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INSTRUCTIONS

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OTC medications for the management of chronic pain

by Kathy Vu, BscPharm, PharmD, ACPR, RPh



Learning objectives

Upon successful completion of this lesson, the pharmacy technician will be able to do the following:

1. Describe the features of chronic pain and differentiate it from acute pain.
2. Describe the OTC treatment options for the management of chronic pain.
3. List the factors for consideration when selecting OTC products for the management of chronic pain.

What is Chronic Pain?

Pain is defined as an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage.¹ This implies that there are two components to pain, the feeling of pain and the emotions caused by pain, that often drive a patient to seek medical attention.

Furthermore, pain may be experienced in both the presence and absence of tissue damage.¹ For example, pain may be experienced as a result of an acute injury such as a sprained ankle or it may be described in patients who have lost a limb in the past.

Pain may be broadly categorized as acute pain and chronic pain. Acute pain is transient

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and lasts for a few weeks at most.²

Examples of acute pain include sprains, strains and tears to muscles and ligaments, headaches or cuts and bruises. Chronic pain, on the other hand, is often defined as any pain lasting more than 12 weeks.² Whereas acute pain is a normal sensation that alerts us to possible injury, chronic pain is very different in that it can persist for months or years.² An important consideration to note is that chronic pain may result from a previous acute injury or an ongoing issue (e.g. illness) but sometimes, there may be no clear cause.² Pain is important for healthcare providers to address because it can worsen other health problems such as fatigue, sleep disturbance, decreased appetite and mood changes.² Pain management is essential to improve quality of life for patients and reduce costs in the healthcare system. Furthermore, pain management is recognized as a fundamental human right.^{3,4} This lesson will focus on the management of chronic pain in adults using over-the-counter (OTC) medications with an emphasis on safe and appropriate product selection.

Treatment Options for the Management of Chronic Pain

One in five adults in Canada suffers from chronic pain.⁵ Causes of chronic pain include arthritic and joint pain, back pain and injuries.⁵ Other causes of chronic pain may include headache, cancer and nerve damage. It is estimated that 20%–40% of children and adolescents around the world experience chronic pain (e.g. headaches, muscle pain and abdominal pain).⁶ Although we need to be mindful of chronic pain in children, this lesson will not focus on this patient population as their pain management needs extend beyond self-management using OTC pain products.

The goal of chronic pain treatment is to reduce pain and improve function and activities of daily living in order to improve overall quality of life. Patients should not be counselled that chronic pain can be cured as this is not usually a realistic goal for chronic pain management. However, pain can be very effectively managed (i.e., reduced) with medications, acupuncture, electric stimulation, nerve blocks or surgery.⁶

Often psychotherapy, relaxation therapies, biofeedback and behaviour modification may also be used.⁶ Complementary and alternative medicine approaches may provide additional relief.² Response varies from one individual to another so multiple approaches are often needed.

Medication options for the management of chronic pain that are available without a prescription (available as OTC products) include three broad categories (see Table 1): nonsteroidal anti-inflammatories (NSAIDs), acetaminophen and muscle relaxants. These agents should be tried first before prescription-strength NSAIDs. Furthermore, all non-opioid therapies (e.g. acetaminophen and NSAIDs) should be optimized before moving on to an opioid alternative (e.g. codeine, oxycodone, etc.) to reduce the risk of side effects and toxicities, including dependence.⁷ Pharmacy technicians have a significant role in optimizing non-opioid therapy by identifying patients who may benefit from further assessment and counselling to minimize unnecessary opioid use.



1. Nonsteroidal anti-inflammatory drugs (NSAIDs) can be very effective for some types of chronic pain syndromes. They are found in approximately 235 OTC and prescription medications either alone or in many combination products used for colds, sinus pressure, pain and fever, and allergies.⁸ These medications act by blocking prostaglandins that are responsible for pain and inflammation. However, inhibiting prostaglandin production in the stomach (a gastric protectant) can lead to gastric irritation, bleeding and ulceration. This risk increases with age, duration of use and use in combination with other medications that can also increase the risk of bleeding (e.g., warfarin or acetylsalicylic acid [ASA]). NSAIDs can also cause kidney failure in patients with pre-existing kidney damage, liver damage or hypertension. NSAIDs can also have cardiovascular effects in patients with risk factors for cardiovascular disease (CVD) or a history of CVD. The risk of heart attack or stroke can begin in the first week of NSAID use and the risks may increase with longer duration of NSAID use.⁶ Patients with current or a history of CVD should be referred to a pharmacist for further assessment on the risks of NSAID use.

2. Acetaminophen is found in more than 355 OTC and prescription medications.⁸ It is commonly found in combination products used for colds, sinus pressure, pain and fever, and allergies. Some opioids (e.g., codeine, oxycodone) are also found in combination with acetaminophen in prescription products, and in combination with codeine and caffeine in products that are available without a prescription (Schedule II) in some provinces. It is important that the maximum daily dose of acetaminophen from all sources does not exceed 4000 mg in patients without a history of liver disease. A lower maximum daily dose (e.g., 3000 mg or even lower [2000 mg]) should be considered for patients who are self-medicating, those with a compromised liver or those who drink alcohol routinely.⁸ An overdose of acetaminophen can result in severe liver failure and death. However, it is also important to note that liver damage may occur at much lower doses than the daily maximum.

3. Muscle relaxants should not be routinely

used to manage chronic pain, but may help to manage muscle spasms that sometimes occur with chronic pain (e.g., fibromyalgia or lower back pain). They are intended for short-term use (e.g. usually 2–3 days) and their dose-limiting side effect, drowsiness, often prevents the use of an appropriate dose for maximum effectiveness. Muscle relaxants are usually found in combination products with acetaminophen or an NSAID (e.g., ASA or ibuprofen).

The role of the pharmacy technician in the selection of OTC Products

A patient approaches you, the pharmacy technician, with the following question, “Could you show me where the Tylenol Extra Strength tablets are?” It would be relatively easy for you to point out the aisle with the pain relief products. However, this is a great opportunity for you to determine whether the patient requires additional counselling by the pharmacist on duty. By gathering a few additional pieces of information, you may help prevent an incident involving liver damage/failure or a GI bleed or kidney problems by referring the patient to the pharmacist appropriately. The following are six examples of additional key pieces of information that should be gathered from any patient asking about OTC products for the management of chronic pain. You may apply these questions to other scenarios involving OTC pain or fever products.

1. Determine if the patient has any allergies to medications, specifically to acetylsalicylic acid (ASA).

Some patients with ASA allergies may have cross-reactions to other NSAIDs such as ibuprofen or naproxen. If your patient has an allergy to ASA or any NSAIDs, they should be referred to a pharmacist for clarification of the nature of the allergy and further assessment to see if they are a candidate for NSAID therapy.

2. Determine if the patient has been assessed by a doctor and is a candidate for self-medication with an OTC product.

It is important to determine if the patient has seen a doctor about their chronic pain before attempting to self-treat this condition. There are “red flags” that must be ruled out when pain is chronic (e.g. cancer, fracture,

hernia, etc.) so that the most appropriate care can be provided. If the patient has not seen a doctor, you need to refer the patient to the pharmacist for additional assessment before assisting with OTC product selection.

3. Determine if the patient is taking any other prescription or OTC medications that might contain the same ingredient.

This information will help you and the pharmacist to understand if other sources of the same medication are being used at the same time, thereby exceeding the daily dosage limit and increasing the risk of toxicity. For example, many patients are not aware that acetaminophen is found in many combination products both as prescription (e.g., acetaminophen with codeine) and OTC (e.g., acetaminophen and pseudoephedrine) medications. Patients with comorbidities (e.g., cancer plus lower back pain) and elderly patients are at higher risk of experiencing toxicity as they may be taking multiple medications concurrently. These patients should be referred to a pharmacist for further assessment and counselling.

4. Determine if the patient is taking any vitamins or herbal products.

This information will help to determine whether there are potential drug interactions that can make the product toxic (e.g., acetaminophen) or ineffective (dose too high or too low). Products such as ginkgo, Echinacea, kava may increase the risk of liver problems when used with acetaminophen while products that can affect platelets (e.g., ginkgo, ginger, ginseng, feverfew, dong quai, etc.) or contain coumarin (e.g. chamomile, red clover, fenugreek) may increase the risk of bleeding with NSAIDs.¹¹ Patients taking vitamins or herbal products, including those purchased over the Internet, should be referred to a pharmacist for further assessment when they request an OTC analgesic.

5. Determine if the patient understands how to take the medication, including the maximum daily dose limit.

Ask the patient to tell you how they will use the product, including the maximum number of tablets in a day. This will help to assess whether the patient is at risk of taking too much or too little of the medication. The

TABLE 1 - OTC Products for the Treatment of Chronic Pain^{9,10}

Category	Drug	Dosing	Maximum Dosage	Notable Side Effects
Nonsteroidal Anti-inflammatory Drugs	Ibuprofen (e.g., Advil, Motrin)	200–400 mg PO Q6–8H	1200 mg with self-medication	Common: GI irritation and upset, nausea/vomiting, heartburn, diarrhea, dizziness/drowsiness.
	Naproxen sodium (e.g., Aleve, Anaprox)	220–440 mg PO Q12–24H	440 mg with self-medication	
	Acetylsalicylic acid (e.g., Aspirin, Excedrin Extra Strength)	325–650 mg PO Q4–6H	3900 mg	Less Common: GI ulcer and bleeding, renal impairment, bleeding (non-GI) and bruising, increased blood pressure, allergic reaction (hives, facial swelling, asthma/wheezing).
Acetaminophen	Acetaminophen (e.g., Tylenol)	325–1000 mg PO Q4–6H ; SR: 650 – 1300 mg Q8H	4000 mg (consider 3000 mg or 2000 mg in liver dysfunction)	Common: well tolerated. Less Common: Increased liver enzymes, liver failure.
Muscle Relaxants	Chlorzoxazone (e.g., Acetazone Forte)	250–750 mg (chlorzoxazone) PO TID–QID	3000 mg based on 750 mg QID	Common: drowsiness, dizziness, sedation, nausea.
	Methocarbamol (e.g., Robaxin, Robax Platinum, Robaxacet, Robaxisal)	400–1500 mg (methocarbamol) PO QID	Usual dose: 4000 mg a day (max 8000 mg for severe conditions)	
	Orphenadrine (e.g., Orfenace)	100 mg PO BID	200 mg	Common: dizziness, sedation, nausea, dry mouth, constipation, urinary retention. Less Common: hallucinations, agitation, blurred vision.

Many other generic and brand name versions are available for the products listed above. Manufacturer's recommended doses may differ from the information contained in Table 1. GI = gastrointestinal; SR = sustained release

directions can be found on the packaging but many patients will not be aware that there is a maximum daily dose. If the patient is unsure of this information, they should be referred to the pharmacist for additional counselling.

6. Determine if the patient has any history of heart disease, liver or kidney problems or GI ulcer or bleeding.

A history of heart disease, kidney problems, GI ulcer or bleeding may result in worsening of these conditions if an NSAID is used. Meanwhile, in patients with a history of liver or severe kidney problems, these problems may worsen with the use of acetaminophen, especially if the patient drinks alcohol on a regular basis. These patients should be

referred to a pharmacist for further assessment and counselling.

Summary

Over-the-counter products such as acetaminophen and NSAIDs are commonly used for the management of chronic pain. Although generally safe to use, these products may result in toxicities when they exceed the daily maximum dose. This can be concerning as acetaminophen and NSAIDs are commonly found in combination products for use in cough and cold, sleeping aid and allergy medications, thereby making it difficult for patients to keep track of their total daily dose. Furthermore, these products are readily accessible to all patients, including those

with risk factors for toxicity or adverse effects. The next time someone asks you about these products, perform a quick check to see if they need additional assessment and counselling by the pharmacist. You may just save a kidney, liver or even a life!

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Kathy Vu recently joined the Leslie Dan Faculty of Pharmacy at the University of Toronto as an Assistant Professor and Director, PharmD for Pharmacists Program. In addition, she is also actively involved with the Continuing Professional Development Program as the Academic Director for the Oncology Program.

QUESTIONS

Please select the best answer for each question and answer online at eCortex.ca for instant results.

1. Choose the most appropriate answer regarding the features of chronic pain.

- a) It is a normal process of healing
- b) Chronic pain usually lasts less than 3 months
- c) Chronic pain rarely affects activities of daily living
- d) Chronic pain can be due to an ongoing injury or a past injury

2. Chronic pain should be managed because it can:

- a) Increase the cost to the healthcare system
- b) Worsen fatigue, depression, sleep and appetite
- c) Worsen quality of life
- d) All of the above

3. Choose the most appropriate answer regarding the prevalence of chronic pain.

- a) It affects 10% of adults
- b) It affects 20% of adults
- c) It affects 20%–40% of adults
- d) None of the above

4. The goal of treatment for chronic pain is best described by the following statement:

- a) Elimination of pain
- b) Reduce pain to improve functioning and performance of activities of daily living
- c) Improve quality of life
- d) Both B and C

5. The treatment of chronic pain may include all of the following EXCEPT:

- a) Relaxation therapy
- b) Radiation therapy
- c) Behavioural therapy
- d) All of the above are not treatment options for chronic pain

6. Choose the most appropriate answer regarding the pharmacologic options for the OTC treatment of chronic pain.

- a) Acetaminophen is associated with many side effects such as bleeding and ulceration
- b) Muscle relaxants are more effective than nonsteroidal anti-inflammatory drugs (NSAIDs) and acetaminophen
- c) NSAIDs and acetaminophen are commonly used for the management of chronic pain
- d) Opioids, acetaminophen and NSAIDs are considered first-line treatment options

7. Choose the most appropriate answer regarding the use of acetaminophen for the treatment of chronic pain

- a) It is effective but only when used in combination with other products such as methocarbamol
- b) The daily maximum dose should not exceed 4 grams for all patients
- c) It is well tolerated but can cause liver problems, especially in patients with a history of liver disease
- d) Both B and C are correct

8. Choose the most appropriate answer regarding the use of NSAIDs for the treatment of chronic pain

- a) They are generally not as effective as acetaminophen or muscle relaxants
- b) They can cause side effects affecting the heart, kidneys and GI tract
- c) Long-term use is safe and patients should be reassured that there are no risks associated with these medications
- d) Both A and B are correct

9. Please choose the most appropriate answer regarding the use of muscle

relaxants in the treatment of chronic pain.

- a) Muscle relaxants are proven to be effective and are routinely used for managing chronic pain
- b) The side effects of these medications can often limit their effectiveness
- c) Side effects of muscle relaxants include dizziness, drowsiness, sedation, dry mouth and urinary retention
- d) Both B and C are correct

10. When determining whether a patient requires additional assessment or counselling by a pharmacist, the following should be considered:

- a) Concurrent prescription and OTC medications
- b) Concurrent use of vitamins and herbal products
- c) Concurrent health problems such as kidney, liver or heart conditions
- d) All of the above

11. Concurrent use of other medications and natural health products may be of concern to patients taking OTC pain medications. Please select the correct statement below.

- a) Some products such as ginseng, ginger and feverfew can increase the risk of bleeding in patients taking NSAIDs
- b) Some products such as ginkgo, kava and Echinacea can increase the risk of liver problems in patients taking acetaminophen
- c) There are no concerns about the concurrent use of other medications or natural health products with OTC pain medications
- d) Both A and B are correct

12. A 22-year-old female patient is looking for ibuprofen to treat her headache. She is under a lot of stress from studying for her exams and needs to resolve the headache soon. She tells you that she was in a car accident last year and continues to get back pain that worsens when she sits for long periods of time to study. What would you need to consider for this patient to determine if she needs additional assessment and advice from a pharmacist?

- a) Determine if she is taking any other medications, including those that may also contain ibuprofen or other NSAIDs
- b) Determine if she has used ibuprofen in the past
- c) Determine if she understands how to use the medication, including the maximum daily dose
- d) All of the above

13. A 67-year-old male is looking for Neocitran™ Extra Strength Total Cold containing acetaminophen, phenylephrine and dextromethorphan. He tells you that

this cold is making it hard for him to go to his aquafit and his knee arthritis is flaring up so he will need more Tylenol Arthritis™ (acetaminophen) as well. How would you answer him?

- a) The Neocitran™ Extra Strength Total Cold and Tylenol Arthritis™ are in aisle 5
- b) You should speak to the pharmacist first because I am concerned that you are taking two products containing acetaminophen
- c) You should speak to the pharmacist first because I am concerned that the Neocitran™ can make you dizzy.
- d) Both B and C are correct

14. A 75-year-old male is picking up his prescription for acetylsalicylic acid (ASA) 325 mg that he has been taking for many years after his heart attack. You notice that he also wants to pay for a box of Robaxisal Extra Strength™ (acetylsalicylic acid 500 mg and methocarbamol 400 mg) which he plans to take for his back pain. What would you do?

- a) Cash him out as he has been on

acetylsalicylic acid in the past and does not need counselling by the pharmacist

- b) Alert the pharmacist as you are concerned that he may be taking too much acetylsalicylic acid
- c) Alert the pharmacist because you are concerned about a 75-year-old patient using methocarbamol that can cause dizziness and drowsiness
- d) Both B and C

15. Please choose the INCORRECT answer below.

- a) Muscle relaxants should be used on a daily basis for at least 14 days for maximum efficacy
- b) The maximum daily dose of ibuprofen from all sources should not exceed 1200 mg without a prescription
- c) The maximum daily dose of acetaminophen from all sources should not exceed 4000 mg in patients without any liver problems
- d) Both A and B are INCORRECT

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