 

**How to use the guide:**

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

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| **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.  |

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| **Domain I – Core Oncology Pharmacy Training (20%)**  |
| **Description** | Domain I will test your skills in fundamental oncology pharmacy technician knowledge. Within the scope of a pharmacy technician, you will need to know oncology pharmaceutical calculations. Also, you will need to be familiar with pharmacy safety and accreditation regulations. Common oncology terminology will also be included in this section as well. |
| **Concepts to know** | 1. Complete calculation relevant to oncology
* $BSA \left(m^{2}\right)= \sqrt{\frac{height \left(cm\right) • weight(kg)}{3600}}$
* $CrCl \left(\frac{ml}{min}\right)= \frac{\left[140-age \right]•\left[body weight \left(kg\right)\right]}{Serum creatinine \left(\frac{mg}{dl}\right) • 72 }\rightarrow Multiply answer by 0.85 if Female$
* $\frac{mg}{kg}=\frac{dose of medication(mg)}{weight (kg)}$
	+ 1 kg ≈ 2.2 lbs
	+ 1 g = 1000 mg
 |
| 1. Define common medical terminology and oncology disease state basic principals.
* [National Cancer Institute Dictionary of Cancer Terms](https://www.cancer.gov/publications/dictionaries/cancer-terms)
* [National Cancer Institute Dictionary of Genetics terms](https://www.cancer.gov/publications/dictionaries/genetics-dictionary)
* [National Cancer Institute Drug Dictionary](https://www.cancer.gov/publications/dictionaries/cancer-drug)
* [JAMA Network](https://jamanetwork.com/)
 |
| 1. Identify common pharmacy organizations and accrediting bodies and their functions.
2. Pharmacy Organizations and their functions
* [Academy of Managed Care Pharmacy](https://www.accp.com/stunet/compass/organizations.aspx#AMCP)
* [American College of Chest Physicians](https://www.accp.com/stunet/compass/organizations.aspx#CHEST)
* [American College of Clinical Pharmacy](https://www.accp.com/stunet/compass/organizations.aspx#ACCP)
* [Board of Pharmacy Specialties](https://www.accp.com/stunet/compass/organizations.aspx#BPS)
* [Hematology/Oncology Pharmacy Association](https://www.accp.com/stunet/compass/organizations.aspx#HOPA)
* [Joint Commission on the Accreditation of Healthcare Organizations](https://www.accp.com/stunet/compass/organizations.aspx#JCAHO)
* [National Community Pharmacists Association](https://www.accp.com/stunet/compass/organizations.aspx#NCPA)
* [MedWatch](https://www.accessdata.fda.gov/scripts/medwatch/index.cfm)
* [National Coordinating Council for Medication Error Reporting and Prevention](https://www.nccmerp.org/)
* [National Institute for Occupational Safety and Health (NIOSH)](https://www.cdc.gov/niosh/index.htm)
* [Chemocare](https://chemocare.com/about/default.aspx)

b) Identify major bodies of accreditation and their individual standards * [NCODA Center of Excellence Medically-Integrated Pharmacy Accreditation](https://www.ncoda.org/accreditation/)
* [Utilization Review Accreditation Commission (URAC)](https://www.urac.org/accreditations-certifications/accreditation-standards/)
* [Accreditation Commission for Health Care (ACHC)](https://www.achc.org/about-accreditation/#why_achc)
* [Community Pharmacy Practice Accreditation](https://nabp.pharmacy/news/news-releases/cppa-community-pharmacy-practice-accreditation-program-now-accepting-applications/)
* [The Joint Commission](https://www.jointcommission.org/accreditation-and-certification/why-the-joint-commission/?utm_content=dm-c-135)
	+ Brief Comparison Table of the above 5 Accreditation Agencies
		- [Pharmacy Times](https://www.pharmacytimes.com/view/pursuing-specialty-pharmacy-accreditation)
 |
| 1. Describe proper handling and storage of oral oncology medications according to USP 800 safety standards
* [USP 800 - Updated 2020](https://drive.google.com/file/d/1HFTM79ok06690LwgF_ZE6BG96aOPbzUQ/view?usp=sharing)
	+ [Hazardous Drugs - Handling in Healthcare Settings](https://www.usp.org/compounding/general-chapter-hazardous-drugs-handling-healthcare)
* [Safe Handling of Oral Anticancer Therapy - Supplemental OCE Sheet](https://www.oralchemoedsheets.com/sheets/Safe-Handling-Of-Oral-Chemo_Supplemental_Patient_Education.pdf)
* [The National Institute for Occupational Safety and Health (NIOSH)](https://www.cdc.gov/niosh/index.htm)
 |
| 1. Identify oncolytic medications requiring REMS dispensing and all corresponding procedures
* [General information: Risk Evaluation and Mitigation Strategies (REMS)](https://www.fda.gov/drugs/drug-safety-and-availability/risk-evaluation-and-mitigation-strategies-rems)
* [FDA approved REMS](https://www.accessdata.fda.gov/scripts/cder/rems/index.cfm)
 |
| **Notes**  |  |
| **Practice problems** | 1. What PPE is needed when compounding sterile and non-sterile HDs? (Select all that apply)
2. Gown
3. Shoe covers
4. Face shield
5. One pair of chemo gloves
6. Hair net
7. What disorder can cause nerve problems, pain, numbness, swelling and can affect your hand and feet?
8. Hand-Foot Syndrome
9. Neuropathy
10. Petechiae
11. Lymphedema
 |
| **Domain II - Clinical Oncology Skills and Patient Management (30%)** |
| **Description** | Domain II will focus on your clinical knowledge in oncology. Main areas of study include identifying laboratory values and understanding what they represent. These skills would be used in the pharmacy to manage patient side effects, adherence, and compliance. You will also need to know the different diagnostic and interventional studies used for cancer staging and restaging. Pharmacy technicians that can recognize and interpret these areas of study will master this section of the exam. |
| **Concepts to know** | 1. Identify medical data in patient records including laboratory values, vital sign abnormalities, and genetic testing results.
* [CBC, CMP, & Liver function values](https://www.walkinlab.com/products/view/complete-blood-count-cbc-comprehensive-metabolic-panel-cmp-14-blood-test-panel#:~:text=A%20CBC%20also%20helps%20your,anemia%2C%20and%20several%20other%20disorders.&text=Comprehensive%20Metabolic%20Panel%20(CMP%2D14)%20with%20eGFR%20is%20a,electrolyte%20and%20acid%2Fbase%20balance.)
	+ [Understanding CBC](https://www.cancer.net/navigating-cancer-care/diagnosing-cancer/reports-and-results/understanding-your-complete-blood-count-cbc-tests)
	+ [Understanding CMP](https://www.oncolink.org/cancer-treatment/procedures-diagnostic-tests/blood-tests-tumor-diagnostic-tests/comprehensive-metabolic-panel)
	+ [Understanding Liver Function Test (LFT)](https://www.oncolink.org/cancer-treatment/procedures-diagnostic-tests/blood-tests-tumor-diagnostic-tests/liver-function-test-lft#:~:text=LFTs%20are%20a%20group%20of,with%20your%20lab%20test%20results.)
	+ [CBC & CMP Lab Ranges Sheet](https://docs.google.com/document/d/1Dcnglqb-N8-zjKBl1wY1NhH4meNF-WjYLk4jjAyQBBk/edit)
* [Vital signs](https://www.ncbi.nlm.nih.gov/books/NBK553213/)
* [The Genetics of Cancer](https://www.cancer.net/navigating-cancer-care/cancer-basics/genetics/genetics-cancer)
	+ [Genetic tests for targeted cancer therapies](https://www.labcorp.com/help/patient-test-info/genetic-tests-targeted-cancer-therapy#:~:text=targeted%20cancer%20therapy%3F-,What%20are%20genetic%20tests%20for%20targeted%20cancer%20therapy%3F,treatment%20that%20a%20person%20receives.)
* [Tumor Markers in Common Use (determine treatment/diagnose cancer)](https://www.cancer.gov/about-cancer/diagnosis-staging/diagnosis/tumor-markers-list)
	+ [More on Tumor Markers with Reference Ranges](https://www.aafp.org/pubs/afp/issues/2003/0915/p1075.html)
	+ [Another Tumor Marker resource](https://www.cancer.net/navigating-cancer-care/diagnosing-cancer/tests-and-procedures/tumor-marker-tests)
	+ [Tumor markers by cancer types](http://edusanjalbiochemist.blogspot.com/2013/07/tumor-marker-introduction.html)
		- Be sure to review Fig. Tumor marker
 |
| 1. Differentiate imaging and diagnostic techniques as it relates to identification and monitoring of various malignancies.
* [PET scans](https://www.cancer.net/navigating-cancer-care/diagnosing-cancer/tests-and-procedures/positron-emission-tomography-and-computed-tomography-pet-ct-scans)
* [CAT/CT scans](https://www.cancer.org/treatment/understanding-your-diagnosis/tests/ct-scan-for-cancer.html)
* [X-rays](https://www.cancer.org/treatment/understanding-your-diagnosis/tests/x-rays-and-other-radiographic-tests.html#:~:text=X%2Drays%20and%20other%20radiographic%20tests%20(also%20known%20as%20radiographs,there's%20no%20special%20preparation%20needed.)
* [Bone Density](https://www.stvincenthospital.com/services/orthopedics/bone-density)
* [Bone Scans](https://www.cancer.net/navigating-cancer-care/diagnosing-cancer/tests-and-procedures/bone-scan)
* [Biopsy](https://www.cancer.net/navigating-cancer-care/diagnosing-cancer/tests-and-procedures/biopsy)
* [Surgery pathology reports](https://www.cancer.gov/about-cancer/diagnosis-staging/diagnosis/pathology-reports-fact-sheet)
 |
| 1. Identify warnings, precautions, and other adverse events associated with oral oncolytics.
* Review the drugs on the following sheet → [Common Oncolytics](https://docs.google.com/document/d/1LQQhUcwd9sbJYG_UOJuygSN2tjaVoIJh/edit)
 |
| 4) Understand the correct usage of NCODA Resources.* [Treatment Support Kits](https://www.ncoda.org/treatment-support-kits/)
* [PQIs](https://www.ncoda.org/pqis/)
* [OCEs](https://www.ncoda.org/oce-sheets/)
* [IVEs](https://www.ncoda.org/ive-sheets/)
 |
| 5) Be familiar with grade levels/scales for side effects/adverse reactions.* [Common Terminology Criteria for Adverse Events (CTCAE) Version 5.0](https://ctep.cancer.gov/protocoldevelopment/electronic_applications/docs/ctcae_v5_quick_reference_5x7.pdf)
 |
| **Notes** |  |
| **Practice problems** | 1. What does the term thrombocytosis mean?
2. Elevated white blood cells
3. Low platelet count
4. Low white blood cells
5. Elevated platelet count
6. What is the purpose of a tumor marker? (Select all that apply)
7. Marks where the tumor is in the body
8. Determine the stage of cancer
9. Cancer screening
10. Monitors patients responses to therapy
11. Assess risk of thrombocytopenia
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| **Domain III - Oncology Pharmacy Billing: 20%** |
| **Description** | Pharmacy billing is an integral component of the pharmacy especially, with oral oncolytic medications. This section is all about how to properly process and bill oral oncolytic medications according to indication, cycle, quantity, and day supply. You will also need to know the difference between each healthcare plan, billing, and processing rules for each. This section also covers the prior authorization process and financial assistance options for patients. |
| **Concepts to know** | 1. Identify the following principles in order to properly bill oncolytics and oncology specific billing terminology.
* [Oncology billing](https://www.cms.gov/medicare-coverage-database/view/article.aspx?articleId=52479)
* Billing per cycle
	+ Billing oncology medications requires knowledge of the quantity of drug used per cycle. This information is found in each oncology medication’s prescribing information.
		- Review the drugs on the following sheet → [Common Oncolytics](https://docs.google.com/document/d/1LQQhUcwd9sbJYG_UOJuygSN2tjaVoIJh/edit)
			* More specifically, the “Dosage and Administration” section for each drug
* [Oral Oncology Treatment Terms - Supplemental OCE sheet](https://www.oralchemoedsheets.com/sheets/Oral-Oncology-Treatment-Terms_Supplemental_Patient_Education.pdf)
* [Treatment cycle definition](https://www.cancer.gov/publications/dictionaries/cancer-terms/def/treatment-cycle)
* [More on chemotherapy (including treatment cycle)](https://www.cancer.net/navigating-cancer-care/how-cancer-treated/chemotherapy/what-chemotherapy)
* Treatment Cycle, Quantity, and Days Supply
	+ Review the drugs on the following sheet → [Common Oncolytics](https://docs.google.com/document/d/1LQQhUcwd9sbJYG_UOJuygSN2tjaVoIJh/edit)
		- More specifically, the “Dosage and Administration” section for each drug
	+ Example Below: [LONSURF Prescribing Information](https://www.lonsurfhcp.com/?gclid=CjwKCAjwpqCZBhAbEiwAa7pXeZym_toZweNYqS3uZ3GuUe6pw_YaOex33W7YB354oDUv_ei2v3xi0BoClVMQAvD_BwE)

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| **Prescription** |
| **Rx**LONSURF (trifluridine and tipiracil)**Directions:** Take one 15 mg trifluridine/6.14 mg tipiracil tablet and three 20 mg trifluridine/8.19 mg tipiracil tablets by mouth twice a day on days 1-5 and 8-12 of the first 28-day cycle.**Patient information:*** JK has metastatic colorectal cancer and was previously treated with fluoropyrimidine-, oxaliplatin-, and irinotecan-based chemotherapy as well as anti-VEGF biological therapy.
* Height: 69 inches
* Weight: 200 lbs

The pharmacist has verified this prescription to ensure that all of the information is correct. Let’s take a look at whether or not the directions make sense and figure out the total quantity of this medication to bill for this cycle. |
| **Why the directions and dose are correct:*** According to the prescribing information, the recommended dose is 35 mg/m2/dose by mouth, twice daily with food on days 1-5 and 8-12 for a 28-day cycle
* The “mg/m2” indicates that this is dosed based on BSA. So, we need to calculate:
	+ $BSA \left(m^{2}\right)= \sqrt{\frac{height \left(cm\right) • weight(kg)}{3600}}$
	+ Height = 69 inch ($\frac{2.54 cm}{1 inch}$) = 175.26 cm
	+ Weight = 200 lbs ($\frac{1 kg}{2.2 lbs})=90.91 kg$
	+ $BSA \left(m^{2}\right)= \sqrt{\frac{175.26 cm • 90.91 kg}{3600}=}2.1 m^{2}$
	+ Multiplying the BSA ($2.1 m^{2}$) by the recommended dose of 35 mg/m2 gives us a daily dose of 73.5 mg given twice daily
		- According to the prescribing information for LONSURF, it is recommended to round to the nearest 5 mg increment, which would be 75 mg in this case
		- Thus, the correct dosing is 75 mg taken twice daily (for a total of 150 mg per day), which is consistent with the directions for this prescription.
		- From the directions, we can decipher that there are a total of 8 tablets being taken per day (one 15 mg tablet + three 20 mg tablets taken twice daily = 8 tablets per day) for a total of 10 days (days 1-5 + days 8-12 = 10 days total).
			* This means that we will need **twenty** of the 15 mg trifluridine/6.14 mg tipiracil tablets and **sixty** of the 20 mg trifluridine/8.19 mg tipiracil tablets

**Drug quantity** is the amount of prescription drug that is given to a patient by the pharmacy in a period of time* the period of time in this case is 1 cycle, which is 28 days
* for this prescription, the total quantity is 80 tablets for the 1st cycle (20 of the 15 mg tablets and 60 of the 20 mg tablets)

**Days Supply** is the number of days the drug quantity for the prescription will last the patient* For this prescription, the medications are taken **two times** per day and needs to be taken on days 1-5 and 8-12
	+ Days Supply = $\frac{Total Quantity}{Total number of tablets taken per day}=\frac{80 tablets}{8 tablets/day}=10 day supply$

**Treatment Cycle** is a period of treatment followed by a period of rest (no treatment) that is repeated on a regular schedule* Although one treatment cycle is 28 days for this medication, the drug is taken for a total of 10 days
	+ The days the drug is taken is highlighted in **blue** and the days the patient does not take the drug is highlighted in orange.

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| **Day 1** | **Day 2** | **Day 3**  | **Day 4** | **Day 5** | **Day 6** | **Day 7** |
| **Day 8** | **Day 9** | **Day 10** | **Day 11** | **Day 12** | **Day 13** | **Day 14** |
| **Day 15** | **Day 16** | **Day 17** | **Day 18** | **Day 19** | **Day 20** | **Day 21** |
| **Day 22** | **Day 23** | **Day 24** | **Day 25** | **Day 26** | **Day 27** | **Day 28** |

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| 1. Identify main steps of insurance verification.
* [What Do Rx, Rx BIN, Rx Grp, And Rx PCN Mean On An Insurance Card?](https://houseofdebt.org/rx-bin-pcn-number-insurance-card/)
	+ Important note: Check whether the patient or someone else is the policyholder.
* [Specialty Pharmacy Insurance Terms - Supplemental OCE sheet](https://www.oralchemoedsheets.com/sheets/Specialty-Pharmacy-Insurance-Terms_Supplemental_Patient_Education.pdf)
 |
| 1. Compare the parts of Medicare part B, part D, and Federal Plans, including specific billing rules, regulations, and compliances.
* [General information regarding Medicare & parts of Medicare](https://www.cms.gov/Medicare/Medicare-General-Information/MedicareGenInfo)
	+ [Another great resource on this topic](https://www.medicare.gov/basics/get-started-with-medicare/medicare-basics/parts-of-medicare)
* [How Medicare works](https://www.medicare.gov/basics/get-started-with-medicare/medicare-basics/how-does-medicare-work)
* [Medicare Advantage plans (also referred to as Medicare Part C)](https://www.medicare.gov/types-of-medicare-health-plans/medicare-advantage-plans)
* [What Medicare Part D drug plans cover (Formulary, generic drugs, tiers)](https://www.medicare.gov/drug-coverage-part-d/what-medicare-part-d-drug-plans-cover)
 |
| 1. Describe the use of TRICARE and TRICARE Prime plans.
* [Available TRICARE plans](https://www.tricare.mil/Plans/HealthPlans)
* [Eligibility & Types of Beneficiaries](https://www.tricare.mil/Plans/Eligibility)
* [TRICARE Prime](https://www.tricare.mil/Plans/HealthPlans/Prime)
 |
| 1. Understand what commercial health insurance plans are and the types of these plans available.
* [Commercial health insurance plans](https://www.medicalbillingandcoding.org/health-insurance-guide/commercial-health-insurance/)
 |
| 1. Be aware of the functions of drug manufacturer copay cards and understand their use.
* [GoodRx - What Are Manufacturer Copay cards?](https://www.goodrx.com/healthcare-access/patient-advocacy/what-are-manufacturer-copay-cards)
* [Medicareafaq - Prescription Discount Cards and Coupons for Medicare Beneficiaries](https://www.medicarefaq.com/faqs/manufacturers-coupons-and-medicare/)
 |
| 1. Differentiate between Medical billing and pharmacy billing.
* [GoodRx - Medical vs. Pharmacy Billing: A Guide for Providers](https://www.goodrx.com/hcp/providers/medical-vs-pharmacy-billing)
* [EnlivenHealth - Medical Billing Versus Pharmacy Billing: What’s the Difference?](https://www.fdsrx.com/medical-billing-versus-pharmacy-billing-whats-the-difference/)
 |
| 1. Understand how to navigate patient assistance options.
* [GoodRx- What Are Patient Assistance Programs?](https://www.goodrx.com/healthcare-access/patient-advocacy/what-are-patient-assistance-programs)
* [NCODA's Financial Assistance Tool](https://www.ncoda.org/financial-assistance/)
	+ Provides up-to-date and comprehensive financial resource information on many chemotherapy and cancer treatment options
	+ It is an excellent resource for oncology caregivers to assist patients who struggle to pay for cancer treatment
* **Pan Foundation’s FundFinder** → [Signup for FundFinder](https://fundfinder.panfoundation.org/)
	+ FundFinder is a free, simple web app that can be used on a computer or mobile device
	+ When patients sign up, they can set up text message or email alerts when disease-specific funding becomes available
	+ When patients get a notification that a fund is open, they can apply immediately
	+ Important note: The app does not guarantee financial assistance. All patient assistance is awarded on a first-come, first-served basis and subject to each foundation’s criteria
 |
| 1. Understand the prior authorization procedure.
* [PharmacyTimes - The Pharmacist's Role in Prior Authorizations](https://www.pharmacytimes.com/view/the-pharmacist-s-role-in-prior-authorizations)
* [priorauthtraining.org - Pharmacy’s Role in the Prior Authorization Process](https://www.priorauthtraining.org/pharmacys-role-in-the-prior-authorization-process/)
* **Prior authorization process flow map**
	+ Review [Figure 1](https://ascopubs.org/doi/10.1200/JOP.2016.017756#_i15)
 |
| **Notes** |  |
| **Practice problems** | 1. In the Medicare Donut hole, what is catastrophic coverage?
2. Covers 95% of drug costs
3. You pay only copays for your medication
4. You pay a certain percentage based on the type of drug
5. Your plan resets
6. What is the billing cycle for palbociclib?
7. 21-day cycle
8. 30-day cycle
9. 14-day cycle
10. 28-day cycle
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| **Domain IV - Oral Oncolytics: 30%** |
| **Description** | 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 oncolytics and prophylactic OTC medications. You will also need to be able to identify oral oncolytics by their brand and generic names. |
| **Concepts to know** | 1. Match proper OTC therapies to adverse reactions associated with oral oncolytic medications.
* Review the drugs on the following sheet → [Common Oncolytics](https://docs.google.com/document/d/1LQQhUcwd9sbJYG_UOJuygSN2tjaVoIJh/edit)
	+ More specifically the “Adverse Reactions” box for the medications listed
 |
| 1. Identify supportive medication; including most common dosages that are required to be taken while being prescribed certain oral oncolytic medications.
* Review the drugs on the following sheet → [Common Oncolytics](https://docs.google.com/document/d/1LQQhUcwd9sbJYG_UOJuygSN2tjaVoIJh/edit)
	+ More specifically the “Premedication/Supportive medication required” bullet under the “Indication and Usage” box for the medications listed
 |
| 1. Verify directions, quantity, and days’ supply are within the guidelines of prescribed medications.
* Review the drugs on the following sheet → [Common Oncolytics](https://docs.google.com/document/d/1LQQhUcwd9sbJYG_UOJuygSN2tjaVoIJh/edit)
	+ More specifically the “Recommended dosages (doses)” bullet under the “Dosage and Administration” box for the medications listed
 |
| 1. Differentiate the properties of various oral oncolytic medications including indication, package sizing, appropriate dosing, brand and generic names, storage, stability, and dosage form.
* Review the drugs on the following sheet → [Common Oncolytics](https://docs.google.com/document/d/1LQQhUcwd9sbJYG_UOJuygSN2tjaVoIJh/edit)
 |
| **Notes** |  |
| **Practice problems** | 1. What is the generic name for Jakafi?
2. ribociclib
3. ruxolitinib
4. regorafenib
5. afatinib
6. What is the correct dosing for a nmCRPC patient being prescribed apalutamide?
7. 240mg-Take 2 (120mg) tablets PO daily
8. 160mg-Take 4 (40mg) capsules PO daily
9. 240mg-Take 4 (60mg) tablets PO daily
10. 160mg- Take 2 (80mg) tablets PO daily
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**Answers to Practice Problems**

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| **Domain I – Core Oncology Pharmacy Training (20%)**  |
| **Practice Problems**  | 1. a & b
2. b
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| **Domain II - Clinical Oncology Skills and Patient Management (30%)** |
| **Practice Problems** | 1. d
2. b, c, & d
 |

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| **Domain III-Oncology Pharmacy Billing: 20%** |
| **Practice Problems**  | 1. a
2. d
 |

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| **Domain IV - Oral Oncolytics (30%)** |
| **Practice Problems**  | 1. b
2. c
 |