

Chapter 50, Traditional Chemotherapy

1. A nurse is presenting information at a health fair concerning cancer. When questioned about the use of green tea, the nurse would point out which potential effect of green tea?
A) Dental caries
B) Damage to heart
C) Insomnia
D) Damage to liver

Answer: C

Rationale: The nurse should inform the client that green tea can cause insomnia, nervousness, restlessness, and GI upset because it contains caffeine. Green tea is known to improve dental health and maintain health of the heart and liver.

Question format: Multiple Choice

Chapter: 50

Learning Objective: 2

Cognitive Level: Apply

Client Needs: Health Promotion and Maintenance

Integrated Process: Teaching/Learning

Reference: p. 681, Herbal Considerations

2. A nursing instructor is conducting a class discussion on the actions of vincristine. The instructor determines the class is successful when the students correctly choose which action?
A) Interfere with amino acid production in the S phase
B) Stop cells during the S and G₂ phases
C) Inhibit DNA synthesis during the S phase
D) Prevent cell division during the S and G₂ phases

Answer: A

Rationale: Vinca alkaloids, such as vincristine, interfere with amino acid production in the S phase. Podophyllotoxins stop the cells and prevent cell division during the S and G₂ phases. Camptothecin analog drugs inhibit DNA synthesis during the S phase.

Question format: Multiple Choice

Chapter: 50

Learning Objective: 2

Cognitive Level: Understand

Client Needs: Physiological Integrity: Pharmacological Therapies

Integrated Process: Clinical Problem-solving Process (Nursing Process)

Reference: p. 682, Plant Alkaloids

3. A nurse is preparing to administer etoposide to a client. Which assessment finding that could influence dosing should the nurse **prioritize** in the preadministration assessment?
- A) The emotional response
 - B) Complete blood count
 - C) Fluid intake and output
 - D) Understanding of therapy

Answer: B

Rationale: The nurse should perform a complete blood count to provide baseline data for future reference due to the potential bone marrow suppression that can occur with etoposide. Emotional response to the disease, client understanding of therapy, and fluid intake and output are preadministration assessments not pertaining to the depressing effect of the bone marrow.

Question format: Multiple Choice

Chapter: 50

Learning Objective: 3

Cognitive Level: Apply

Client Needs: Physiological Integrity: Pharmacological Therapies

Integrated Process: Clinical Problem-solving Process (Nursing Process)

Reference: p. 685, Preadministration Assessment

4. A nurse is caring for a client prescribed gemcitabine. On the morning laboratory results, the nurse discovers the following: white blood cell count $4500/\text{mm}^3$ and platelets $135,000/\text{mm}^3$. The nurse anticipates discovering which sign on the ongoing assessment?
- A) Bloody urine
 - B) Concentrated urine
 - C) Frequent micturition
 - D) Pain on urination

Answer: A

Rationale: Thrombocytopenia is characterized by a platelet count of less than $100,000/\text{mm}^3$. The client is at risk for thrombocytopenia due to bone marrow suppression, which is indicated by hematuria. Concentrated urine, frequent micturition, or pain on urination is not indicative of thrombocytopenia. Frequent urination is a potential sign of an infection. Leukopenia or white counts of less than $2500/\text{mm}^3$ would need to be reported to the health care provider.

Question format: Multiple Choice

Chapter: 50

Learning Objective: 3

Cognitive Level: Apply

Client Needs: Physiological Integrity: Reduction of Risk Potential

Integrated Process: Clinical Problem-solving Process (Nursing Process)

Reference: p. 688, Fatigue, Injury Risk, and Infection Risk

5. A nurse is teaching a client about the chemotherapeutic agent that has been prescribed. When asked about potential hair loss, which answer should the nurse **prioritize**?
- A) Forewarn about hair loss as permanent
 - B) Explain it is not life threatening
 - C) Suggest the use of a wig or cap
 - D) Explain that hair has no true function

Answer: C

Rationale: The nurse can assist the client in being comfortable with their body image by suggesting that the client use a wig or cap until the hair grows back. The nurse should forewarn about hair loss to prepare the client for the outcome of the treatment. The nurse should explain that hair preserves body heat and loss of hair is not life threatening to help put the client at ease during treatment.

Question format: Multiple Choice

Chapter: 50

Learning Objective: 4

Cognitive Level: Apply

Client Needs: Psychosocial Integrity

Integrated Process: Caring

Reference: p. 689, Altered Body Image Perception

6. A nurse is caring for a client during chemotherapeutic drug therapy and determines a nursing diagnosis of altered tissue integrity is appropriate. Which action would be appropriate for the nurse to suggest during the teaching session?
- A) Scrub and clean skin often.
 - B) Wear loose protective clothing.
 - C) Ensure adequate sunlight.
 - D) Have frequent baths.

Answer: B

Rationale: The nurse should suggest to the client to wear loose protective clothing and to watch areas of skinfolds for breakdown. The nurse should not suggest that the client scrub and clean the skin often, ensure adequate sunlight, or have frequent baths as these measures may aggravate the condition and cause further impairment to the tissue. The client is advised to avoid sunlight.

Question format: Multiple Choice

Chapter: 50

Learning Objective: 4

Cognitive Level: Apply

Client Needs: Physiological Integrity: Pharmacological Therapies

Integrated Process: Clinical Problem-solving Process (Nursing Process)

Reference: p. 690, Altered Tissue Integrity

7. A client, who has been prescribed melphalan for the treatment of an ovarian tumor, wants to know how the drug acts. Which response would the nurse integrate into the answer?

- A) Increases acidity of the cell environment
- B) Changes to a more alkaline cell environment
- C) Neutralizes the alkalinity of the cell environment
- D) Changes the cell to a neutral environment

Answer: B

Rationale: The nurse should explain to the client that the alkylating agent changes the cell to a more alkaline environment, which in turn damages malignant cells, which are more susceptible to the effects of the alkylating drugs. Alkylating drugs do not increase the acidity of the cell environment, neutralize the alkalinity of the cell environment, or change the cell to a neutral environment.

Question format: Multiple Choice

Chapter: 50

Learning Objective: 2

Cognitive Level: Apply

Client Needs: Physiological Integrity: Pharmacological Therapies

Integrated Process: Teaching/Learning

Reference: p. 682, Alkylating Agents

8. A client, who is prescribed vinblastine, is also currently administered warfarin. The nurse will carefully monitor the client for which reaction?
- A) Seizures
 - B) Ototoxicity
 - C) CNS depression
 - D) Prolonged bleeding

Answer: D

Rationale: The nurse should monitor the client for the increased risk of prolonged bleeding. Increased risk of seizures occurs when phenytoin interacts with a plant alkaloid. Increased risk of ototoxicity is observed in clients receiving plant alkaloids with loop diuretics. Increased risk of CNS depression is observed in clients who are receiving antidepressants along with plant alkaloids.

Question format: Multiple Choice

Chapter: 50

Learning Objective: 2

Cognitive Level: Apply

Client Needs: Physiological Integrity: Pharmacological Therapies

Integrated Process: Clinical Problem-solving Process (Nursing Process)

Reference: p. 683, Interactions

9. The nurse is preparing to administer cisplatin to a client. The nurse anticipates the client will also be prescribed which drug to counteract some adverse reactions?
- A) Mesna
 - B) Leucovorin
 - C) Dexrazoxane
 - D) Amifostine

Answer: D

Rationale: Amifostine binds with the metabolites of cisplatin to protect the kidneys from the nephrotoxic effects. Mesna would be used with ifosfamide to protect the bladder from hemorrhagic cystitis. Leucovorin is used to provide folic acid to the cells after methotrexate administration. Dexrazoxane is a cardioprotective agent used with doxorubicin.

Question format: Multiple Choice

Chapter: 50

Learning Objective: 2

Cognitive Level: Apply

Client Needs: Physiological Integrity: Pharmacological Therapies

Integrated Process: Clinical Problem-solving Process (Nursing Process)

Reference: p. 684, Box 50.3 Cytoprotective Agents

10. The nurse determines a nursing diagnosis of imbalanced nutrition: less than body requirements is the priority for a client receiving chemotherapeutic therapy. Which suggestion would be **least** appropriate for the nurse to include in the client's plan of care?
- A) Offer fatty foods to stimulate the taste buds.
 - B) Provide small, frequent meals.
 - C) Avoid exposure to unpleasant smells.
 - D) Provide foods that are high in protein.

Answer: A

Rationale: Greasy or fatty foods and unpleasant sights, smells, and tastes should be avoided. Small, frequent meals and foods that are high in protein are appropriate.

Question format: Multiple Choice

Chapter: 50

Learning Objective: 4

Cognitive Level: Apply

Client Needs: Physiological Integrity: Reduction of Risk Potential

Integrated Process: Clinical Problem-solving Process (Nursing Process)

Reference: p. 688, Malnutrition

11. A group of nursing students are preparing a presentation depicting the cell cycles and the chemotherapeutic agents that work best at each phase. The instructor determines the students have correctly illustrated the information by including antimetabolites at which phase?
- A) S phase
 - B) M phase
 - C) G₂ phase
 - D) G₁ phase

Answer: A

Rationale: Antimetabolite drugs are substances that incorporate themselves into the cellular components during the S phase of cell division. This interferes with the synthesis of RNA and DNA, making it impossible for the cancerous cell to divide into two daughter cells. The vinca alkaloids interfere with amino acid production in the S phase and formation of microtubules in the M phase. Taxanes also interfere in the M phase with microtubules. Cells are stopped during the S and G₂ phases by the podophyllotoxins and thus are unable to divide. DNA synthesis during the S phase is inhibited by camptothecin analog drugs such as topotecan.

Question format: Multiple Choice

Chapter: 50

Learning Objective: 1

Cognitive Level: Analyze

Client Needs: Physiological Integrity: Pharmacological Therapies

Integrated Process: Teaching/Learning

Reference: p. 682, Antimetabolites

12. After teaching a group of nursing students about traditional chemotherapy, the instructor determines that the teaching was successful when the students correctly categorize which drug(s) as a plant alkaloid? Select all that apply.
- A) Vincristine
 - B) Capecitabine
 - C) Paclitaxel
 - D) Etoposide
 - E) Irinotecan

Answer: A, C, D, E

Rationale: Drugs that are derived from plant alkaloids include vinca alkaloids (vincristine), taxanes (paclitaxel), podophyllotoxins (etoposide), and camptothecin analogs (irinotecan).

Capecitabine is an antimetabolite.

Question format: Multiple Select

Chapter: 50

Learning Objective: 1

Cognitive Level: Understand

Client Needs: Physiological Integrity: Pharmacological Therapies

Integrated Process: Teaching/Learning

Reference: p. 682, Plant Alkaloids

13. A nurse is preparing to administer a traditional chemotherapeutic agent that is classified as an antimetabolite. Which drug(s) might the nurse be preparing to give? Select all that apply.
- A) Mercaptopurine
 - B) Capecitabine
 - C) Fluorouracil
 - D) Etoposide
 - E) Irinotecan

Answer: A, B, C

Rationale: Antimetabolite drugs are substances that incorporate themselves into the cellular components during the S phase of cell division and include mercaptopurine, capecitabine, and fluorouracil. Etoposide and irinotecan are plant alkaloids.

Question format: Multiple Select

Chapter: 50

Learning Objective: 1

Cognitive Level: Understand

Client Needs: Physiological Integrity: Pharmacological Therapies

Integrated Process: Clinical Problem-solving Process (Nursing Process)

Reference: p. 692, Summary Drug Table

14. A health care provider has prescribed an alkylating agent for a client. The nurse anticipates administering which drug(s) to the client? Select all that apply.
- A) Bleomycin
 - B) Chlorambucil
 - C) Vinblastine
 - D) Cyclophosphamide
 - E) Ifosfamide

Answer: B, D, E

Rationale: Alkylating agents make the cell a more alkaline environment, leading to cell damage. Alkylating agents include chlorambucil, cyclophosphamide, and ifosfamide. Bleomycin is classified as a chemotherapeutic antibiotic. Vinblastine is a plant alkaloid.

Question format: Multiple Select

Chapter: 50

Learning Objective: 1

Cognitive Level: Understand

Client Needs: Physiological Integrity: Pharmacological Therapies

Integrated Process: Clinical Problem-solving Process (Nursing Process)

Reference: p. 692, Summary Drug Table

15. The nursing instructor is teaching a session about chemotherapeutic antibiotics. The instructor determines the session is successful when the students correctly choose which drug(s) in this category? Select all that apply.
- A) Bleomycin
 - B) Carboplatin
 - C) Dactinomycin
 - D) Daunorubicin
 - E) Busulfan

Answer: A, C, D

Rationale: Chemotherapeutic antibiotics have similar action to alkylating drugs and include bleomycin, dactinomycin, and daunorubicin. Carboplatin is an alkylating agent. Busulfan is an alkyl sulfonate alkylating agent.

Question format: Multiple Select

Chapter: 50

Learning Objective: 1

Cognitive Level: Understand

Client Needs: Physiological Integrity: Pharmacological Therapies

Integrated Process: Clinical Problem-solving Process (Nursing Process)

Reference: p. 692, Summary Drug Table

16. The nurse is preparing to administer a traditional chemotherapeutic agent to a client with a brain tumor. Which drug(s) does the nurse anticipate administering? Select all that apply.
- A) Cisplatin
 - B) Melphalan
 - C) Carmustine
 - D) Streptozocin
 - E) Mechlorethamine

Answer: C, D

Rationale: Nitrosoureas, such as carmustine and streptozocin, are unique alkylating agents that can cross the blood-brain barrier and are used for brain tumors. Other alkylating agents such as cisplatin, which is a platinum-based drug, and melphalan and mechlorethamine, which are nitrogen mustard derivative agents, cannot cross the blood-brain barrier and are not used for brain tumors.

Question format: Multiple Select

Chapter: 50

Learning Objective: 2

Cognitive Level: Apply

Client Needs: Physiological Integrity: Pharmacological Therapies

Integrated Process: Clinical Problem-solving Process (Nursing Process)

Reference: p. 682, Alkylating Agents

17. The nurse is preparing a teaching session for a client who is to receive a traditional chemotherapeutic drug. Which example(s) of immediate adverse reactions should the nurse include in the teaching? Select all that apply.
- A) Fertility problems
 - B) Extravasation
 - C) Nausea
 - D) Cardiotoxicity
 - E) Pulmonary fibrosis

Answer: B, C

Rationale: Nausea, vomiting, and extravasation are examples of immediate reactions to a chemotherapeutic drug that the nurse should discuss with the client prior to drug administration. Fertility problems, cardiotoxicity, and pulmonary fibrosis are more long-term adverse reactions.

Question format: Multiple Select

Chapter: 50

Learning Objective: 2

Cognitive Level: Apply

Client Needs: Physiological Integrity: Pharmacological Therapies

Integrated Process: Clinical Problem-solving Process (Nursing Process)

Reference: p. 682, Adverse Reactions

18. A client and caregivers are questioning a nurse concerning the potential long-term effects of a prescribed chemotherapeutic drug therapy. Which example(s) of a potential long-term effect(s) can the nurse provide to the client and caregivers? Select all that apply.
- A) Fertility problems
 - B) Thrombocytopenia
 - C) Leukopenia
 - D) Stomatitis
 - E) Cardiotoxicity

Answer: A, E

Rationale: Fertility problems, cardiotoxicity, pulmonary toxicity, and neurologic problems are examples of long-term reactions to a chemotherapeutic drug that the nurse should discuss with the client and caregivers prior to drug administration. Thrombocytopenia, leukopenia, and stomatitis are more immediate adverse reactions.

Question format: Multiple Select

Chapter: 50

Learning Objective: 2

Cognitive Level: Apply

Client Needs: Physiological Integrity: Pharmacological Therapies

Integrated Process: Teaching/Learning

Reference: p. 682, Adverse Reactions

19. A nurse is preparing to administer a chemotherapeutic drug to a client. The nurse anticipates the client will exhibit which sign(s) related to the effect of the drug on various rapidly growing cells in the body? Select all that apply.
- A) Alopecia
 - B) Leukopenia
 - C) Stomatitis
 - D) Cardiotoxicity
 - E) Thrombocytopenia

Answer: A, B, C, E

Rationale: Alopecia, bone marrow suppression (leukopenia and thrombocytopenia), stomatitis, and diarrhea are adverse effects of chemotherapeutic drugs and are related to the death of rapidly growing cells.

Question format: Multiple Select

Chapter: 50

Learning Objective: 2

Cognitive Level: Apply

Client Needs: Physiological Integrity: Pharmacological Therapies

Integrated Process: Clinical Problem-solving Process (Nursing Process)

Reference: p. 682, Adverse Reactions

20. A client is to start receiving therapeutic doses of a chemotherapeutic drug and can experience various adverse reactions as the treatment progresses. The nurse predicts the client will also be prescribed which drug(s) that will help prevent or lessen some of those adverse reactions? Select all that apply.
- A) Cytarabine
 - B) Amifostine
 - C) Leucovorin
 - D) Dacarbazine
 - E) Dexrazoxane

Answer: B, C, E

Rationale: Amifostine, leucovorin, and dexrazoxane are cytoprotective agents that can be given along with chemotherapeutic drugs to help prevent or lessen certain adverse effects. Cytarabine is an antimetabolite chemotherapeutic drug. Dacarbazine is an alkylating agent.

Question format: Multiple Select

Chapter: 50

Learning Objective: 2

Cognitive Level: Apply

Client Needs: Physiological Integrity: Pharmacological Therapies

Integrated Process: Clinical Problem-solving Process (Nursing Process)

Reference: p. 684, Box 50.3 Cytoprotective Agents

21. A client prescribed digoxin has been diagnosed with cancer and is to be administered chemotherapeutic medication. The nurse will **prioritize** cardiac assessments if the client is prescribed which chemotherapeutic drug(s)? Select all that apply.
- A) Mercaptopurine
 - B) Busulfan
 - C) Thiotepa
 - D) Doxorubicin
 - E) Irinotecan

Answer: A, D, E

Rationale: Plant alkaloids (irinotecan), antimetabolites (mercaptopurine), and chemotherapeutic antibiotics (doxorubicin) can decrease serum digoxin levels and result in worsening atrial fibrillation. Alkylating drugs such as busulfan and thiotepa do not have this interaction with digoxin.

Question format: Multiple Select

Chapter: 50

Learning Objective: 2

Cognitive Level: Apply

Client Needs: Physiological Integrity: Pharmacological Therapies

Integrated Process: Clinical Problem-solving Process (Nursing Process)

Reference: p. 683, Interactions

22. A nurse is preparing to administer a chemotherapeutic drug to a client and notes the client is also prescribed phenytoin on the preadministration assessment. The nurse determines the client will require careful monitoring if which chemotherapeutic drug(s) is to be administered? Select all that apply.
- A) Mercaptopurine
 - B) Busulfan
 - C) Thiotepa
 - D) Doxorubicin
 - E) Irinotecan

Answer: B, C, E

Rationale: Plant alkaloids (irinotecan) and alkylating agents (busulfan and thiotepa) can increase risk of seizure activity when given with phenytoin. Antimetabolites such as mercaptopurine have a decreased need for antiseizure medication when used concomitantly with chemotherapeutic medication. Other chemotherapeutic agents such as doxorubicin (an antibiotic) do not have this reaction with phenytoin.

Question format: Multiple Select

Chapter: 50

Learning Objective: 3

Cognitive Level: Apply

Client Needs: Physiological Integrity: Pharmacological Therapies

Integrated Process: Clinical Problem-solving Process (Nursing Process)

Reference: p. 683, Interactions

23. The nurse is preparing to administer a chemotherapeutic drug to a client. Which preadministration assessment(s) should the nurse **prioritize**? Select all that apply.
- A) Blood glucose
 - B) Weight
 - C) Fasting lipid panel
 - D) Blood pressure
 - E) Temperature

Answer: B, D, E

Rationale: The nurse's preadministration assessment before the administration of the first dose of a chemotherapeutic drug should include the client's vital signs (blood pressure, temperature, pulse, and respiratory rate) and weight (to ensure accurate drug dosing). The blood glucose level would be important if the client also has diabetes; however, that is not mentioned in this scenario. Obtaining fasting lipid panels would be important during the ongoing assessment to monitor for potential adverse reactions and ensure treatment with bexarotene could be initiated if needed.

Question format: Multiple Select

Chapter: 50

Learning Objective: 3

Cognitive Level: Apply

Client Needs: Physiological Integrity: Reduction of Risk Potential

Integrated Process: Clinical Problem-solving Process (Nursing Process)

Reference: p. 685, Preadministration Assessment

24. A client has been receiving a chemotherapeutic agent for a diagnosis of leukemia. The nurse will **prioritize** which factor(s) on the ongoing assessment of this client? Select all that apply.
- A) General condition
 - B) Individual response to the drug
 - C) Any adverse reactions
 - D) Guidelines established by evidence-based practice
 - E) Laboratory and radiographic reports

Answer: A, B, C, E

Rationale: After the administration of a chemotherapeutic drug, the nurse bases the ongoing assessment on the following factors: client's general condition, client's individual response to the drug, adverse reactions that may occur, results of periodic laboratory tests and radiographic scans, and guidelines established by the oncology health care provider or clinic not by evidence-based practice. Each client's progress must be monitored on an individual basis and planned around that client's progress and response to the therapy.

Question format: Multiple Select

Chapter: 50

Learning Objective: 3

Cognitive Level: Apply

Client Needs: Physiological Integrity: Reduction of Risk Potential

Integrated Process: Clinical Problem-solving Process (Nursing Process)

Reference: p. 686, Ongoing Assessment

25. The nursing instructor is teaching a class on the necessary precautions required when working around chemotherapeutic drug. The instructor determines the session is successful when the students correctly don which piece(s) of equipment to clean a drug spill? Select all that apply.
- A) Gloves
 - B) Safety goggles
 - C) Gown
 - D) Chemical spill boots

E) NIOSH-approved respirator

Answer: A, B, C, E

Rationale: Nurses are at risk for many adverse reactions from the accidental absorption of the drugs. A nurse should wear a gown, safety goggles, gloves, and a NIOSH-approved respirator when cleaning up a spill of a chemotherapeutic drug. Spill boots are not required per OSHA guidelines.

Question format: Multiple Select

Chapter: 50

Learning Objective: 5

Cognitive Level: Apply

Client Needs: Safe and Effective Care Environment: Safety and Infection Control

Integrated Process: Clinical Problem-solving Process (Nursing Process)

Reference: p. 687, Table 50.1 Personal Protective Equipment for Safe Handling of Antineoplastic Drugs

26. The nurse is conducting an ongoing assessment on a client who has received a chemotherapeutic agent. Which sign(s) should the nurse **prioritize** and alert the health care provider concerning? Select all that apply.
- A) Temperature of 100°F or higher
 - B) Cough
 - C) Sore throat
 - D) Frequent urination
 - E) White blood cell count of less than 3500/mm³

Answer: B, C, D

Rationale: The nurse should notify the health care provider immediately if any of the following occur during observation of a client receiving a chemotherapeutic drug as they may be signs of leukopenia: temperature of 100.4°F (38°C) or higher (not 100°F/37.8°C), cough, sore throat, chills, frequent urination, or a white blood cell count of less than 2500/mm³ (not 3500/mm³).

Question format: Multiple Select

Chapter: 50

Learning Objective: 5

Cognitive Level: Analyze

Client Needs: Physiological Integrity: Reduction of Risk Potential

Integrated Process: Clinical Problem-solving Process (Nursing Process)

Reference: p. 688, Fatigue, Injury Risk, and Infection Risk

27. The client is instructed to return to the clinic after calling and reporting various concerns. The nurse alerts the primary health care provider after noting which sign(s) on the assessment? Select all that apply.
- A) Bleeding gums
 - B) Petechiae
 - C) Greenish-yellow stools
 - D) Hematuria
 - E) Bright green emesis

Answer: A, B, D

Rationale: The nurse should notify the health care provider immediately if any of the following occurs during assessment of a client receiving an chemotherapeutic drug as they may be signs of thrombocytopenia: bleeding gums, easy bruising, petechiae, increased menstrual bleeding, tarry stools (not greenish-yellow), hematuria, or coffee-ground emesis (not bright green).

Question format: Multiple Select

Chapter: 50

Learning Objective: 5

Cognitive Level: Apply

Client Needs: Physiological Integrity: Reduction of Risk Potential

Integrated Process: Clinical Problem-solving Process (Nursing Process)

Reference: p. 688, Fatigue, Injury Risk, and Infection Risk