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Understanding pain and factors influencing pain management

by Sarah-Lynn Dunlop, BA, MEd, RPhT

Learning objectives

After completing this lesson, the pharmacy technician participant will be able to:

1. Review factors that contribute to the development and persistence of pain.
2. Recognize patient populations at a higher risk of developing pain, as well as barriers to accessing treatment.
3. Identify pharmacological and non-pharmacological treatments for common types of pain.
4. Understand the role of the pharmacy technician in providing care to patients living with pain.

Introduction

Pain, an unpleasant sensation, or signal in the nervous system, indicates potential or actual injury and is experienced by every person at some point in their lives.[1,2] Whether practising in community, hospital, long-term care, or other settings, pharmacy technicians will find themselves providing care for individuals experiencing pain, thus making it important that they understand the complexities of pain. This includes understanding the language used to describe pain, the pathophysiology, and pharmacological and nonpharmacological treatment options. It is also important for technicians to recognize patient populations that tend to experience a higher prevalence of pain, as well as factors that

TABLE 1 - Factors influencing the experience of pain[3]	
Biological	• Extent of illness or injury • Concurrent illnesses • Physiological stress • Pain tolerance • Pain thresholds
Psychological	• Anxiety • Fear • Guilt • Anger • Depression • Thoughts that pain represents something worse than it does • Feelings of being helpless to manage pain • Past experiences with pain (including past pain management and outcomes)
Social	• Response of significant others to pain (e.g., supportive, critical, enabling) • Demands of work environment • Access to medical care • Culture • Family attitudes & beliefs

may contribute to or exacerbate pain, and potential barriers individuals may face while seeking treatment for their pain.

Pain Overview

Pain is one of the most common symptoms people experience and it is "complicated and multidimensional."[3] Pain has both a sensory component and an emotional component. It is influenced by biological, psychological and social factors. This makes each person's pain experience personal and unique.[3,4] Table 1 provides examples of factors that influence pain.

Pain receptors, or nociceptors, are sensory neurons that initiate the pain response experience by the body and transmit signals to the brain. They are generally stimulated by tissue injury or damage, a lack of oxygen, and tissue distention or distortion. Pain receptors do not adapt to a stimulus, but continually respond to alert us to potential damage or danger. This is a protective function of pain that allows us to avoid the source of pain (e.g., if we burn our hand on a stove, we feel the pain, and move our hand away from it). For some types of pain, it can be difficult for people to describe, pinpoint the precise location, or determine the cause of their pain. Pain can vary from mild to severe in intensity or felt in a small or large area. It can be sharp or dull, intermittent or constant, throbbing or steady.[2] Individuals can also experience a variety of types of pain, including acute, chronic, nociceptive, neuropathic, or referred. Table 2 reviews the classification of different types of pain.

Because pain receptors and their nervous pathways differ, the sensation of pain can differ depending on the location of the pain trigger.[2] For example, the pain receptors in our skin can transmit much more precise information about the type and location of a painful stimulus than the pain receptors in our internal organs, as pain in internal organs may be felt over a larger area and be difficult to locate.[2]

Precise location of pain can also be difficult to identify in individuals who experience referred pain. In referred pain, individuals may experience pain in "an area of their body that does not accurately represent where the problem is because the pain is referred there from another area."[2] This can happen because nerve pathways from the body through the spinal cord to the brain can be shared, enabling pain to be felt in an area where there is no actual stimulus causing pain.[2]

Acute Pain

Acute pain typically comes on suddenly, can be easy to diagnose and treat, and generally goes away after a limited amount of time.[1,5] Acute pain is usually a symptom of tissue damage or injury. While it is generally temporary, it can last anywhere from minutes to days, weeks, or even months depending on the cause, and can sometimes turn into chronic pain.[5,6] Individuals experiencing pain from an unidentified cause, that is not going away in a normal amount of time, is severe or is not responding to treatment should be referred to a physician for assessment.[6] Most individuals experiencing acute pain will find some pain relief with medications while the tissue heals. While both prescription and over-the-counter (OTC) analgesics are available for individuals to treat acute pain, it is important to recognize that analgesics will only relieve the pain. Patients may need additional, non-pharmacological treatments to help heal the damaged or injured tissue (see Non-Pharmacological Treatment Options).

Chronic Pain

Nearly eight million Canadians are living with chronic pain, which is recognized by the World Health Organization as its own disease, rather than a symptom of tissue dam-

TABLE 2 - Types of pain[3-7]	
Acute Pain	Typically nociceptive pain that is temporary and results from a tissue injury, e.g., burn, cut, broken bone, post-operative pain
Nociceptive Pain	Pain that arises from damage to body tissue; typical pain as result of injury, disease or inflammation; usually described as sharp, aching, throbbing, e.g., acute pain, arthritis
Chronic Pain	Pain that lasts for longer than 3 months, is associated with significant emotional distress and/or significant functional disability. This type of pain can happen after the original cause of pain has healed, e.g., chronic pain, arthritis
Neuropathic Pain	Pain that arises from direct damage to the nervous system; may be caused by lesion or disease of somatosensory system. Typically described as burning or shooting pain; skin may be numb, tingling or extremely sensitive to touch, e.g., diabetic peripheral neuropathy, complex regional pain syndrome, post-herpetic neuralgia
Nociplastic Pain	Pain that arises from a change in the way sensory neurons function; sensory neurons become more responsive/sensitive, e.g., fibromyalgia, non-specific low back pain

age or injury, and is one of the most common reasons Canadians seek health care.[3,4] In contrast to acute pain, chronic pain lasts for more than three months, may have no known cause, or may persist after an injury has been treated and healed or may be connected to an underlying disease or health issue.[3,4]

Similarly to acute pain, individuals may seek relief from their chronic pain with the use of analgesics; however, additional drug classes are also frequently used to treat chronic pain.[3,4,7] The feeling of pain can be managed with medications; however, unlike acute pain, which typically resolves after the tissue has healed, chronic pain is difficult to cure.

The Impact of Chronic Pain

Pain affects the individual experiencing the pain, as well as their families, communities, and society. Living with pain can interfere with one's ability to engage in activities of daily living.[3,4] "The magnitude and severity of these impacts are typically higher in populations affected by structural inequities, including those living in poverty, women, Indigenous Peoples, and certain ethnic communities."[3] Box 1 lists some effects of pain on individuals.

In addition to the impact on an individual's physical and emotional health, treating the pain can also cause stress due to the associated costs. Individuals may face significant costs associated with travel to appointments, treatments that are not covered by insurance, and missing work either to attend treatments or due to debilitating pain. Health Canada reports the total direct and indirect cost of chronic pain in 2019 was up to $40.4 billion.[5]

Treating Pain

While there are a variety of both pharmacological and non-pharmacological treatment options available, treatments work best when used together as part of a pain management plan. Pharmacy technicians should be familiar with pharmacological treatment options, as well as non-pharmacological treatment options.

Pharmacological Treatment Options

A wide variety of pharmacological treatment options are available to patients to provide relief from pain, including prescription medications and OTC products. These products have both benefits for pain control and risks of adverse effects. See Table 3 for a summary. A variety of dosage forms are also available for patients, including oral, topical, and transdermal dosage forms. Table 3 reviews benefits and risks associated with some pharmacological treatment options for pain.

BOX 1 - The impact of chronic pain[3,4]

- Decreased social connections and supports
- Feelings of isolation
- Loss of sense of self and spirituality
- Reduced quality of life and general health
- Decreased physical, mental, and emotional health
- Increased worry, stress, anxiety, sadness, depression, anger, frustration
- Increased risk of suicide
- Problems with cognitive function (reduced processing speed, selective attention, memory, executive functioning)
- Increased fatigue, exhaustion, and sleep problems
- School/work absence and reduced productivity
- Increased disability and inactivity
- Increased healthcare utilization

Cannabis

In addition to using prescription and over-the-counter pain relievers, individuals may choose to use cannabis to manage their pain. Individuals can obtain an authorization for medical cannabis from their physician or nurse practitioner and access medical cannabis from a licensed producer. The legalization of cannabis in Canada allows individuals to choose to self-manage their pain with cannabis without consulting a healthcare professional by purchasing cannabis through a licensed retailer.[3] Some research suggests that the use of cannabis can help decrease chronic pain, in particular neuropathic pain, allowing for better pain control and decreased use of health services and prescription medications (in particular, opioids).[3]

Cannabis is available in a variety of dosage forms and individuals may choose to ingest, inhale, or apply their cannabis topically for pain relief. Table 4 reviews cannabis routes of administration.

Non-pharmacological Treatment Options

Many Canadians do not have a primary care physician and the pharmacy team may be the most regular contact they have with a healthcare professional.[3,5] Without a family physician, some individuals may not be able to receive a proper diagnosis for their pain, may not know how to best treat their pain, and may not be aware of nonphar-

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TABLE 4 - Routes of administration for cannabis[25]

Route of Administration	Examples	Notes:
Ingestion	Sublingual oil or sprays	Drops can be placed under tongue or mixed in food or drink; sprays can be sprayed under tongue Edibles can include butter to be used in baking, hard and soft candies, brownies, cookies, etc. Onset of action = 30–90 minutes Duration of action = Up to ~ 8 hours
	Edibles	
Inhalation	Vaporized	Inhalation Onset of action = Seconds to minutes Duration of action = 2–4 hours
	Combustion (smoking)*	
Topical	Topical creams or oils	Applied directly to skin; more local effect

*Note: Smoking cannabis for pain relief is not recommended as the amount of cannabinoids absorbed with smoking is inconsistent and can depend on factors such as depth of inhalation, puff duration, and breathhold. Smoking of cannabis is associated with exposure to more toxic by-products such as carbon dioxide, hydrocarbons, and tar.

TABLE 3 - Summary of pharmacological treatment options for pain[6,8-23]

Drug Class	Examples of Medications	Properties & Mechanisms of Action	Therapeutic Use & Benefits	Adverse Effects & Warnings
Non-opioid Analgesics	acetaminophen	• Analgesic & anti-pyretic (fever lowering) properties • Thought to increase pain threshold by inhibiting COX-1 (cyclooxygenase) & COX-2, inhibiting prostaglandin synthesis	• Generally used for mild to moderate pain • Fewer side effects than NSAIDs (e.g., acetaminophen is gentler on the stomach than NSAIDs) • Fewer drug interactions than NSAIDs • Can be used with NSAIDs or oral opioids for an additive effect • Drug of first choice for several conditions & patient populations (e.g., osteoarthritis, pain & fever in children, women who are pregnant or breastfeeding, patients at risk of GI bleed or on anti-coagulants, patients with renal disease)	• Hepatotoxic (toxic to the liver); should not exceed a total dose of 4 g in a 24-hour period in order to avoid liver damage • High-risk populations should use doses lower than the daily maximum and for shorter periods of time; high-risk populations include those with pre-existing liver disease, alcoholism, malnutrition, chronic users of acetaminophen, pediatric populations • Regular & excessive consumption of alcohol and acetaminophen increases risk of hepatotoxicity • Patients taking tyrosine kinase inhibitors (e.g., dasatinib, imatinib, sunitinib) are at an increased risk of hepatoxicity; maximum recommended dose of acetaminophen of 1300 mg/day when combined with imatinib • Watch for inadvertent administration of excessive doses of acetaminophen through concomitant use of multiple acetaminophen-containing products (e.g., cough and cold remedies, arthritis formulations, products for relief of menstrual symptoms or muscle spasm, antipyretics
Non-Opioid Analgesics - NSAIDs	acetylsalicylic acid (ASA) celecoxib diclofenac ibuprofen indomethacin ketorolac ketoprofen naproxen	• Analgesic, anti-inflammatory, anti-pyretic & anti-thrombotic properties • Inhibit action of cyclooxygenase (COX) enzymes, inhibiting synthesis of prostaglandins	• Generally used for mild to moderate pain • Can be compounded into topical or transdermal dosage forms at compounding pharmacies	• Chronic use associated with stomach side effects (ranging from discomfort to the development of ulcers and bleeding) & kidney failure; taking with food or combining with a stomach protecting medication (e.g., misoprostol or a proton pump inhibitor) can help to protect the stomach • Avoid use of ASA in children less than 18 years of age • Significant drug interactions when taken concomitantly with: corticosteroids (increased risk of GI bleeding); cyclosporine (additive risk of renal failure); medications that increase the risk of bleeding, such as anti-coagulants and anti-platelets (additive risk of bleeding), lithium (increase levels of lithium), higher doses of methotrexate (increased levels and toxicity of methotrexate)
Opioid Analgesics	codeine fentanyl hydromorphone morphine oxycodone tapentadol tramadol	• Analgesic properties • Mimic endogenous opioids (e.g., endorphins), inhibit the release of neurotransmitters and decrease neuronal excitability	• Normally used orally to treat moderate to severe pain • Used parenterally for severe pain due to faster onset of action in hospital or institutional pharmacy;	• High risk of causing harm when not used appropriately • Side effects include constipation, nausea, sedation, euphoria, respiratory depression, tolerance, withdrawal symptoms (e.g., increased heart rate and blood pressure, rapid breathing, dilated pupils, anxiety, restlessness, sweating, vomiting, dizziness, seizures, hallucinations), & opioid-use disorder • Apply Opioid Warning Sticker "Opioids can cause dependence, addiction and overdose."

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Anticonvulsants	carbamazepine gabapentin pregabalin	• Thought to modulate release of excitatory neurotransmitters & nerve impulses involved in the transmission of pain • Dose should be titrated up & tapered down; avoid rapid discontinuation	• Normally used for chronic neuropathic pain & post-herpetic neuralgia; • Can be compounded into alternate dosage forms (transdermal, suppositories) at compounding pharmacies	• Side effects can include CNS & respiratory depression (increased risk if taking opioids concurrently), blurred vision, peripheral edema, and suicide ideation
Tricyclic antidepressants	amitriptyline nortriptyline	• Blocks reuptake of serotonin &/or norepinephrine by the pre-synaptic neuron, increasing the synaptic concentration of these neurotransmitters in the central nervous system	• Often used to treat chronic neuropathic pain; • Can be compounded into transdermal dosage forms at compounding pharmacies	• Side effects include primarily anticholinergic effects (dry mouth, constipation, blurred vision, confusion, cognitive impairment) & orthostatic hypotension • Avoid combining with SNRIs
SNRIs (serotonin-norepinephrine reuptake inhibitors)	duloxetine venlafaxine	• Blocks reuptake of serotonin & norepinephrine by pre-synaptic neuron, increasing the synaptic concentration of these neurotransmitters in the central nervous system • Dose should be titrated up & tapered down; Avoid rapid discontinuation	• Used for chronic neuropathic pain;	• Adverse effects include nausea, dry mouth, headache, dizziness, and a risk of developing serotonin syndrome (confusion, restlessness, dilated pupils, rapid or irregular heart rate, increased blood pressure, muscle rigidity, high fever, seizures, loss of consciousness)
Synthetic cannabinoid	Nabilone	• Affects CB1 receptors in endocannabinoid system, which are primarily found in the central nervous system.	• Used to treat chronic pain	• Adverse effects include drowsiness, dizziness, euphoria, depression, lack of concentration, sleep disorder

ASA–acetylsalicylic acid; CNS–central nervous system; GI–gastrointestinal; NSAIDs–nonsteroidal anti-inflammatory drugs; Ataxia-poor coordination of skeletal muscle, difficulty with fine motor control, difficulty swallowing

macological treatments. As mentioned above, pharmacological treatments primarily help individuals manage the symptom of pain, temporarily providing pain relief and increasing mobility and activity, but pain medications will not cure pain or heal the tissue. Box 2 lists some non-pharmacological options for treating pain and Table 5 identifies some practitioners who can help treat pain through manipulation. Pharmacy technicians should be familiar with some of these treatment options and collaborate with the pharmacist to recommend some of these therapies to patients where appropriate.

BOX 2 - Non-pharmacological options for treating pain[3,4]

- Acupuncture
- Chiropractic treatments
- Massage therapy
- Medication or mindfulness practices
- Physical movement/activity
- Osteopathic treatments
- Physiotherapy
- Tai Chi
- TENS (transcutaneous electrical nerve stimulation)
- Yoga

Role of Pharmacy Technician

In order to provide safe and effective care for patients experiencing pain, pharmacy technicians need to be able to recognize people who tend to experience pain, identify barriers they may face, and understand the role of non-pharmacological and pharmacological pain treatments.

Recognize Patient Populations Who Tend to Experience Increased Prevalence of Pain

Pain is not experienced equally among Canadians.[3-5] Certain populations tend to experience higher prevalence and severity of pain, in particular those facing discrimination and marginalization.[3-5] These same populations also tend to face greater barriers to obtaining appropriate treatment for pain.[5] Box 3 lists populations who tend to experience higher rates of and more severe pain.

Recognize Barriers to Obtaining Treatment for Pain

Seeking and receiving care for pain presents a challenge to many Canadians. Individuals seeking treatment for pain may face significant barriers including stigma, the current opioid crisis and COVID-19 pandemic, a lack of resources, and lack of cultural care.

Stigma

While acute pain is often visible (e.g., redness and inflammation from tissue injury, wounds, or surgical sites), chronic pain is not. Because of the invisibility of chronic pain and the subjective nature of pain, individuals living with chronic pain have not always been taken seriously.[3-5] They may have their pain dismissed, be viewed by family, friends, society, and even healthcare professionals as seeking attention or opioids in order to achieve a euphoric feeling, rather

TABLE 5 - Practitioners who can help treat pain	
Practitioner	Often help treat musculoskeletal pain; however, massage and acupuncture may also help increase relaxation and decrease anxiety, which may help reduce pain
Massage therapist	Manipulate soft tissue; helpful in managing pain and anxiety-associated pain in acute and chronic pain (including low back, neck, shoulder, osteoarthritis, fibromyalgia, cancer pain)
Chiropractors	Manipulate spine and other joints to treat pain including TMJ (temporomandibular joint), low back, neck, and shoulder pain
Acupuncturists	Insert thin needles through the skin to stimulate specific points on the body; often performed by chiropractors and Traditional Chinese Medicine practitioners
Osteopaths	Stretch, massage, and manipulate the body
Physiotherapists & Physical Therapists	Stretch & massage, use ultrasound & TENS, prescribe exercises

than simply seeking relief from pain.[3-5,26] This can lead to individuals delaying access to diagnosis and treatment, and contribute to increased pain.[5]

While it is important that pharmacy technicians remain vigilant in assessing all prescriptions for authenticity and detecting fraudulent prescriptions, it is equally important that pharmacy technicians listen to and respect individuals seeking care. Keep in mind the connection between between pain and emotional and psychological health. Technicians should acknowledge to the patient that they believe their pain is real and interferes with their everyday life. This can help build a trusting relationship between the technician and the patient.

Opioid Crisis

In recent years, Canada has seen an increase in the number of opioid-related overdoses and deaths, including an increase during the COVID-19 pandemic.[3-5,26,27] This "opioid crisis" has created a barrier to accessing prescriptions for opioids among individuals who rely on opioids for pain relief, particularly as medical authorities are encouraging prescribers to gradually decrease patients' opioid doses or cease prescribing opioids.[3-5,26] This can leave some patients in debilitating pain, some with serious withdrawal symptoms, and may cause some to seek illegal sources to manage their pain.[3-5]

Lack of Resources

Across Canada, there is a shortage of physicians, leaving many Canadians without a family physician or primary healthcare provider, leading to some individuals relying on emergency rooms and walk-in clinics to manage pain. This can contribute to the stigma of drug seeking for individuals who rely on opioids for pain management and the challenge for some individuals to receive proper treatment. Those who do have a family physician may not have one who is knowledgeable in treating their pain and while a family physician can make a referral to a specialist, patients report long wait-times to see a specialist, delaying a diagnosis and treatment plan and prolonging pain.[5] Visiting a pain specialist may also require travel for many patients and unaffordable costs associated with travel (transportation, accommodations, and absences from work).

In addition to travel-associated costs, access to many treatments and therapies can be limited due to the cost of the therapy. Low-income individuals and/or those who do not have a good private health insurance plan may be restricted to treatments and therapies with a with a lower cost or those that are covered by their public health plan.[5] This may allow the individual to receive medications to help relieve their pain, but may limit access to therapies to help heal the tissue and the cause of pain.

Pharmacy technicians can research and compile a list of local healthcare providers accepting new patients for the treatment of pain and help connect patients with these providers.

COVID-19

The ongoing COVID-19 pandemic has had a significant impact on Canadians seeking healthcare. The pandemic has disrupted a variety of healthcare services. With reduced access to physicians and allied healthcare professionals who can help patients with pain and to rehabilitation services, and the cancellation of many elective surgeries, many patients are left with increased pain and disability.[5]

The pandemic has also caused significant stressors for many individuals, including loss of income, social isolation, and exacerbation of pre-existing mental health conditions, which can all further contribute to pain.[5]

BOX 3 - Populations experiencing increased rates and severity of pain[3-5]

- Seniors
- Women
- Children & adolescents
- Veterans
- Sexual and gender minorities
- Racialized peoples
- Indigenous Peoples
- People who use drugs
- People with mental illness
- Persons with disabilities
- People who are incarcerated
- People working in the trades

Lack of Cultural Care

There is a long history of Indigenous Peoples experiencing stigma, discrimination, and negative experiences in our healthcare system. Like many individuals, Indigenous Peoples may have to travel long distances in order to receive treatment for pain. When Indigenous Peoples who live in an Indigenous community are removed from their community or family support system, they may face additional challenges or barriers to accessing care due to language barriers and cultural isolation.[5] Many Western treatments do not include traditional Indigenous knowledge, medicines and healing, which, along with family and cultural support, are central to the healing of Indigenous Peoples.[5] In addition to physical pain, Indigenous Peoples may be deeply affected by emotional pain "as the result of racism, colonization, premature death of kin, dispossession, dislocation, and community violence," which requires culturally safe and relevant healing.[5]

Gathering Patient Information

The National Association of Pharmacy Regulatory Authorities (NAPRA) competencies for pharmacy technicians in Canada include developing a professional relation-

ship with patients and gathering information using appropriate interview techniques.[28] Pharmacy technicians in community and hospital pharmacy practice have the opportunity to apply these competencies in providing care for individuals living with pain.

In hospitals, pharmacy technicians conducting best possible medication histories (BPMHs) must ensure they accurately gather information about any pain medications by asking open-ended questions where possible. This should include the name, dose, dosage form and how they are taking their prescriptions/OTCs, and cannabis use. As part of verifying the information gathered through the patient or caregiver interview, pharmacy technicians may choose to follow up with the patient's community pharmacy. Pharmacy technicians can document if the patient has recently had a change in their pain medications or if the patient has a pattern of requesting early refills on pain medications, possibly indicating poor management of pain or potential substance use disorder.

In community pharmacy practice, pharmacy technicians will have the opportunity to gather patient information during a BPMH as part of a medication review, and will also have the opportunity to gather patient information when receiving prescriptions brought in by individuals and when individuals are purchasing OTC products.

It is important to gather all appropriate information to ensure a complete and up-to-date profile for both new and established patients when receiving a new prescription. When assessing new prescriptions for completeness and authenticity, pharmacy technicians can also perform a quick review of the patient's profile, if they have one, and determine if the new prescription is a change or if there are any immediate alerts that require pharmacist intervention. If creating a profile for a new patient, pharmacy technicians should gather information regarding other prescription and OTC items the patient is currently taking and document these for the pharmacist to review.

Pharmacy technicians who notice individuals self-selecting OTC products for pain should determine if the individual needs assistance or pharmacist intervention by gathering information for the pharmacist. This includes monitoring purchases of acetaminophen. Patients may be taking acetaminophen for pain and inadvertently select other OTC items containing acetaminophen (e.g., cough and cold products). It is important that individuals not exceed a dose of 4 g of acetaminophen in a 24-hour period to help avoid liver damage.

All patients receiving an opioid should also receive a take-home naloxone kit.[29] Pharmacy technicians can also help ensure that patients (or caregivers of patients) receiving prescriptions for opioids receive a naloxone kit, can demonstrate proper use of the injection and the nasal spray, and ensure they are counselled by a pharmacist.[29]

TABLE 6 - List of drug names that can be confused[31]

Drug Name	Confused with:
acetaminophen	Acetazolamide
codeine phosphate	codeine contin
duloxetine	fluoxetine, paroxetine
Gabapentin	Gemfibrozil
Hydrocodone	hydromorphone
Hydromorphone	Morphine
Oxycodone	hydrocodone, oxybutynin
Tramadol	trazodone

TABLE 7 - Example of a medication with different dosage forms that can be confused

Medication	How commonly prescribed	Dosage form & strengths available
hydromorphone IR	Typically prescribed for PRN use, for multiple doses throughout the day, and for breakthrough pain	Oral tablets: 1 mg, 2 mg, 4 mg, 8 mg
hydromorphone CR	Typically prescribed for scheduled/routine use, twice per day	Oral capsules: 3 mg, 4.5 mg, 6 mg, 9 mg, 12 mg, 18 mg, 24 mg, 30 mg

Maintain Patient Safety

Pharmacy technicians in community, hospital, and long-term care pharmacy practice need to pay close attention to detail when filling all prescriptions, especially during high-risk dispensing tasks, such as preparing compliance packages, compounding, preparing unit-dose packages, and loading automated dispensing units.

Many medications used to treat pain, in particular opioids, are available in varying strengths or concentrations, dosage forms, and release mechanisms (immediate-release [IR] vs sustained-release [SR]), leading to many possibilities for confusing medications. Opioids are also classed as high-alert drugs by the Institute of Safe Medication Practices (ISMP) due their increased risk of causing significant patient harm if used inappropriately.[30] Pharmacy technicians should be familiar with these various factors in order to help maintain patient safety and use tall man letters to help avoid selection errors. Table 6 lists medications used to treat pain that could be confused with other medications. Table 7 provides an example of a medication available in different dosage forms that can be confused.

Conclusion

Pain is a subjective, and at times invisible, condition that has significant negative impacts on individuals. Many complex factors contribute to the development, exacerbation, and persistence of pain. It is important for pharmacy technicians to recognize these factors and work to provide care to patients that is free of discrimination, is culturally safe, and ensures patient safety. Pharmacy technicians should continue to engage in continuing professional development on this complex topic to continue to provide the best care possible for their patients.

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QUESTIONS

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

1. HW, an 87-year-old patient, reports taking acetaminophen 650 mg tablets, 2 tablets by mouth 4 times daily for back pain. Which of the following should the pharmacy technician do?

a) Alert the pharmacist that HW is taking a larger than recommended dose on a regular basis.
b) Ask HW to give more information about the pain he is experiencing and advise him that he should request a stronger pain reliever from his physician.
c) Notify HW that the amount of acetaminophen he is taking can be harmful to his renal system.
d) A & B
e) B & C

2. A patient in a community pharmacy is purchasing naproxen sodium 220 mg OTC for themselves to help with pain relief. Table 1 is the patient's current medication list. Use of naproxen with which of the patient's current medications is of concern and requires pharmacist intervention?

a) Naproxen and acetylsalicylic acid
b) Naproxen and duloxetine
c) Naproxen and folic acid
d) Naproxen and methotrexate
e) A & D only
f) A, B & D only

TABLE 1 for Question 2

Medication	Dose	Route	Frequency
acetylsalicylic acid	81 mg	PO	daily
duloxetine	30 mg	PO	daily
folic acid	5 mg	PO	6 days per week
methotrexate	20 mg	PO	QMonday

3. Which of the following medications used to treat chronic pain can cause the following adverse effects: blurred vision, cognitive impairment, confusion, constipation, dry mouth, and orthostatic hypotension?
a) acetaminophen
b) amitriptyline
c) baclofen
d) diclofenac

4. DK, a 17-year-old female, comes into the community pharmacy to receive an injection from the pharmacy technician. DK is visibly nervous and keeps asking if the injection is going to hurt. Which of the following can influence an individual's experience of pain?
a) Attitudes and beliefs of support system
b) Fear of pain
c) Thinking the pain represents something worse than it is
d) B & C
e) A, B, & C

5. JC, a 31-year old pregnant patient who is a regular patient at the community pharmacy, approaches the pharmacy counter asking if the pharmacy technician can show her to the aisle for pain relief as she has been experiencing low back pain. Which of the following should the pharmacy technician do?
a) Knowing that JC has a good private insurance plan, suggest JC see her doctor for a prescription pain reliever in order to experience increased pain relief.
b) Show JC to the pain relief aisle and explain the different properties of acetaminophen and NSAIDs.
c) Tell JC that there are no safe pain relief medications to take during pregnancy and advise her to seek non-pharmacological pain relief methods, making use of her extended health benefits.
d) All of the above are actions the pharmacy technician should take.
e) The pharmacy technician should not take any of the above actions.

6. KB, a pharmacy technician in a community pharmacy, gathers the information in table 2 while conducting a best possible medication history as part of a medication review. Which of the following should concern KB?
a) Concurrent use of naproxen and acetaminophen
b) Lack of sufficient pain relief
c) Too high dose of acetaminophen
d) A & B
e) B & C

7. A 46-year-old white male is admitted to hospital with opioid withdrawal. The patient notifies staff that they do not have a family doctor and had a prescription from an emergency department for morphine for pain, which his private insurance through his employer covers. He ran out of tablets and was refused a renewal at the walk-in clinic. Which of the following may have contributed to the patient not getting a renewal on their prescription?
a) Patient demographics
b) Patient fear of stigma and being labelled a drug seeker
c) Physicians prescribing fewer opioids in midst of the opioid crisis
d) B & C only
e) A, B, & C

8. Pharmacy technician EM is reviewing a patient's medication history. For which of the following concurrent treatments for pain should EM alert the pharmacist?
a) acetaminophen + ibuprofen
b) amitriptyline + morphine + venlafaxine
c) diclofenac + gabapentin
d) gabapentin + baclofen

9. CA is a pharmacy technician working in a community pharmacy. Mr. D, a regular patient, asks CA to show him the extra-strength acetaminophen. While directing Mr. D to the aisle with analgesics, CA asks Mr. D to describe his pain. He tells CA that he thinks he pulled his calf muscle two days ago while running with his dog and he has been experiencing a constant throbbing and shooting pain. CA notices that his right calf is significantly larger than his left calf and looks red. What should the pharmacy technician do?
a) Advise Mr. D to try extra-strength ibuprofen instead as it helps with inflammation.
b) Gather additional information and alert the pharmacist.
c) Show Mr. D the extra-strength acetaminophen, pointing out brand name and generic options.
d) Recognize that Mr. D should see a physician for further assessment.
e) B & D

10. Mrs. G, an elderly female, had minor surgery five months ago. Her incision site healed nicely; however, she is complaining of a numbness and burning sensation at the site of the incision since it healed. Which of the following is TRUE?
a) Mrs. G may have hit the incision site and is suffering from acute pain.
b) Mrs. G should be assessed by a physician as the incision site is likely infected.
c) Mrs. G may be suffering from chronic neuropathic pain at the incision site.
d) Mrs. G should try ibuprofen over-the-counter first for this pain as it is not severe and there are fewer side effects associated with OTC ibuprofen than other OTC products (e.g., acetaminophen).

11. SF, a pharmacy technician working in a hospital pharmacy, is conducting a BPMH on a 71-year-old female Indigenous patient, MW, who has been transported to the hospital from her remote community for treatment of pain. Which of the following should the pharmacy technician recognize while providing care for MW?
a) Language barriers may exist

TABLE 2 for Question 6

Prescription Medications			
Medication	**Dose**	**Route**	**Frequency**
acetaminophen	500 mg	PO	Q4-6H PRN
atorvastatin	10 mg	PO	QPM
imatinib	400 mg	PO	Daily
levothyroxine	50 mcg	PO	QAM
naproxen	250 mg	PO	BID
ramipril	5 mg	PO	Daily
OTC's & Natural Health Products			
Medication	**Dose**	**Route**	**Frequency**
acetaminophen	500 mg	PO	Q4-6H PRN
Vitamin D	1000 units	PO	Daily
Calcium carbonate	1000 mg	PO	Daily

b) MW is likely looking for a prescription for opioids as it may be difficult to receive opioids in a remote community
c) MW may be reluctant to disclose information due to past negative experiences in healthcare settings.
d) A & C
e) A, B, & C

12. EW is a 54-year-old male purchasing over-the-counter famotidine because he has been having stomach pains for the last few weeks and a friend recommended that he try it. Upon looking at EW's profile, pharmacy technician TH notices that EW has been taking diclofenac 75 mg po bid for the past six weeks. Which of the following should the pharmacy technician do?
a) Alert the pharmacist of the stomach pain with the diclofenac.
b) Ask EW how he has been taking his diclofenac and if there have been any changes in his health recently (new medications, dietary changes, stress, etc.).
c) Confirm with the patient that famotidine will help his stomach pain and advise him to also take his diclofenac with food.
d) A & B

13. While conducting a BPMH, the pharmacy tech documents documents that patient MM has been using cannabis for pain relief. Which of the following is true?
a) Cannabis is only beneficial for treating acute pain.
b) Ingesting cannabis through edibles has the fastest onset of action compared to other cannabis routes of administration.
c) Smoking cannabis is not recommended for pain relief.
d) Use of cannabis for pain relief is associated with an increased use of health services.

14. ZD, a 57-year-old female, is admitted to hospital with pain. Upon completing a BPMH the pharmacy technician notices that ZD seems to be very quiet, withdrawn and depressed. The pharmacy technician recognizes that pain can have several effects on an individual. Which of the following is NOT an effect of chronic pain on an individual?
a) Increased fatigue and exhaustion
b) Increased risk of suicide
c) Increased social supports
d) Increased stress and anxiety

15. A patient complaining of neck pain for the past few months requests an OTC recommendation to help ease pain. The patient tells the pharmacy technician that they have not had their pain assessed or diagnosed by a healthcare professional. Which of the following may be reasons why the patient has not had their pain assessed or diagnosed?
a) Lack of access to healthcare services during the COVID-19 pandemic
b) Lack of family physician
c) Lack of knowledge of alternate healthcare professionals who can assess and treat musculoskeletal pain
d) Lack of private health insurance
e) A & C only
f) A, B, C, D

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3. a b c d	**6.** a b c d e	**9.** a b c d e	**12.** a b c d	**15.** a b c d e f

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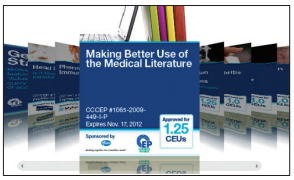

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