Tension-Type Headache, Acute

Treatment: Headache

Goals of Therapy

- Relieve or abolish pain associated with the headache promptly (e.g., within 2 to 4 hours of treatment).
- Relieve or prevent headache-associated disability so that the patient can return quickly to normal functioning.
- Consistent response to acute headache treatment.
- Prevent complications of medication usage, such as adverse events or medication-overuse headache (MOH).

Nonpharmacologic Management

- Rest or sleep in a dark, quiet room.
- Apply cold cloth, ice pack, or heat pack to head.
    - Dependent on what provides relief to the patient.
- Identify and avoid triggers if/when possible. The most frequently identified triggers include:
    - Stress and mental tension
    - Other triggers may include (not an exhaustive list):
        - Head and neck movements
        - Irregular/inappropriate meals
        - Caffeine
        - Female hormones (menstrual cycle, hormonal substitution)
        - Sleep issues
- Recommend maintaining a headache diary to record frequency, intensity, suspected triggers, and the use and effect of medication
    - What You Should Know About Headache Self-Management
    - Headache Diary Sheets: long form, short form
- Certain lifestyle adjustments may be beneficial:
    - Manage stress through relaxation training, cognitive behaviour therapy, or massage therapy.
    - Avoid skipping meals, reduce caffeine intake.
    - Ensure regular exercise.
    - Practice good sleep hygiene by avoiding irregular or inadequate sleep.

- Physiotherapy and chiropractic care may be useful if mechanical problems in neck or shoulders identified

Pharmacologic Treatment

Choice of medication for tension-type headache (TTH) will be based on several factors, including patient preference, side-effect profile, comorbid conditions, previous use history, and effect. Some patients may require one or more medications, depending on headache severity.

Analgesics

- Simple analgesics (e.g., acetaminophen, Nonsteroidal Anti-inflammatory Drugs(NSAIDs)) are first line for acute treatment of TTH.
    - NSAID analgesics, including ASA, may be more effective in treating episodic TTHs and are less likely to lead to medication-overuse headaches (MOH) compared to acetaminophen.
    - NSAIDs appear to have similar effectiveness for TTH when compared with each other.
    - Ibuprofen may be the treatment of choice due to favourable adverse effect profile.
- Optimize treatment:
    - TTH treatment may be more effective if taken earlier in the episode.
    - Ensure medications are optimally dosed to be the most effective (see below).
    - Patients must limit the use of analgesics to avoid MOH.
- Individualize the initial dose:
    - Individuals may need the maximum single dose of the selected analgesic and others may not.
        - There is no direction on the effectiveness of either approach, this can be guided by treatment success or failure.
        - If patients select the maximum dose and experience side effects, suggest decreasing the initial dose with the goal to achieve headache eradication and decrease the side effects experienced.
        - If patients select a lower dose and the effect is not optimal, suggest increasing the initial dose.
- Expectations:
    - Modest effectiveness: pain-free rates at two hours range from 16 to 37%.
- Mild TTHs may not require pharmacologic treatment.

Oral Acetaminophen (Tylenol®, generics)

- Indicated for self-care treatment of mild to moderate pain, including headache pain.
- Preferred agent in:
    - Individuals unable to tolerate NSAIDs
    - Individuals who are pregnant
    - Elderly individuals, where other agents may be contraindicated

    - Individuals with impaired kidney function (dosing interval is every 6 hours if CrCl is 10 to 50ml/min and every 8 hours if CrCl is <10 mL/min)
- Acute treatment (adult): 500 to 1000 mg orally every 4 to 6 hours as needed.
    - Typical Dose: 1000 mg (most trials have used acetaminophen 1000 mg)
    - Maximum: 4000 mg/day
- Acute treatment (pediatric > 5 years old): 10 to 15 mg/kg/dose orally every 4 hours as needed.
    - Maximum: 75 mg/kg/day, not to exceed 4000 mg/day
- Absorption from rectal suppositories is irregular, and bioavailability is reduced by 10 to 20%, but this dosage form may be preferred. Refer to monograph of selected product for dosing.
- Caution in patients with hepatic impairment and chronic alcohol users.
- Contraindicated in severe liver dysfunction.
- High risk medication due to risk of liver injury when taken at doses above recommended.

Oral Nonsteroidal Anti-Inflammatories (NSAIDs)

- NSAIDs commonly recommended for acute treatment of TTH in adults: ASA, diclofenac potassium tablets, ibuprofen, naproxen, and naproxen sodium.
- Pediatric Options: ibuprofen and naproxen (only ibuprofen and naproxen are approved for use in children).
    - Children ≤ 5 years old must be referred.
- Mechanism of Action: Inhibit the activity of cyclooxygenase and decrease the production of prostaglandins, which are responsible for mediating pain.
- Efficacy: when compared to each other, NSAIDs appear to be similar in the ability to eradicate TTHs.
- Fast-acting options: ~10-20 minutes quicker onset with naproxen sodium, effervescent ASA, ibuprofen liquid gel, and diclofenac potassium. Avoid enteric-coated or slow-release tablets. Faster onset without food.
- Duration of action: longer duration of action with naproxen vs. ibuprofen, ASA, and diclofenac potassium.
- Counselling: Ensure patients are properly hydrated while on NSAID therapy.

NSAID Precautions

Refer patients who are requesting NSAIDs and have medical conditions that are precautions to NSAID use to an appropriate health care provider.

- Cardiovascular and/or cerebrovascular disease
    - Treatment with NSAIDs must be undertaken with caution in patients with pre-existing cardiovascular disease (CVD) or cerebrovascular disease or presenting with risk factors for CVD. There are many online calculators to assess CVD risk.
    - For these patients, treatment options other than NSAIDs should be considered first.
    - CVD includes:
        - myocardial infarction, angina, heart failure
        - peripheral artery disease (e.g., intermittent claudication)

        - atherosclerosis
        - atrial fibrillation
    - Cerebrovascular disease includes:
        - stroke or transient ischemic attack
    - Risk factors for CVD include:
        - age (males > 55 and females > 65)
        - family history of premature cardiovascular disease
        - uncontrolled hypertension
        - dyslipidemia
        - diabetes
        - poor diet
        - obesity
        - lack of physical activity
        - tobacco use
        - kidney disease
    - There is evidence to suggest some NSAIDs may impart greater cardiovascular risk than others.
    - Short-term use of NSAIDs still carries risk in this population.
- Gastrointestinal disease
    - NSAIDs are contraindicated in patients with active gastric, duodenal, or peptic ulcers and inflammatory bowel disease (i.e., Crohn's disease and ulcerative colitis), and should be used with caution in patients with risk factors.
    - The risk of toxicity increases with both duration and dose.
    - Risk factors for gastrointestinal bleeding and peptic ulcer disease associated with NSAID use include:
        - history of gastrointestinal bleeding
        - history of peptic ulcer
        - older age
        - tobacco or alcohol use
        - H. pylori infection
        - alcoholic liver disease
        - concomitant medications that affect bleeding (e.g., multiple NSAIDs, antithrombotics, corticosteroids, SSRIs)
- Renal impairment
    - NSAIDs are contraindicated if CrCl < 30 mL/min
    - Those with less compromised renal function (CrCl ≥ 30 to < 60mL/min) may use NSAIDs short-term, but caution is still required, especially if using concomitant medications below.
    - Risk factors for renal complications include:
        - dehydration
        - heart failure
        - hypertension
        - pre-existing renal disease
        - concomitant medications (e.g., ACE inhibitors, ARBs, direct renin inhibitors, diuretics)
- Pulmonary conditions with previous reaction to NSAID, including ASA

    - NSAIDs can induce an asthma attack in some patients. Patients with a history of asthma or allergic-type reactions after taking an NSAID should avoid all nonselective NSAIDs including ASA.
    - ASA is the most common cause, and COX-2 inhibitors have NOT been found to precipitate asthma attacks.
    - If a patient has previously tolerated an NSAID, it is safe to take them again.
- Bleeding disorder or taking medication that has antiplatelet/anticoagulant effects
    - NSAIDs have antiplatelet effects, which can increase the risk of bleeding.
    - This is especially of concern for patients on warfarin, other antiplatelets/anticoagulants.
    - NSAIDs increase bleeding risk independently of the INR or other lab tests, so it is not possible to monitor for this interaction.
- Hepatic impairment
    - Liver injury from NSAIDs is rare.
    - Use NSAIDs with caution and discontinue if liver function worsens.
    - NSAIDs are contraindicated in severe impairment or active liver disease.
- Hyperkalemia
    - NSAIDs are contraindicated with known hyperkalemia.

Combination Analgesics

- Combination products containing non-opioid agents (e.g., Combogesic®, Advil® Plus Acetaminophen)
    - May increase efficacy for some individuals.
    - Offer convenience of two agents in one product.
    - Optimal dosing of each ingredient may be not achievable with combination products.
- Combination products containing caffeine are considered second-line.
    - May increase efficacy for some patients.
    - May increase risk for the development of MOH.
- Combination products containing opioids (e.g., codeine) lack evidence for increased effectiveness compared to other agents and are not recommended for routine use.13
    - May be indicated when other treatment options are not effective or are contraindicated.
    - May increase risk for the development of MOH.

Table 1: Common Nonsteroidal Anti-Inflammatories (NSAIDs) For Tension-Type Headache (TTH)

Only NSAIDs commonly prescribed for TTHs are included in the following table.

Note: Consensus on the dose for initial treatment has not been determined in the literature. The dosing is variable within each reference.

Drug (Immediate Release)	Adult Oral Dose (≥ 18 years old)	Pediatric Oral Dose	Clinical Pearls
Acetylsalicylic acid (ASA)	500-1000 mg every 4 to 6 hours Typical Dose: 1000 mg Daily Maximum: 4000 mg	Reminder: ASA should not be used in children or adolescents < 18 years old due to the risk of Reye syndrome, unless otherwise recommended by their primary care practitioner.	
Diclofenac potassium and sodium	50 mg every 6 to 8 hours for 1 to 2 doses Daily Maximum: 100 mg	Safety and efficacy have not been established in the pediatric population (< 16 years of age)	

Ibuprofen	400 to 800 mg every 6 hours for 1 to 2 doses Typical Dose: 400 mg Daily Maximum: 3200 mg	Age > 5 years: 5 to 10 mg/kg/dose, up to four times daily Maximum: 40 mg/kg/day, not to exceed 1200 mg/day	Liquid-containing capsules may have faster onset of action.
Naproxen Base	500 mg every 12 hours or 250 mg every 6 to 8 hours Typical Dose: 500 mg Daily Maximum: 1000 mg	Age > 5 years: 5 to 7 mg/kg/dose every 8 to 12 hours as needed Maximum: 10 mg/kg/day, not to exceed 1000 mg/day	
Naproxen Sodium	Single dose of 220 mg to 550 mg or 550 mg every 12 hours or 275 mg every 6 to 8 hours Typical Dose: 550 mg Daily Maximum: 1100 mg	Safety and efficacy have not been established in the pediatric population (<18 years of age)	Faster onset of action vs. naproxen base.

Special Populations

Pediatrics

All children ≤ 5 years old must be referred.

- Pharmacologic options are limited to acetaminophen, ibuprofen, or naproxen.
- ASA should not be used in children or adolescents < 18 years old due to the risk of Reye syndrome, unless otherwise recommended by their primary care practitioner.

Planning Pregnancy

- NSAIDs are not recommended in patients trying to conceive.

Pregnancy

All pregnant patients with new onset of headache, sudden onset of severe headache, rapidly increasing headache frequency or severity, or neurologic deficits require emergency referral.

Prompt evaluation for preeclampsia is required for pregnant patients ≥ 20 weeks of gestation.

- Nonpharmacologic measures are first choice during pregnancy; medication may not always be necessary.
- Tension headaches do not lessen during pregnancy. If needed, the occasional dose of acetaminophen is recommended as a first-line option.
- NSAIDs should generally be avoided in pregnancy.
    - NSAIDs are not recommended during the first trimester and at 20 weeks or later of pregnancy.
    - First trimester use is associated with birth defects.
    - **Health Canada undertook a review of the safety of NSAID use in patients at 20 weeks and later of pregnancy.
        - This review was completed and an advisory issued June 8, 2021 states NSAID use starting from approximately 20 weeks of pregnancy or later may cause rare but serious kidney problems in an unborn baby, which can lead to low levels of amniotic fluid and possible complications.
        - Health Canada recommends avoiding NSAIDs during weeks 20 and beyond of pregnancy.
            - Another reason to avoid NSAIDs in the later stages of pregnancy is interference with closure of the ductus arteriosus as well as an effect on delaying and prolonging labor by inhibiting uterine contractions may occur.
            - Refer to patient's primary care provider if symptoms not controlled with acetaminophen or NSAID (if deemed an acceptable option).
        - NSAID use before 20 weeks is possibly linked to miscarriage; data inconclusive.
        - If NSAID deemed an acceptable second-line option between 14 and 19 weeks of pregnancy, recommend/prescribe the lowest effective dose for the shortest duration possible. Consider ibuprofen, naproxen, or diclofenac. ASA should be avoided due to its long-lasting antiplatelet effects.

Postpartum

Postpartum patients with new onset of headache, sudden onset of severe headache, rapidly increasing headache frequency or severity, or neurologic deficits require emergency referral.

Postpartum patients with hypertension should be referred due to ongoing risk of preeclampsia (can present a week or more postpartum).

- Postpartum is often considered to be 6 to 8 weeks after birth; however, the American College of Obstetricians and Gynecologists considers postpartum care to extend up to 12 weeks.
- Non-breastfeeding/chestfeeding postpartum patients can be treated for TTH with the same medications as nonpregnant patients.

Breastfeeding/Chestfeeding

Pregnant or postpartum with severe OR new-onset OR atypical headache → Refer to Emergency Department (ED)

- Nonpharmacologic measures are first choice during breastfeeding/chestfeeding.
- If needed, the occasional dose of acetaminophen is recommended and preferred.
- NSAIDs are generally considered compatible.
    - Most NSAIDs are excreted into breast/chest milk; however, in very small amounts that are not expected to have an impact on the infant.
    - Preference should be given to agents with a shorter half-life such as ibuprofen, rather than agents with a longer half-life such as naproxen.
    - Ibuprofen may be a preferred agent, due to its safe use in infants in doses much higher than those found in breast/chest milk.
      Adults > 65 years
    - Increased age is a risk factor for cardiovascular and cerebrovascular diseases and other conditions. See “NSAID Precautions and Contraindications”” section above.

Adults > 65 years

- Increased age is a risk factor for cardiovascular and cerebrovascular diseases and other conditions. See “NSAID Precautions and Contraindications” section above.

General Advice & Monitoring:

Advice

- Some patients may require a combination of products to adequately treat their headaches.

- Patients may need to try a medication several times to assess for effectiveness, as medications to treat an acute headache do not necessarily work on every episode.
- Encourage the patient to actively engage in their headache management by keeping a headache diary to log information such as the number of headaches per month, possible triggers, and effectiveness of treatment.
- Monitor monthly usage of medications for acute treatment of headache to help prevent medication overuse headache:
    1. Triptans, opioids, or ergots, alone or in combination **maximum 9 days per month**
    2. Acetaminophen, ASA, or NSAIDs, alone or in combination **maximum 14 days per month**
    3. Combination of medications from both 1. and 2. **maximum 9 days per month**
- Patients with chronic headache (defined as ≥ 15 headache days per month), frequent migraine headaches (defined as ≥ 4 headache days per month), or significant impact on quality of life may benefit from prophylactic therapy and should be advised to see an appropriate health care provider for further assessment, if desired.

Assess Benefit

- Follow up with the patient within 24 hours, ideally within 2 to 4 hours.
- Use the follow up as an opportunity to determine whether the patient had a satisfactory response to acute treatment.
- If symptoms are **improving and headache is resolving**, note effectiveness of treatment in headache diary and recommend use for future episodes.
- If symptoms are **improving but the headache is not resolving, or has returned,** remind the patient that doses may be repeated at the interval specified in the dosing instructions.
- If symptoms are **not improving but the patient's headache is not significantly worsening**:
    - Ensure the patient is using optimal dosing of the chosen product.
    - Consider whether a dose increase is appropriate.
    - Consider a different product either a different class or a different product in the same class. Some patients may require several medication trials before finding an appropriate and effective option. In some cases, patients may also require more than one medication.
- If symptoms are **not improving and the patient's headache is significantly worsening,** or **they are experiencing additional signs and symptoms** (see the When to Refer section) they should be referred to their primary care practitioner or emergency department, depending on the situation.

Assess Adverse Effects

Acetaminophen

- Adverse effects are not expected.

NSAIDs

- NSAIDs are generally well-tolerated for short-term therapy (< 1 week) in adults **without** comorbidities (e.g., GI disease, CV disease, renal dysfunction). Longer duration of therapy is associated with an increased risk of adverse effects.
- For mild GI upset - suggest small frequent meals, chewing gum or sucking lozenges.
- Discontinue if intolerable side effects such as persistent nausea / vomiting, ringing in ears, shortness of breath, unusual bruising, or bleeding (mouth, urine, stool), skin rash, swelling of limbs, chest pain, or palpitations. **Refer** to appropriate health care provider.

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