

COPT Worksheet – Domain IV

Oral Oncolytics (30% of Exam)

This section will test your in-depth knowledge of oral oncolytic medications, focusing on indication, dosing, administration, and strengths. You will need to appropriately identify supportive medications that correspond with oral oncolytic and prophylactic OTC medications. You will also need to be able to identify oral oncolytics by their brand and generic names.

Instructions: This guide contains a description, concepts to know, and practice problems for each section of the exam content outline. Use the corresponding hyperlinks in each section of the guide to learn more information and/or examples.

Important Note: This guide was developed to help you prepare for the COPT examination. Moreover, it should be utilized in addition to your own notes, as it is not an all-inclusive review of exam topics. All links provided are hyperlinked to reinforce your learning.

Common Oncolytics Learning Guide: Use the Common Oncolytics Learning Guide downloaded in Domain 2. This guide contains 60 of the most common oncolytic medications, and you will be responsible for filling in and knowing the information.

Objective 4.1: Match appropriate over-the-counter (OTC) therapies to adverse reactions associated with oral oncolytic medications.

Description	While oral oncolytic medications offer significant therapeutic benefits, they can also cause a wide range of adverse reactions. Adverse drug reactions (or adverse events) are any unwanted effects of a drug or medication. Fortunately, some of these side effects are manageable with readily available over-the-counter (OTC) medications. Pharmacy technicians who are familiar with the most common adverse reactions associated with these medications can provide patients with appropriate information on OTC options to manage their symptoms and improve their quality of life during treatment.
Over-the-Counter Therapies	<p>Review this list of common over-the-counter therapies that can be provided to patients to help manage their adverse reactions. Use this list to help complete the Common Adverse Reactions section below.</p> <ul style="list-style-type: none"> Acetaminophen Baking soda (baking soda mouth rinse) Benzoyl Peroxide cream Bisacodyl Bismuth subsalicylate (Pepto-Bismol) Calamine lotion Claritin Clotrimazole cream Dextromethorphan Dimenhydrinate (Dramamine) Electrolyte drinks (Pedialyte) Expectorant Ginger Glucose tablets or glucose gel Guaifenesin Herbal supplements Hydrocortisone Hydrogen peroxide Ibuprofen Loperamide (Imodium) Melatonin Mouthwash Naproxen

	Naproxen Omega-3 fatty acids/fish oil Protein shake (ensure) Saliva substitutes (xylitol) Saltwater rinse Senna Simethicone Topical pain relievers Triple antibiotic ointment Urea cream
Common Adverse Reactions	<p>Below is a list of common adverse reactions patients can experience when taking oral oncolytic medications. Use a search engine to define the adverse reaction and determine which over-the-counter therapy could help provide relief from the adverse event.</p> <p>Note:</p> <ul style="list-style-type: none"> • Some adverse events may have more than one effective OTC therapy • Some adverse events may have no effective OTC therapy • More serious adverse events may require the pharmacy technician to reach out to the pharmacist or advise the patient to contact their doctor (if so, make that recommendation next to the adverse event) <p>Constipation: Cough: Dehydration (not getting enough water the body needs to be healthy caused by being unable to drink): Diarrhea: Dizziness: Dyspnea: Dry Mouth: Edema: Fatigue: Fever: Flatulence: Hand-foot Syndrome (also called palmar-plantar erythrodysesthesia): Localized Pain (such as back pain): Mouth Sores: Nausea: Headache: Hot Flashes: Hypercholesterolemia: Glucose Serum (Decreased): Insomnia: Muscle Spasms: Neutropenia: Rash: Weight Loss: Vomiting:</p>

Objective 4.2: Identify appropriate dosage and administration requirements for oral oncolytics including necessary supportive medications.

Description	The Dosage and Administration section of prescribing information is a critical resource for oncology pharmacy technicians, providing a comprehensive guide on how to use a medication safely and effectively.
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	<ul style="list-style-type: none"> • Recommended Dosage: This includes the typical dosage range for the medication, considering factors like the patient's age, weight, and condition being treated. • Dosing Interval: This specifies how often the medication should be taken, whether it's daily, twice a day, or following a specific schedule. • Duration of Treatment: This section provides guidance on the typical length of treatment for the intended use of the medication. • Dosage Adjustments: This addresses how the dosage might need to be modified for specific patient populations. For example, adjustments might be necessary for patients with impaired kidney or liver function, or for pregnant or breastfeeding women. • Drug Interactions: This section highlights potential interactions with other medications the patient might be taking. These interactions can affect how the body absorbs or metabolizes the medication, potentially reducing its effectiveness or increasing the risk of side effects. • Administration Instructions: This provides detailed information on how to take the medication. It might specify whether it should be taken with or without food if it needs to be crushed or dissolved, and proper injection techniques if applicable. • Required Premedication/Supportive Medication: These medications are two separate categories of drugs used to optimize a patient's experience with a main oral oncolytic medication. Required pre-medications are administered before giving the main medication to help reduce the risk of adverse reactions or enhance the effectiveness of the main medication. Supportive medications are used alongside the main medication to help manage adverse reactions or improve the patient's tolerance. <p>By understanding this information, pharmacy technicians can ensure accurate dispensing, answer patient questions effectively, and contribute to the safe and appropriate use of medications.</p>
Common Oncolytics Learning Guide: Dosage and Administration	<p>For this section, you will fill out the Dosage and Administration section of your Common Oncolytics Learning Guide.</p> <ol style="list-style-type: none"> 1. Use the list of the most used Common Oncolytics Learning Guide downloaded in Domain 2. 2. Fill out <i>Column 3: Dosage and Administration</i> for all tables. <ul style="list-style-type: none"> ○ Use each medication's attached Prescribing Information insert and place the Dosage and Administration information in all tables. <ul style="list-style-type: none"> ▪ Most information can usually be found on pages 1 and 2 of the inserts. ○ Be sure to include the following information about Adverse Reactions: <ul style="list-style-type: none"> ▪ Recommended dosage <ul style="list-style-type: none"> • Billing Cycle • Quantity • Days Supply ▪ Administration instructions (example: with or without food) ▪ Premedication/Supportive medication required (not all oral oncolytics will provide a list of supportive medications)
Practice Problems	<ol style="list-style-type: none"> 1. What is the recommended starting dose for a newly diagnosed Philadelphia chromosome positive CML patient starting nilotinib? <ol style="list-style-type: none"> a. 300mg orally twice daily b. 50mg orally once daily c. 200mg orally twice daily

	<p>d. 150mg orally once daily</p> <p>2. Which of the following instructions should be followed to ensure proper absorption of the medication eltrombopag?</p> <ol style="list-style-type: none"> Take eltrombopag with a high-calcium meal to enhance its effectiveness. Take eltrombopag with any other medications you are prescribed to avoid missed doses. Take eltrombopag without a meal or with a meal low in calcium (≤ 50 mg), and at least 2 hours before or 4 hours after any medications or products containing polyvalent cations, such as antacids, calcium-rich foods, and mineral supplements. Take eltrombopag with mineral supplements to increase absorption. <p>3. Which of the following statements accurately describes the use of supportive medication for patients taking oral oncolytics?</p> <ol style="list-style-type: none"> Supportive medication is generally unnecessary for oral oncolytics as they have minimal side effects. Patients taking oral oncolytics may require supportive medication to manage side effects such as nausea, vomiting, and diarrhea. Supportive medication for oral oncolytics is only needed for patients with pre-existing conditions. Supportive medications for oral oncolytics is primarily used to enhance the absorption of the oncolytic medication.
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Objective 4.3: Identify approved indications and uses for oral oncolytic medications.

Description	<p>The Indications and Usages section of prescribing information focuses on the conditions or diseases a specific medication is approved by the Food and Drug Administration (FDA) to treat. This section provides crucial details about the medication's intended uses.</p> <ul style="list-style-type: none"> Approved Uses: This section clearly lists the specific medical conditions for which the medication has been shown to be safe and effective through rigorous clinical trials. Patient Populations: It may specify whether the medication is approved for use in adults, children, or specific age groups. Disease States: The wording might describe the condition the medication directly treats (e.g., "indicated for the treatment of hypertension") or the symptoms it alleviates (e.g., "indicated for the relief of pain"). Limitations of Use: In some cases, the FDA may approve a medication for a specific use with limitations. For example, the section might specify that the medication is only effective for a particular stage of a disease or in combination with other therapies. <p>The Indications and Usages section serves as a roadmap for appropriate medication use, and knowledge of this will ensure pharmacy technicians contribute to safe and effective medication use.</p>
Common Oncolytics Learning Guide: Indication and Usage	<p>For this section, you will fill out the Indication and Usage section of your Common Oncolytics Learning Guide.</p> <ol style="list-style-type: none"> Use the list of the most used Common Oncolytics Learning Guide downloaded in Domain 2. Fill out <i>Column 4: Indication and Usage</i> for all tables.

	<ul style="list-style-type: none"> ○ Use each medication's attached Prescribing Information insert and place the Indication and Usage information in all tables. <ul style="list-style-type: none"> ▪ Most information can usually be found on pages 1 and 2 of the inserts. ○ Be sure to include the following information Indication and usage: <ul style="list-style-type: none"> ▪ FDA-approved indications for medication <p>Note: If the information in the above list is not listed in the attached Prescribing Information insert, you do not need to look up the information elsewhere.</p>
Practice Problems	<ol style="list-style-type: none"> 1. Acalabrutinib is approved for which indication? <ol style="list-style-type: none"> a. Small lymphocytic lymphoma (SLL) b. Acute myeloid leukemia (AML) c. Non-Hodgkin's lymphoma (NHL) d. Chronic lymphocytic leukemia (CLL) 2. Which indication is an approved for the medication tivozanib? <ol style="list-style-type: none"> a. Mantle cell lymphoma (MCL) b. Refractory advanced renal cell carcinoma (RCC) c. Adult patients with Adult patients with Waldenström macroglobulinemia (WM) d. Non-small cell lung cancer (NSLC)

Objective 4.4: Identify the characteristics of different oral oncolytic medications, including their brand and generic names, dosage forms, package sizing, and storage requirements.

Description	Pharmacy technicians play a huge role in safely dispensing oral oncolytic medications. Knowing the specifics of these medications, including the brand name and generic counterpart, dosage forms, and storage requirements is crucial for accurate dispensing, effective communication with patients, and ultimately, optimal patient care.
Medication (Brand and Generic)	Knowing both names allows pharmacy technicians to verify if the dispensed medication matches the doctor's order, reducing the risk of errors if a brand name is prescribed but a generic is dispensed. Additionally, generics offer the same active ingredients as brand names but at a significantly lower cost. Understanding generics empowers oral oncology technicians to discuss cost-saving options with patients when appropriate, promoting medication adherence and affordability.
Common Oncolytics Learning Guide: Medication (Brand and Generic)	<p>For this section, you will review the Medication (Brand and Generic) section of your Common Oncolytics Learning Guide</p> <ol style="list-style-type: none"> 1. Use the list of the most used Common Oncolytics Learning Guide downloaded in Domain 2. 2. Review <i>Column 1: Medication (Brand and Generic)</i> in all tables. <ul style="list-style-type: none"> ○ While this information is already filled out on the table, you are responsible for knowing the brand name and its generic counterpart for all medications. ○ Use these Quizlet Flashcards to help you study.
Dosage Forms and Strength	The Dosage Forms and Strengths section of prescribing information is all about understanding the different variations in which a medication is available and how potent each variation is.

	<ul style="list-style-type: none"> • Dosage Forms: This describes the various physical forms the medication comes in, such as tablets, capsules, liquids, syrups, creams, or ointments. • Strengths: This specifies the amount of medication present in each unit of the dosage form. For example, a tablet might be available in strengths of 10 milligrams (mg), 20 mg, or 50 mg. • Identifying Features: The section might describe any unique characteristics that help differentiate strengths or dosage forms. For instance, tablets of different strengths might have distinct colors, shapes, or markings. <p>Understanding this information about oral oncolytic medications allows pharmacy technicians to identify medications and potential medication errors, reduce dispensing errors, and provide accurate patient education.</p>
Common Oncolytics Learning Guide: Dosage Forms and Strength	<p>For this section, you will fill out the Dosage Forms and Strength section of your Common Oncolytics Learning Guide.</p> <ol style="list-style-type: none"> 1. Use the list of the most used Common Oncolytics Learning Guide downloaded in Domain 2. 2. Fill out <i>Column 5: Dosage Forms and Strength</i> for all tables. <ul style="list-style-type: none"> ○ Use each medication's attached Prescribing Information insert and place the Dosage Forms and Strength information in all tables. <ul style="list-style-type: none"> ▪ Most information can usually be found on pages 1 and 2 of the inserts. ○ Be sure to include the following information Indication and usage: <ul style="list-style-type: none"> ▪ Available Dosage Forms ▪ Available Strengths <p>Note: If the information in the above list is not listed in the attached Prescribing Information insert, you do not need to look up the information elsewhere.</p>
How Supplied / Storage and Handling	<p>The "How Supplied / Storage and Handling" section of prescribing information is a two-part resource that provides key details on how a medication is packaged and how it should be stored and handled to maintain its potency and safety.</p> <p>How Supplied: Describes the various ways a medication is commercially available.</p> <ul style="list-style-type: none"> • Package Sizes: This specifies the quantities in which the medication is dispensed. For example, tablets might be available in bottles of 30, 60, or 90. <p>Storage: Provides crucial information on how to store and handle the medication to ensure it remains safe and effective throughout its shelf life. Without proper storage, the medication may become less effective.</p> <ul style="list-style-type: none"> • Temperature Requirements: This specifies the ideal temperature range for storing the medication. Some medications require refrigeration (cold storage), while others might need protection from heat and humidity. • Light Sensitivity: Certain medications are sensitive to light and should be stored in a dark container or protected from direct sunlight. <p>Handling: Provides information on how to safely mix, handle, and dispose of the medication.</p>

	<ul style="list-style-type: none"> • Mixing or Reconstitution Instructions: For some medications, particularly liquids or powders, this section may provide instructions on how to properly mix or reconstitute the medication before use. • Disposal Instructions: This section provides guidance on how to safely dispose of expired or unused medication. <p>Understanding the How Supplied / Storage and Handling section helps pharmacy technicians verify that the dispensed medication matches the prescribed quantity and dosage form, store medications under appropriate conditions in the pharmacy, avoid waste, and counsel patients on how to safely discard expired or unused medications, minimizing the risk of accidental ingestion or environmental contamination.</p>
Common Oncolytics Learning Guide: How Supplied / Storage and Handling	<p>For this section, you will fill out the How Supplied / Storage and Handling section of your Common Oncolytics Learning Guide.</p> <ol style="list-style-type: none"> 1. Use the list of the most used Common Oncolytics Learning Guide downloaded in Domain 2. 2. Fill out <i>Column 6: How Supplied / Storage and Handling</i> for all tables. <ul style="list-style-type: none"> ○ Use each medication's attached Prescribing Information insert and place the Dosage Forms and Strength information in all tables. <ul style="list-style-type: none"> ▪ Most information can usually be found on pages 1 and 2 of the inserts. ○ Be sure to include the following information Indication and usage: <ul style="list-style-type: none"> ▪ Package Sizing ▪ Storage and Handling Requirements ▪ Package Quantity <p>Note: If the information in the above list is not listed in the attached Prescribing Information insert, you do not need to look up the information elsewhere.</p>
Practice Problems	<ol style="list-style-type: none"> 1. Which of the following statements best describes the package sizing for palbociclib capsules? <ol style="list-style-type: none"> a. Palbociclib is available only in bottles containing 30 capsules, regardless of the dosage strength. b. Palbociclib comes in a bottle containing 21 capsules, typically used for a 21-day cycle followed by a 7-day rest period. c. Palbociclib is available in single-dose packets containing 10 capsules, which can be combined to achieve the prescribed dose. d. Palbociclib is dispensed in multi-dose bottles containing 30 tablets, meant to be taken once daily without interruption. 2. Which of the following statements accurately describes the storage requirements for oral etoposide? <ol style="list-style-type: none"> a. Etoposide should be stored at room temperature, between 20°C to 25°C (68°F to 77°F) and protected from light. b. Etoposide should be frozen at -20°C (-4°F) and thawed before use. c. Etoposide must be refrigerated at a temperature between 2°C to 8°C (36°F to 46°F) and kept away from moisture. d. Etoposide can be stored at any temperature, as it is stable under all conditions. 3. Why must oncology pharmacy technicians carefully follow the storage and handling instructions provided in the prescribing information? <ol style="list-style-type: none"> a. To ensure that medications are aesthetically pleasing and look professional on the pharmacy shelves.

	<ul style="list-style-type: none">b. To guarantee the safety and efficacy of medications by preventing degradation or contamination.c. To reduce the cost of medications by extending their shelf life indefinitely.d. To comply with local health department regulations, which are not typically concerned with the efficacy of the medications.
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Practice Problem Answers

Objective 4.2

1. a. 300mg orally twice daily
2. c. Take eltrombopag without a meal or with a meal low in calcium (≤ 50 mg), and at least 2 hours before or 4 hours after any medications or products containing polyvalent cations, such as antacids, calcium-rich foods, and mineral supplements.
3. b. Patients taking oral oncolytics may require supportive medication to manage side effects such as nausea, vomiting, and diarrhea.

Objective 4.3

1. d. Chronic lymphocytic leukemia (CLL)
2. b. Refractory advanced renal cell carcinoma (RCC)

Objective 4.4

1. b. Palbociclib comes in a bottle containing 21 capsules, typically used for a 21-day cycle followed by a 7-day rest period
2. c. Etoposide must be refrigerated at a temperature between 2°C to 8°C (36°F to 46°F) and kept away from moisture.
3. b. To guarantee the safety and efficacy of medications by preventing degradation or contamination.