medication:

- Antipyretics should be used to make the child more comfortable and not routinely with the sole aim of reducing the temperature
- Doses should be measured carefully to avoid over- or under-dosing
- If the temperature does not come down after one dose, do not administer another dose immediately. Wait for the appropriate dosing interval to pass and only give another dose at the correct time
- If the child vomits immediately after taking a dose of medicine, another dose may be given
- Sleeping children should not be awakened solely to administer antipyretics
- Avoid combination products and 'cough and cold medicines', which complicate dosing and may increase the risk of overdose and side-effects
- Antipyretic medication should not be administered for longer than 2 days without consulting a doctor

STEP 3

RECOMMEND TREATMENT

Non-pharmacological treatment recommendations for fever in children aged <5



Non-pharmacological treatment recommendations include¹⁻⁶

6. Advice parents on when to seek further help of a healthcare professional

- if the child has a fit, develops a non-blanching rash, if parent/carer is more worried or feels that the child is less well than when they previously sought advice, fever lasts 5 days or longer, or if the parent/carer is concerned that they are unable to look after the child

Pharmacological treatment recommendations for fever in children aged <5



Pharmacological treatment recommendations include¹⁻⁴

1. Antipyretics are indicated to improve overall comfort of the febrile child.
2. Consider using either paracetamol or ibuprofen in children with fever who appear distressed
3. Antipyretics should not be used with the aim of reducing body temperature in children with fever
4. When using paracetamol or ibuprofen in children with fever:
 - Continue only as long as the child appears distressed
 - Consider changing to the other agent if the child's distress is not alleviated
 - Do not give both agents simultaneously
 - Only consider alternating these agents if the distress persists or recurs before the next dose is due
 - Doses have to be calculated as per weight of the child- Paracetamol 10-15 mg/kg dose every 4-6 hours (maximum dose 60-90 mg/kg in 24 hrs), Ibuprofen 5-10 mg/kg dose every 6-8 hours (maximum dose 30-40 mg/kg in 24 hrs)
 - Avoid combination of antipyretics and 'cough and cold medicines'

WHAT IS THE USE OF PAIN MANAGEMENT PROTOCOLS?

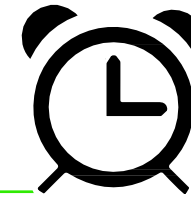


What is the use of protocol in pain management?^{1,2}

Helps conduct
high-quality
pain assessment



Shortens the time taken
to administer
analgesics



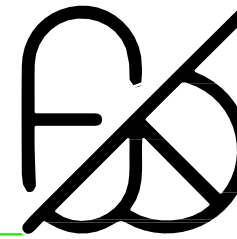
Provides faster
and superior
pain relief



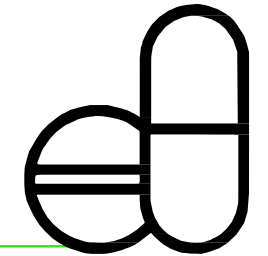
Leads to early
mobilization



Results in fewer
medication
side effects



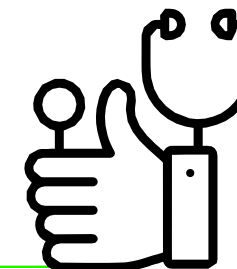
Helps adjust
pain medication
doses



Promotes the use of non-
pharmacological
approaches



Increases patient
satisfaction



References:

1. MUSCULOSKELETAL PAIN PROTOCOL

1. Atchison JW, et al. NSAIDs for Musculoskeletal Pain Management: Current Perspectives and Novel Strategies to Improve Safety. J Manag Care Pharm. 2013 Nov;19(9 Suppl A):10.18553/jmcp.2013.19.s9.1. doi: 10.18553/jmcp.2013.19.s9.1.
2. Cleveland Clinic. Musculoskeletal Pain. Last reviewed 03/10/2021. Available at <https://my.clevelandclinic.org/health/diseases/14526-musculoskeletal-pain>. Accessed December 2023.
3. International Pharmaceutical Federation (FIP). Empowering self-care: A handbook for pharmacists. The Hague: International Pharmaceutical Federation; 2022.
4. Urgent and Emergency Musculoskeletal Conditions Requiring Onward Referral. Updated 3 December 2020 Version 2. Available at <https://arma.uk.net/wpcontent/uploads/2021/01/Urgent-emergency-MSK-conditions-requiring-onward-referral-2.pdf>.
5. Moore N, Pollack C, Butkerait P. Adverse drug reactions and drug-drug interactions with over-the-counter NSAIDs. Ther Clin Risk Manag. 2015 Jul 15; 11:1061-75.
6. Vostinaru O. Adverse Effects and Drug Interactions of the Non-Steroidal Anti-Inflammatory Drugs [Internet]. Nonsteroidal Anti-Inflammatory Drugs. InTech; 2017. Available from: <http://dx.doi.org/10.5772/intechopen.68198>. Accessed December 2023.
7. Agrawal S, Khazaeni B. Acetaminophen Toxicity. [Updated 2023 Jun 9]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK441917/>.
8. John Alchin, Arti Dhar, Kamran Siddiqui & Paul J. Christo (2022) Why paracetamol (acetaminophen) is a suitable first choice for treating mild to moderate acute pain in adults with liver, kidney or cardiovascular disease, gastrointestinal disorders, asthma, or who are older, Current Medical Research and Opinion, 38:5, 811-825, DOI: 10.1080/03007995.2022.2049551.
9. Meunier L, Larrey D. Recent Advances in Hepatotoxicity of Non-Steroidal Anti-Inflammatory Drugs. Ann Hepatol. 2018 Mar 1;17(2):187-191.
10. McEvoy L, Carr DF, Pirmohamed M. Pharmacogenomics of NSAID-Induced Upper Gastrointestinal Toxicity. Front Pharmacol. 2021 Jun 21; 12:684162.
11. Ghlichloo I, Gerriets V. Nonsteroidal Anti-Inflammatory Drugs (NSAIDs) [Updated 2023 May 1]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK547742/>. Accessed December 2023.
12. Qaseem A, et al. Nonpharmacologic and Pharmacologic Management of Acute Pain From Non-Low Back, Musculoskeletal Injuries in Adults: A Clinical Guideline From the American College of Physicians and American Academy of Family Physicians. Ann Intern Med. 2020 Nov 3;173(9):739-748. doi: 10.7326/M19-3602. Epub 2020 Aug 18. Erratum in: Ann Intern Med. 2023 Apr;176(4):584.
13. PAMI- Pain assessment and management initiative. Basics of Pain Assessment and Management. Updated May 20, 2019. Available at <https://pami.emergency.med.jax.ufl.edu/wordpress/files/2019/10/PAMI-Basic-Principles-of-Pain-Management-final.pdf>. Accessed December 2023.
14. Chen JS, Kandle PF, Murray IV, et al. Physiology, Pain. [Updated 2023 Jul 24]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK539789/>.
15. El-Tallawy SN, Nalamasu R, Salem GI, LeQuang JAK, Pergolizzi JV, Christo PJ. Management of Musculoskeletal Pain: An Update with Emphasis on Chronic Musculoskeletal Pain. Pain Ther. 2021 Jun;10(1):181-209.
16. Scottish Intercollegiate Guidelines Network (SIGN). Management of chronic pain. Edinburgh: SIGN; 2013, Revised 2019. (SIGN publication no. 136). <https://www.sign.ac.uk/assets/sign136.pdf>.
17. Quintero GC. Review about gabapentin misuse, interactions, contraindications and side effects. J Exp Pharmacol. 2017 Feb 9; 9:13-21. doi:10.2147/JEP.S124391.
18. Maurer PM, Bartkowski RR. Drug interactions of clinical significance with opioid analgesics. Drug Saf. 1993 Jan;8(1):30-48.
19. Lyrica interactions: Alcohol, medications, and other factors. Last medically reviewed on July 22, 2022. Available at <https://www.medicalnewstoday.com/articles/drugs-lyrica-interactions>. Accessed December 2023.
20. Moraczewski J, Awosika AO, Aedma KK. Tricyclic Antidepressants. [Updated 2023 Aug 17]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK557791/>.
21. Mayo clinic- Serotonin and norepinephrine reuptake inhibitors (SNRIs). Reviewed Oct. 05, 2019. Available at <https://www.mayoclinic.org/diseases-conditions/depression/in-depth/antidepressants/art-20044970>. Accessed December 2023.

References:

2. OSTEOARTHRITIS PAIN PROTOCOL

1. Kolasinski SL, Neogi T, Hochberg MC et al. American College of Rheumatology/Arthritis Foundation Guideline for the Management of Osteoarthritis of the Hand, Hip, and Knee. Arthritis Care Res (Hoboken). 2020 Feb;72(2):149-162. doi: 10.1002/acr.24131.
2. Kielly J, Davis EM, Marra C. Practice guidelines for pharmacists: The management of osteoarthritis. Can Pharm J (Ott). 2017 May 1;150(3):156-168. doi: 10.1177/1715163517702168.
3. Elizabeth Cottrell et al. Appropriate community pharmacy management of joint pain. The Pharmaceutical Journal. 26 August 2021.
4. Moore N, Pollack C, Butkerait P. Adverse drug reactions and drug-drug interactions with over-the-counter NSAIDs. Ther Clin Risk Manag. 2015 Jul 15; 11:1061-75.
5. John Alchin, Arti Dhar, Kamran Siddiqui & Paul J. Christo (2022) Why paracetamol (acetaminophen) is a suitable first choice for treating mild to moderate acute pain in adults with liver, kidney or cardiovascular disease, gastrointestinal disorders, asthma, or who are older, Current Medical Research and Opinion, 38:5, 811-825, DOI: 10.1080/03007995.2022.2049551.
6. Meunier L, Larrey D. Recent Advances in Hepatotoxicity of Non-Steroidal Anti-Inflammatory Drugs. Ann Hepatol. 2018 Mar 1;17(2):187-191.
7. McEvoy L, Carr DF, Pirmohamed M. Pharmacogenomics of NSAID-Induced Upper Gastrointestinal Toxicity. Front Pharmacol. 2021 Jun 21; 12:684162.
8. Ghlichloo I, Gerriets V. Nonsteroidal Anti-Inflammatory Drugs (NSAIDs) [Updated 2023 May 1]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK547742/>. Accessed December 2023.
9. Osteoarthritis in over 16s: diagnosis and management. London: National Institute for Health and Care Excellence (NICE); 2022 Oct 19. (NICE Guideline, No. 226.) Available from: <https://www.ncbi.nlm.nih.gov/books/NBK588843/>. Accessed on 24th January 2024.
10. Scott, D. (2006). Osteoarthritis and rheumatoid arthritis- Clinical focus.
11. Vostinaru O. Adverse Effects and Drug Interactions of the Non-Steroidal Anti-Inflammatory Drugs [Internet]. Nonsteroidal Anti-Inflammatory Drugs. InTech; 2017. Available from: <http://dx.doi.org/10.5772/intechopen.68198>. Accessed December 2023.
12. Agrawal S, Khazaeni B. Acetaminophen Toxicity. [Updated 2023 Jun 9]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK441917/>.
13. Moseng T, Vliet Vlieland TPM, Battista S, et al. EULAR recommendations for the non-pharmacological core management of hip and knee osteoarthritis: 2023 update. Ann Rheum Dis. 2024 Jan 11: ard-2023-225041. doi: 10.1136/ard-2023-225041.
14. Celeste VanAtta et al. Guiding Osteoarthritis Management. US Pharm. 2023;48(3):17-21.
15. Bannuru RR, Osani MC, Vaysbrot EE et al. OARSI guidelines for the non-surgical management of knee, hip, and polyarticular osteoarthritis. Osteoarthritis Cartilage. 2019 Nov;27(11):1578-1589. doi: 10.1016/j.joca.2019.06.011.
16. Zhang W, Doherty M. EULAR recommendations for knee and hip osteoarthritis: a critique of the methodology. Br J Sports Med. 2006 Aug;40(8):664-9. doi: 10.1136/bjsm.2004.016840.

References:

3. ADULT NON-SPECIFIC LOW BACK PAIN PROTOCOL

- Casazza BA. Diagnosis and treatment of acute low back pain. Am Fam Physician. 2012 Feb 15;85(4):343-50.
- Della-Giustina D. Acute low back pain: recognizing the “red flags” in the workup. Volume 53 - Issue 6 - June 2013.
- Verhagen AP, et al. Red flags presented in current low back pain guidelines: a review. Eur Spine J. 2016 Sep;25(9):2788-802. doi: 10.1007/s00586-016-4684-0.
- National Institute of Arthritis and Musculoskeletal and Skin Diseases. Back Pain. Available at <https://www.niams.nih.gov/health-topics/back-pain>. Accessed on 16th Jan 2024
- World Health Organization. Low Back Pain. 19th June 2023. Available at Doi <https://www.who.int/news-room/fact-sheets/detail/low-back-pain> in #:~:text=Low%20back%20pain%20(LBP)%20has,LBP%2C%20including%20children%20and%20adolescents. Accessed 16th Jan 2024.
- Oliveira CB, et al. Clinical practice guidelines for the management of non-specific low back pain in primary care: an updated overview. Eur Spine J. 2018 Nov;27(11):2791-2803. doi: 10.1007/s00586-018-5673-2.
- Moore N, Pollack C, Butkerait P. Adverse drug reactions and drug-drug interactions with over-the-counter NSAIDs. Ther Clin Risk Manag. 2015 Jul 15; 11:1061-75.
- John Alchin, Arti Dhar, Kamran Siddiqui & Paul J. Christo (2022) Why paracetamol (acetaminophen) is a suitable first choice for treating mild to moderate acute pain in adults with liver, kidney or cardiovascular disease, gastrointestinal disorders, asthma, or who are older, Current Medical Research and Opinion, 38:5, 811-825, DOI: 10.1080/03007995.2022.2049551.
- Meunier L, Larrey D. Recent Advances in Hepatotoxicity of Non-Steroidal Anti-Inflammatory Drugs. Ann Hepatol. 2018 Mar 1;17(2):187-191.
- McEvoy L, Carr DF, Pirmohamed M. Pharmacogenomics of NSAID-Induced Upper Gastrointestinal Toxicity. Front Pharmacol. 2021 Jun 21; 12:684162.
- Ghlichloo I, Gerriets V. Nonsteroidal Anti-Inflammatory Drugs (NSAIDs) [Updated 2023 May 1]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK547742/>. Accessed December 2023.
- Derek Gyllenhammer et al. The Community Pharmacist's Role in Managing Lower Back Pain. US Pharm. 2017;42(8):35-38.
- Quaseem et al. Noninvasive Treatments for Acute, Subacute, and Chronic Low Back Pain: A Clinical Practice Guideline from the American College of Physicians. Ann Intern Med. 2017 Apr 4;166(7):514-530. doi: 10.7326/M16-2367.
- Vostinaru O. Adverse Effects and Drug Interactions of the Non-Steroidal Anti-Inflammatory Drugs [Internet]. Nonsteroidal Anti-Inflammatory Drugs. InTech; 2017. Available from: <http://dx.doi.org/10.5772/intechopen.68198>. Accessed December 2023.
- Agrawal S, Khazaeni B. Acetaminophen Toxicity. [Updated 2023 Jun 9]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK441917/>.
- Corp N, et al. Evidence-based treatment recommendations for neck and low back pain across Europe: A systematic review of guidelines. Eur J Pain. 2021 Feb;25(2):275-295. doi: 10.1002/ejp.1679.
- Mena Alrais Dellarocca. Evidence-Based Management of Nonspecific Low Back Pain in Adults. March 2021. Continuing Education for Pharmacists & Pharmacy Technician. Available at <https://journalce.powerpak.com/ce/evidence-based-management-of-nonspecific>. Accessed 17th Jan 2024.
- Baroncini A, et al. Nonopioid pharmacological management of acute low back pain: A level I of evidence systematic review. J Orthop Res. 2023 Aug;41(8):1781-1791. doi: 10.1002/jor.25508.
- Koes B, Schreijenberg M, Tkachev A. Paracetamol for low back pain: the state of the research field. Expert Rev Clin Pharmacol. 2020 Sep;13(9):1059-1066. doi: 10.1080/17512433.2020.1817738.
- Cyclobenzaprine HCL- Interactions. Available at <https://www.webmd.com/drugs/2/drug-8888-8087/cyclobenzaprine-oral/cyclobenzaprine-oral/details>. Accessed on 16th Jan 2024.
- Tizanidine HCL- Interactions. Available at <https://www.webmd.com/drugs/2/drug-1024/tizanidine-oral/details>. Accessed on 16th Jan 2024.
- Low back pain and sciatica in over 16s: assessment and management NICE guideline [NG59]Published: 30 November 2016 Last updated: 11 December 2020.

References:

4. ADULT HEADACHE PAIN PROTOCOL

1. Headaches in over 12s: diagnosis and management. London: National Institute for Health and Care Excellence (NICE); 2021 Dec 17. (NICE Guideline, No. 150.) Available from: <https://www.ncbi.nlm.nih.gov/books/NBK553317/>. Accessed 6th Dec 2023.
2. British Association for the study of Headache. (BASH) NATIONAL HEADACHE MANAGEMENT SYSTEM FOR ADULTS 2019. Available at <https://headache.org.uk/wp-content/uploads/2023/02/bash-guideline-2019.pdf>. Accessed 6th Dec. 2023.
3. Headaches. Cleveland Clinic. Last reviewed 08/29/2022. Available at <https://my.clevelandclinic.org/health/diseases/9639-headaches>. Accessed December 2023.
4. Toward Optimized Practice Institute of Health Economics. Primary care management of headache in adults: Clinical practice guideline, 2nd edn, pp.1–76, <https://actt.albertadoctors.org/media/uqlh1yin/headache-guideline.pdf> 2016, Accessed December 2023.
5. Moore N, Pollack C, Butkerait P. Adverse drug reactions and drug-drug interactions with over-the-counter NSAIDs. Ther Clin Risk Manag. 2015 Jul 15; 11:1061-75.
6. Vostinaru O. Adverse Effects and Drug Interactions of the Non-Steroidal Anti-Inflammatory Drugs [Internet]. Nonsteroidal Anti-Inflammatory Drugs. InTech; 2017. Available from: <http://dx.doi.org/10.5772/intechopen.68198>. Accessed December 2023.
7. Agrawal S, Khazaeni B. Acetaminophen Toxicity. [Updated 2023 Jun 9]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK441917/>.
8. John Alchin, Arti Dhar, Kamran Siddiqui & Paul J. Christo (2022) Why paracetamol (acetaminophen) is a suitable first choice for treating mild to moderate acute pain in adults with liver, kidney or cardiovascular disease, gastrointestinal disorders, asthma, or who are older, Current Medical Research and Opinion, 38:5, 811-825, DOI: 10.1080/03007995.2022.2049551.
9. Meunier L, Larrey D. Recent Advances in Hepatotoxicity of Non-Steroidal Anti-Inflammatory Drugs. Ann Hepatol. 2018 Mar 1;17(2):187-191.
10. McEvoy L, Carr DF, Pirmohamed M. Pharmacogenomics of NSAID-Induced Upper Gastrointestinal Toxicity. Front Pharmacol. 2021 Jun 21; 12:684162.
11. Ghlichloo I, Gerriets V. Nonsteroidal Anti-Inflammatory Drugs (NSAIDs) [Updated 2023 May 1]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK547742/>. Accessed December 2023.
12. Cleveland Clinic. Headache Medicine. Last reviewed 11/24/2021. Available at <https://my.clevelandclinic.org/health/drugs/9652-headache-medicine>. Accessed 7th Dec 2023.
13. Ford B, Dore M, Harris E. Outpatient Primary Care Management of Headaches: Guidelines from the VA/DoD. Am Fam Physician. 2021 Sep 1;104(3):316-320.
14. Pharmacy Times. Staying Ahead of Headache Management: Tips for Pharmacists on Patient Recommendations. Reviewed November 6, 2023. Available at <https://www.pharmacytimes.com/view/staying-ahead-of-headache-management-tips-for-pharmacists-on-patient-recommendations>. Accessed 7th Dec. 2023.
15. Hagen M, Alchin J. Nonprescription drugs recommended in guidelines for common pain conditions. Pain Manag. 2020 Mar;10(2):117-129.
16. Alnasser, A., Alhumrran, H., Alfehaid, M. et al. Paracetamol versus ibuprofen in treating episodic tension-type headache: a systematic review and network meta-analysis. Sci Rep 13, 21532 (2023). <https://doi.org/10.1038/s41598-023-48910-y>.
17. Derry S, Wiffen PJ, Moore RA. Aspirin for acute treatment of episodic tension-type headache in adults. Cochrane Database Syst Rev. 2017 Jan 13;1(1):CD011888. doi: 10.1002/14651858.CD011888.pub2.
18. Vaz JM, Alves BM, Duarte DB, Marques LA, Santana RS. Quality appraisal of existing guidelines for the management of headache disorders by the AGREE II's method. Cephalalgia. 2022 Mar;42(3):239-249.
19. Bindu S, Mazumder S, Bandyopadhyay U. Non-steroidal anti-inflammatory drugs (NSAIDs) and organ damage: A current perspective. Biochem Pharmacol. 2020 Oct; 180:114147.
20. Bendtsen L, Evers S, Linde M, Mitsikostas DD, Sandrini G, Schoenen J; EFNS. EFNS guideline on the treatment of tension-type headache - report of an EFNS task force. Eur J Neurol. 2010 Nov;17(11):1318-25.
21. Diclofenac oral tablets. December 9, 2022. Available at <https://www.medicalnewstoday.com/articles/drugs-diclofenac-tablets#interactions>. Accessed December 2023.
22. What to know about ibuprofen. February 8, 2023. Available at <https://www.medicalnewstoday.com/articles/161071#interactions>. Accessed December 2023.
23. What to know about naproxen. Updated on June 27, 2023. Available at <https://www.medicalnewstoday.com/articles/324917#interactions>. Accessed December 2023.
24. Ketoprofen-Interactions. Available at <https://www.webmd.com/drugs/2/drug-5995-8186/ketoprofen-oral/ketoprofen-oral/details>. Accessed December 2023.

References:

5. ADULT MIGRAINE PAIN PROTOCOL

1. Mayans L, Walling A. Acute Migraine Headache: Treatment Strategies. Am Fam Physician. 2018 Feb 15;97(4):243-251.
2. Eigenbrodt AK, Ashina H, Khan S, et al. Diagnosis and management of migraine in ten steps. Nat Rev Neurol. 2021 Aug;17(8):501-514.
3. Moore N, Pollack C, Butkerait P. Adverse drug reactions and drug-drug interactions with over-the-counter NSAIDs. Ther Clin Risk Manag. 2015 Jul 15; 11:1061-75.
4. Vostinaru O. Adverse Effects and Drug Interactions of the Non-Steroidal Anti-Inflammatory Drugs [Internet]. Nonsteroidal Anti-Inflammatory Drugs. InTech; 2017. Available from: <http://dx.doi.org/10.5772/intechopen.68198>. Accessed December 2023.
5. Agrawal S, Khazaeni B. Acetaminophen Toxicity. [Updated 2023 Jun 9]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK441917/>.
6. John Alchin, Arti Dhar, Kamran Siddiqui & Paul J. Christo (2022) Why paracetamol (acetaminophen) is a suitable first choice for treating mild to moderate acute pain in adults with liver, kidney or cardiovascular disease, gastrointestinal disorders, asthma, or who are older, Current Medical Research and Opinion, 38:5, 811-825, DOI: 10.1080/03007995.2022.2049551.
7. Meunier L, Larrey D. Recent Advances in Hepatotoxicity of Non-Steroidal Anti-Inflammatory Drugs. Ann Hepatol. 2018 Mar 1;17(2):187-191.
8. McEvoy L, Carr DF, Pirmohamed M. Pharmacogenomics of NSAID-Induced Upper Gastrointestinal Toxicity. Front Pharmacol. 2021 Jun 21; 12:684162.
9. Ghlichloo I, Gerriets V. Nonsteroidal Anti-Inflammatory Drugs (NSAIDs) [Updated 2023 May 1]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK547742/>. Accessed December 2023.
10. Haghdoust F, Togha M. Migraine management: Non-pharmacological points for patients and health care professionals. Open Med (Wars). 2022 Nov 23;17(1):1869-1882.
11. Ailani J, Burch RC, Robbins MS; Board of Directors of the American Headache Society. The American Headache Society Consensus Statement: Update on integrating new migraine treatments into clinical practice. Headache. 2021 Jul;61(7):1021-1039. doi: 10.1111/head.14153.
12. Diener H-C, Holle-Lee D, Nägel S, et al. Treatment of Migraine Attacks and Prevention of Migraine: Guidelines by the German Migraine and Headache Society and the German Society of Neurology. Clinical and Translational Neuroscience. 2019; 3(1):3.
13. The International Classification of Headache Disorders 3rd edition. Available at <https://ichd-3.org/1-migraine/>. Accessed on 12th January 2024.
14. Migraine Drug Interactions FAQs- Reviewed on June 17, 2021. Available at <https://americanmigrainefoundation.org/resource-library/migraine-drug-interactions-faq/>. Accessed on 12th January 2024.

References:

6. ADULT ACUTE SORE THROAT PAIN PROTOCOL

1. Sore Throat. Adapted from <https://www.mayoclinic.org/diseases-conditions/sore-throat/symptoms-causes/syc-20351635>. Accessed 8th Feb. 2024.
2. Gunnarsson RK, Ebell M, Centor R. et al. Best management of patients with an acute sore throat - a critical analysis of current evidence and a consensus of experts from different countries and traditions. *Infect Dis (Lond)*. 2023 Jun;55(6):384-395.
3. Moore N, Pollack C, Butkerait P. Adverse drug reactions and drug-drug interactions with over-the-counter NSAIDs. *Ther Clin Risk Manag*. 2015 Jul 15; 11:1061-75.
4. John Alchin, Arti Dhar, Kamran Siddiqui & Paul J. Christo (2022) Why paracetamol (acetaminophen) is a suitable first choice for treating mild to moderate acute pain in adults with liver, kidney or cardiovascular disease, gastrointestinal disorders, asthma, or who are older, *Current Medical Research and Opinion*, 38:5, 811-825, DOI: 10.1080/03007995.2022.2049551.
5. Meunier L, Larrey D. Recent Advances in Hepatotoxicity of Non-Steroidal Anti-Inflammatory Drugs. *Ann Hepatol*. 2018 Mar 1;17(2):187-191.
6. McEvoy L, Carr DF, Pirmohamed M. Pharmacogenomics of NSAID-Induced Upper Gastrointestinal Toxicity. *Front Pharmacol*. 2021 Jun 21; 12:684162.
7. Ghlichloo I, Gerriets V. Nonsteroidal Anti-Inflammatory Drugs (NSAIDs) [Updated 2023 May 1]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK547742/>. Accessed December 2023.
8. Propisnova, Viktoriia & Zhulai, Tetiana & Grześkowiak, Edmund & Szkutnik-Fiedler, Danuta. Sore throat: diagnosis and treatment world standards and approaches to pharmaceutical care in Ukraine. *Acta Poloniae Pharmaceutica - Drug Research*. 2023, 80. 521-530.
9. Sore throat. Available at <https://www.mayoclinic.org/diseases-conditions/sore-throat/diagnosis-treatment/drc-20351640>. Accessed 7th Feb. 2024.
10. Sheena Rughani. Case-based learning: sore throat. *The Pharmaceutical Journal*, 17 September 2019.
11. Krüger K, Töpfner N, Berner R, Windfuhr J, Oltrogge JH: Clinical practice guideline: Sore throat. *Dtsch Arztebl Int* 2021; 118: 188–94.
12. ESCMID Sore Throat Guideline Group; Pelucchi C, Grigoryan L, Galeone C, Esposito S, Huovinen P, Little P, Verheij T. Guideline for the management of acute sore throat. *Clin Microbiol Infect*. 2012 Apr;18 Suppl 1:1-28.
13. Randel A; Infectious Disease Society of America. IDSA Updates Guideline for Managing Group A Streptococcal Pharyngitis. *Am Fam Physician*. 2013 Sep 1;88(5):338-40.
14. Centers for Disease control and Prevention. (CDC) Sore Throat. Available at <https://www.cdc.gov/antibiotic-use/sore-throat.html>. Last Reviewed: October 6, 2021. Accessed 7th Feb.2024.
15. Coutinho G, Duerden M, Sessa A, Caretta-Barradas S, Altiner A. Worldwide comparison of treatment guidelines for sore throat. *Int J Clin Pract*. 2021 May;75(5):e13879.
16. Vostinaru O. Adverse Effects and Drug Interactions of the Non-Steroidal Anti-Inflammatory Drugs [Internet]. *Nonsteroidal Anti-Inflammatory Drugs*. InTech; 2017. Available from: <http://dx.doi.org/10.5772/intechopen.68198>. Accessed December 2023.
17. Agrawal S, Khazaeni B. Acetaminophen Toxicity. [Updated 2023 Jun 9]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK441917/>.
18. Yip DW, Gerriets V. Penicillin. [Updated 2022 May 19]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK554560/>.
19. Amoxicillin, oral tablet. *Medical News Today*. Available at <https://www.medicalnewstoday.com/articles/amoxicillin-oral-tablet>. Accessed on 8th Feb. 2024.
20. What is cephalexin? *Medical News Today*. Available at <https://www.medicalnewstoday.com/articles/322404>. Accessed on 8th Feb. 2024.
21. DURICEF prescribing information. Available at https://www.accessdata.fda.gov/drugsatfda_docs/label/2002/50512s441bl.pdf. Accessed on 8th Feb. 2024.

References:

7. ADULT DENTAL PAIN PROTOCOL

1. Timmerman A, Parashos P. Management of dental pain in primary care. *Aust Prescr*. 2020 Apr;43(2):39-44.
2. Renton T, Wilson NH. Understanding and managing dental and orofacial pain in general practice. *Br J Gen Pract*. 2016 May;66(646):236–7.
3. Garispe A, Sorensen C, Sorensen JR. Dental Emergencies. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 [cited 2024 Jan 26]. Available from: <http://www.ncbi.nlm.nih.gov/books/NBK589664/>.
4. Moore N, Pollack C, Butkerait P. Adverse drug reactions and drug–drug interactions with over-the-counter NSAIDs. *Ther Clin Risk Manag*. 2015 Jul 15;11:1061–75.
5. Vostinaru O. Adverse Effects and Drug Interactions of the Non-Steroidal Anti-Inflammatory Drugs. In: Nonsteroidal Anti-Inflammatory Drugs [Internet]. IntechOpen; 2017 [cited 2024 Jan 28]. Available from: <https://www.intechopen.com/chapters/54761>.
6. Agrawal S, Khazaeni B. Acetaminophen Toxicity. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 [cited 2024 Jan 28]. Available from: <http://www.ncbi.nlm.nih.gov/books/NBK441917/>.
7. Alchin J, Dhar A, Siddiqui K, Christo PJ. Why paracetamol (acetaminophen) is a suitable first choice for treating mild to moderate acute pain in adults with liver, kidney or cardiovascular disease, gastrointestinal disorders, asthma, or who are older. *Curr Med Res Opin*. 2022 May;38(5):811–25.
8. Meunier L, Larrey D. Recent Advances in Hepatotoxicity of Non Steroidal Anti-Inflammatory Drugs. *Ann Hepatol*. 2018 Mar 1;17(2):187–91.
9. McEvoy L, Carr DF, Pirmohamed M. Pharmacogenomics of NSAID-Induced Upper Gastrointestinal Toxicity. *Front Pharmacol*. 2021;12:684162.
10. Ghlichloo I, Gerriets V. Nonsteroidal Anti-Inflammatory Drugs (NSAIDs). In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 [cited 2024 Jan 28]. Available from: <http://www.ncbi.nlm.nih.gov/books/NBK547742/>.
11. Dowell D, Ragan KR, Jones CM, Baldwin GT, Chou R. CDC Clinical Practice Guideline for Prescribing Opioids for Pain — United States, 2022. *MMWR Recomm Rep*. 2022 Nov 4;71(3):1–95.
12. American Dental Association. ADA Dental Drug Handbook: A Quick Reference. Chicago, IL: American Dental Association; 2019.
13. Carrasco-Labra A, Polk DE, Urquhart O, Aghaloo T, Claytor JW, Dhar V, et al. Evidence-based clinical practice guideline for the pharmacologic management of acute dental pain in adolescents, adults, and older adults: A report from the American Dental Association Science and Research Institute, the University of Pittsburgh, and the University of Pennsylvania. *J Am Dent Assoc*. 2024 Feb 1;155(2):102-117.e9.
14. Advil dual action prescribing information [Internet]. [cited 2024 Jan 29]. Available from: [https://www.advil.com/content/dam/cf-consumer-healthcare/bp-advil-v2/en_US/pdf/LBL_00000551_WEB_READY_ADVIL_DUAL_ACTION_WITHACETAMINOPHEN_\(VERSION_11.0\).pdf](https://www.advil.com/content/dam/cf-consumer-healthcare/bp-advil-v2/en_US/pdf/LBL_00000551_WEB_READY_ADVIL_DUAL_ACTION_WITHACETAMINOPHEN_(VERSION_11.0).pdf).
15. Pigg M, Nixdorf DR, Law AS, Renton T, Sharav Y, Baad-Hansen L, et al. New International Classification of Orofacial Pain: What Is in It For Endodontists? *J Endod*. 2021 Mar;47(3):345–57.
16. Koh SWC, Li CF, Loh JSP, Wong ML, Loh VWK. Managing tooth pain in general practice. *Singapore Med J*. 2019 May;60(5):224–8.
17. Macauley Y, O'Donnell P, Duncan H. Dental pain. *BMJ*. 2013 Nov 5;347:f6539.
18. Smith HS. Opioid Metabolism. *Mayo Clin Proc*. 2009 Jul;84(7):613–24.
19. Peranathan V, Buckley N. Opioids and antidepressants: which combinations to avoid. *Aust Prescr*. 2021 Apr 1;44(2):41–4.
20. Smith H, Bruckenthal P. Implications of opioid analgesia for medically complicated patients. *Drugs Aging*. 2010 May;27(5):417–33.
21. Oral Analgesics for Acute Dental Pain [Internet] 2023 [cited 2024 Jan 25]. Available from: <https://www.ada.org/resources/research/science-and-research-institute/oral-health-topics/oral-analgesics-for-acute-dental-pain>.
22. Becker DE. Pain Management: Part 1: Managing Acute and Postoperative Dental Pain. *Anesth Prog*. 2010;57(2):67–79.
23. Tekam D, Vaz V, Sahithi M, Ruchitha TG, Sruthi MK, Gahana GC. Analgesics for the Dental Pain Management: A Comprehensive Review. *International Journal of Scientific Study* 2022;10(3).
24. Tadokoro-Cuccaro R, Fisher BG, Thankamony A, Ong KK, Hughes IA. Maternal Paracetamol Intake During Pregnancy—Impacts on Offspring Reproductive Development. *Front Toxicol*. 2022 Apr 14;4:884704.
25. Kim SJ, Seo JT. Selection of analgesics for the management of acute and postoperative dental pain: a mini-review. *J Periodontal Implant Sci*. 2020 Mar 19;50(2):68–73.
26. Tramadol/Paracetamol 37.5mg / 325mg tablets - Summary of Product Characteristics (SmPC) - (emc) [Internet] 2023 [cited 2024 Jan 30]. Available from: <https://www.medicines.org.uk/emc/product/10547/smpc#gref>.
27. Percocet prescribing information [Internet] 2006 [cited 2024 Jan 30] Available from: https://www.accessdata.fda.gov/drugsatfda_docs/label/2006/040330s015,040341s013,040434s003lbl.pdf.

References:

8. PERIOD PAIN PROTOCOL

1. ACOG Committee Opinion No. 760: Dysmenorrhea and Endometriosis in the Adolescent. Obstet Gynecol. 2018 Dec;132(6): e249-e258.
2. Burnett M, Lemyre M. No. 345-Primary Dysmenorrhea Consensus Guideline. J Obstet Gynaecol Can. 2017 Jul;39(7):585-595.
3. Itani R, Soubra L, Karout S, et al. Primary Dysmenorrhea: Pathophysiology, Diagnosis, and Treatment Updates. Korean J Fam Med. 2022 Mar;43(2):101-108.
4. McKenna KA, Fogleman CD. Dysmenorrhea. Am Fam Physician. 2021 Aug 1;104(2):164-170.
5. Moore N, Pollack C, Butkerait P. Adverse drug reactions and drug-drug interactions with over-the-counter NSAIDs. Ther Clin Risk Manag. 2015 Jul 15; 11:1061-75.
6. John Alchin, Arti Dhar, Kamran Siddiqui & Paul J. Christo (2022) Why paracetamol (acetaminophen) is a suitable first choice for treating mild to moderate acute pain in adults with liver, kidney or cardiovascular disease, gastrointestinal disorders, asthma, or who are older, Current Medical Research and Opinion, 38:5, 811-825, DOI: 10.1080/03007995.2022.2049551.
7. Meunier L, Larrey D. Recent Advances in Hepatotoxicity of Non-Steroidal Anti-Inflammatory Drugs. Ann Hepatol. 2018 Mar 1;17(2):187-191.
8. McEvoy L, Carr DF, Pirmohamed M. Pharmacogenomics of NSAID-Induced Upper Gastrointestinal Toxicity. Front Pharmacol. 2021 Jun 21; 12:684162.
9. Ghlichloo I, Gerriets V. Nonsteroidal Anti-Inflammatory Drugs (NSAIDs) [Updated 2023 May 1]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK547742/>. Accessed December 2023.
10. Case-based learning: dysmenorrhoea management. The Pharmaceutical Journal, PJ, July 2021, Vol 307, No 7951;307(7951): DOI:10.1211/PJ.2021.1.90233.
11. Armour M, Ee CC, Naidoo D, Ayati Z, Chalmers KJ, Steel KA, de Manincor MJ, Delshad E. Exercise for dysmenorrhoea. Cochrane Database Syst Rev. 2019 Sep 20;9(9):CD004142.
12. Vostinaru O. Adverse Effects and Drug Interactions of the Non-Steroidal Anti-Inflammatory Drugs [Internet]. Nonsteroidal Anti-Inflammatory Drugs. InTech; 2017. Available from: <http://dx.doi.org/10.5772/intechopen.68198>. Accessed December 2023.
13. Agrawal S, Khazaeni B. Acetaminophen Toxicity. [Updated 2023 Jun 9]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK441917/>.
14. Cooper DB, Patel P, Mahdy H. Oral Contraceptive Pills. [Updated 2022 Nov 24]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK430882/>.
15. Fazio A. Oral contraceptive drug interactions: important considerations. South Med J. 1991 Aug;84(8):997-1002.
16. Potential Drug Interactions in Patients Taking Oral Contraceptive Pills. Available at <https://www.aafp.org/pubs/afp/issues/2019/1115/p599.pdf> Accessed December 2023.

References:

9. FEVER IN CHILDREN AGED <5 YEARS

1. Fever in under 5s: assessment and initial management. London: National Institute for Health and Care Excellence (NICE); 2021 Nov 26. PMID: 31891472.
2. Chiappini E, Bortone B, Galli L, et al. Guidelines for the symptomatic management of fever in children: systematic review of the literature and quality appraisal with AGREE II. *BMJ Open* 2017;7:e015404. doi:10.1136/bmjopen-2016-015404.
3. Richardson M, Lakhanpaul M; Guideline Development Group and the Technical Team. Assessment and initial management of feverish illness in children younger than 5 years: summary of NICE guidance. *BMJ*. 2007 Jun 2;334(7604):1163-4.
4. Green R, Webb D, Jeena PM, Wells M, Butt N, Hangoma JM, Moodley RS, Maimin J, Wibbelink M, Mustafa F. Management of acute fever in children: Consensus recommendations for community and primary healthcare providers in sub-Saharan Africa. *Afr J Emerg Med*. 2021 Jun;11(2):283-296.
5. Drake R. Management of mild pediatric pain and fever. Available at <https://www.researchreview.co.nz/getmedia/8b1e2073-fe41-43ad-a3c7-34697534407d/Educational-Series-Paediatric-Analgesia.pdf.aspx?ext=.pdf>. Accessed 12th April 2024.
6. Green R, Jeena P, Kotze S et al. Management of acute fever in children: guideline for community healthcare providers and pharmacists. *S Afr Med J*. 2013 Sep 3;103(12):948-54.
7. Caruggi S, Rossi M, De Giacomo C, Luini C, Ruggiero N, Salvatoni A, Salvatore S. Pediatric Dehydration Assessment at Triage: Prospective Study on Refilling Time. *Pediatr Gastroenterol Hepatol Nutr*. 2018 Oct;21(4):278-288.