

# chemotherapy complications



*Helping your  
patient cope  
with adverse  
reactions*



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Contact Hours

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**Cancer treatment can unleash a host of problems. Here's how to prepare your patient and help her manage common complications.**

IMAGINE THAT YOU'RE CARING FOR A patient undergoing chemotherapy. She's likely to have plenty of questions—for example, what kinds of adverse reactions should she expect, how soon will they occur, and how long will they last?

Because some adverse reactions won't occur for several weeks, you need to prepare her before discharge so she can deal with them at home. If you're caring for her during treatment, you'll also need to assess how well she's tolerating treatment. In

this article, I'll describe the most common adverse reactions to chemotherapy, how to intervene, and what to teach your patient to help her maintain her quality of life.

### **Fighting fatigue**

Perhaps the most common and debilitating response to cancer treatment, fatigue can seriously damage quality of life.

To evaluate how heavy a toll fatigue is taking on your patient's life, ask her if she can carry out activities of daily living, go to work, perform usual chores, and engage in social activities with family and friends. Her own subjective assessments are the best way to track fatigue levels and patterns over time.

Also encourage her to keep a fatigue diary. Ask her to rate her fatigue on a scale of 0 (no fatigue) to 10 (worst fatigue) and document her activities and fatigue levels for 1 week, or as long as needed for assessment. She can also develop a list of her activities and rank them in importance. Then, to conserve her energy, she can ask family and friends to do the less important activities. Advise the patient's family not to make assumptions about her energy levels or the activities that are most important to her.

Encourage her to get at least 8 hours of sleep at night, take daily naps, and pace activities and rest periods. Depending on the type of therapy she's receiving, mild exercise may be appropriate and can actually help increase energy levels. She should try to perform important activities when she usually has the most energy, but she should be careful not to overdo activities because that may worsen fatigue the next day.

### **Minimizing the effects of myelosuppression**

Antineoplastic drugs kill rapidly dividing cells—including immature

neutrophils and megakaryocytes (which manufacture platelets) in bone marrow. Neutrophil counts typically fall 8 to 12 days after therapy; platelet counts 8 to 14 days after therapy. Two to 4 weeks after chemotherapy, when the drugs' effects have been resolved, the marrow recovers and resumes producing neutrophils and platelets. Many chemotherapy drugs cause myelosuppression, including the alkylating agents, antimetabolites, vinca (plant) alkaloids, and antitumor antibiotics.

When neutrophils and platelets in the blood are used up and no replacements are available, the patient develops thrombocytopenia and neutropenia. Anemia may occur later from reduced red blood cell (RBC) production or bleeding.

**Thrombocytopenia** can cause severe bleeding, so assess your patient's skin, venipuncture sites, mucous membranes (particularly in the mouth), and urine and stool for blood loss. Because thrombocytopenia can cause cerebral hemorrhage, monitor your patient's neurologic status regularly and watch for a decreased level of functioning.

If platelet counts are equal to or less than  $50,000/\text{mm}^3$ , institute platelet precautions: Avoid invasive procedures and notify the physician of low platelet counts. If the platelet count falls to  $5,000/\text{mm}^3$  or less, keep the patient on bed rest. Administer platelet transfusions as prescribed and monitor for adverse reactions such as fever and chills.

Teach the patient about ways to reduce the risk of bleeding, such as using an electric razor for shaving and a mouth sponge for oral care. Warn her not to take aspirin or nonsteroidal anti-inflammatory drugs, which increase the bleeding risk.

**Neutropenia**, which makes the patient susceptible to infections, may occur alone or with thrombocytopenia. If the absolute neutrophil count

is less than  $1,000/\text{mm}^3$ , institute the following precautions:

- Place the patient in a single room without plants, flowers, or other free-standing water, which can harbor bacteria.
- Take her vital signs every 4 hours—more often if her clinical condition warrants it.
- Make sure all health care personnel and visitors practice good hand washing before visiting her. People who are sick shouldn't visit until her neutrophil counts return to normal.
- Maintain good patient hygiene (mouth care after meals, daily bath, and perineal care).
- To reduce the risk of bacterial infection, avoid invasive procedures and equipment, including indwelling catheters, rectal thermometers, and suppositories. The patient should also avoid raw fruits and vegetables because surface bacteria that would normally be harmless could pose an infection risk when a patient's neutrophil count is low.

When you assess the patient, inspect her mouth, nose, and skin for signs and symptoms of infection. However, fever may be the only sign that a neutropenic patient has an infection.

Be on the alert for signs and symptoms of sepsis and septic shock, such as chills, rigors, temperature spike, hypotension, and tachycardia. If you suspect sepsis, notify the physician and obtain a chest X-ray and stat blood and urine cultures. Check peripheral and central intravenous (I.V.) lines for signs of infection; remove a peripheral line as ordered and culture the tip of it and any central lines. If prescribed, administer antibiotics and antipyretics to provide comfort, but be cautious not to mask a fever, which may be the only sign of neutropenia.

Teach the patient which signs and symptoms to report to her health care provider. Instruct her to reduce the

risk of infection by avoiding crowded places, sick people, and pet excretions and by eating nutritionally balanced meals.

**Anemia** is a less common result of bone marrow depression. Compared with white blood cells, RBCs have a long life span (about 120 days); the marrow usually recovers before the RBC count falls significantly. If anemia occurs, it usually happens about 3 months after treatment and is more likely to develop in patients receiving cisplatin, an alkylating agent.

Assess your patient's hemoglobin and hematocrit levels before and periodically during treatment, and monitor SpO<sub>2</sub> and arterial blood gases. If prescribed, administer a transfusion of packed RBCs and monitor the patient for complications. Administer erythropoietin as prescribed and teach the patient how to self-administer this drug.

Teach the patient to eat foods high in iron and to change positions slowly to avoid dizziness from orthostatic hypotension. She should call her physician if she notices signs and symptoms of anemia, including shortness of breath, tachycardia, dizziness, palpitations, fatigue, and pallor.

### **Getting a grip on GI reactions**

Mucosal cells lining the gastrointestinal (GI) tract also divide rapidly and are often killed by cancer chemotherapy. Adverse reactions can occur anywhere along the GI tract, from the mouth to the anus.

**Nausea and vomiting**, which are very common, can develop within hours of treatment. Symptoms may range from mild to severe, depending on the drug and dose used, but usually resolve over several days. If severe or prolonged, however, nausea and vomiting can lead to malnutrition, dehydration, poor tolerance of chemotherapy, refusal of treat-

ment, and reduction in the patient's quality of life.

To reduce the frequency and severity of nausea and vomiting, administer antiemetics as prescribed before chemotherapy and as needed afterward. Monitor the patient for dehydration and electrolyte imbalances.

Also assess her tolerance of foods, fluids, and odors; her eating habits; and her food preferences. Document her height and weight and monitor her weight weekly. Consult with a nutritionist to educate her about diet changes. If she's losing weight, she needs a diet high in calories, protein, and carbohydrates. Encourage her to experiment with different herbs and flavorings and to eat frequent, small meals.

If she's vomiting, keep her N.P.O. and slowly restart feedings with clear, uncarbonated liquids and dry foods such as crackers and toast. Slowly introduce bland foods, and teach her to avoid odors and perform oral care after vomiting. Tell her to notify her physician if antiemetics don't control vomiting, if she vomits more than three times in 1 day, or if she has signs and symptoms of dehydration or electrolyte imbalance, such as dry mucous membranes, increased thirst, decreased frequency of urination, and dark, concentrated urine.

**Mucosal inflammation** can occur anywhere in the GI tract. Antimetabolites such as 5-fluorouracil (5-FU), antitumor antibiotics, and irinotecan (a topoisomerase I inhibitor) are most likely to cause mucositis.

The condition of the patient's mouth may give you a clue about the appearance and integrity of other areas of the GI tract. Painful mouth ulcers that may bleed can develop a week after treatment and persist for another week, providing a portal for infection. The patient may experience painful swallowing if mucositis



*Anemia doesn't develop until 3 months after treatment because of the red blood cell's longer life span.*

occurs in the esophagus.

In women, ulcers may occur in the vagina, causing pain, itching, and discharge.

Assess the patient's mucous membranes for ulcers, infection, pain, bleeding, and discharge. Culture infected areas and administer topical antifungals as prescribed.

Teach the patient to watch for signs and symptoms of mucositis, and tell her to rinse her mouth with saline or bicarbonate solution after every meal and at bedtime. If brush-

ing her teeth causes her gums to bleed or if her platelet count drops below 50,000/mm<sup>3</sup>, advise her to use a soft sponge stick to clean her teeth.

To make eating easier, a patient with mouth sores can use a topical oral anesthetic before meals—for example, a 1:1:1 mixture of pediatric diphenhydramine elixir, Maalox, and viscous lidocaine.

The patient's diet should be soft, bland, acid-free, and high in protein and calories. Encourage her to drink fluids and liquid diet supplements. She should avoid alcohol- and glycerin-based mouthwashes, lemon and glycerin swabs, and hydrogen peroxide, which promotes fungal growth and harms granulating tissue. Suggest that she use a petrolatum-based lubricant to keep her lips moist.

**Constipation** can develop from limited mobility, pain medications, and treatment with drugs such as the vinca alkaloids vincristine and vinblastine, which interfere with the autonomic nervous system and reduce peristalsis. Symptoms occur within 3 to 7 days of chemotherapy and can last 1 to 2 weeks. Patients receiving drugs that cause constipation should also receive prophylactic stool softeners.

After chemotherapy, assess for bowel sounds and the patient's pattern of bowel elimination. Monitor for paralytic ileus, impaction, vomiting, and abdominal distension. Remember that liquid stool can leak around an impaction.

Teach the patient to eat foods high in soluble fiber, such as oatmeal, whole grains, fruits, and vegetables. She also needs to drink at least 2 liters of fluid per day, unless contraindicated. Stool softeners, laxatives, and physical activity (if permitted) also promote bowel function.

Tell the patient that she should have a bowel movement at least every other day and to call her physi-

cian if the bowel regimen isn't effective or if she doesn't produce stool for 3 days.

**Diarrhea** results when chemotherapy destroys the GI tract's epithelial cells. The shortened and denuded intestinal villi pass food through the GI tract more rapidly than normal. Fewer nutrients and fluids are absorbed, leading to fluid and electrolyte imbalances.

When you monitor the patient's fluid intake and output, assess the quality, quantity, and consistency of her stools. Apply a protective barrier such as diaper rash cream to perirectal skin. The physician may order stool cultures; if the results rule out infection, he may prescribe antidiarrheal medications. The patient's diet should be low-residue and lactose-free; bananas and sports drinks can help replace lost fluids and electrolytes without aggravating the GI tract.

Tell the patient to call the physician if she has two or more liquid stools per day or signs and symptoms of dehydration.

### **Coping with hair loss and skin changes**

Many cancer drugs, including doxorubicin (an antitumor antibiotic) and paclitaxel (a vinca alkaloid), can cause **alopecia**, often within weeks of administration. By damaging hair follicles, these drugs weaken hair and interrupt hair growth. In many cases, however, the patient's hair will grow back after treatment is completed, although its texture may change.

Combination therapy means your patient usually receives at least one drug with the potential to cause hair loss. Tell her to buy a head covering, such as a cap, turban, scarf, or wig, before she loses her hair. If the drug regimen is less likely to cause alopecia, the patient will still need to treat her hair very gently to avoid dryness and breakage. She should avoid hair

coloring and permanent waves and should protect her head from sun exposure.

**Skin changes**, such as hyperpigmentation caused by chemotherapy drugs, are more common in black patients. Skin over the hand joints may darken, as may the tongue and mucous membranes. Some drugs given peripherally, including 5-FU (with or without leucovorin) and bleomycin, an antitumor antibiotic, darken the veins used for infusion. Other changes are pruritus, infection, and dry or sloughing skin. The nails may separate from the nail bed or develop grooves or ridges. These integumentary changes can occur over weeks to months and may affect the patient's body image.

To prevent tissue injury from vesicants given through peripheral veins, insert an I.V. cannula in a vein on the patient's forearm, but avoid the antecubital area. Ensure that the catheter is in place by checking for the I.V. infusion to stop running when you occlude the vein proximal to the cannula opening. Otherwise, you should see a blood return and the infusion should run well when the clamp is wide open.

Give drugs slowly and check vein patency regularly. If you suspect extravasation, stop the infusion immediately and follow your facility's protocol.

If your patient is receiving drugs that cause photosensitivity, she should protect her skin by:

- **reducing or eliminating sun exposure** with high-SPF lotions, a hat, sunglasses, long-sleeved shirts, and long pants when spending more than a few minutes outdoors
- **keeping her nails short, not cutting her cuticles, and not scratching her skin.** To combat itchiness, she can use a moisturizer or soothing gels or lotions that contain topical hydrocortisone, diphenhydramine, or oatmeal.
- **wearing cotton clothing**, which is

more comfortable than wool or synthetics.

### Dealing with sexual problems

Many common chemotherapy drugs, including the alkylating agents, can interfere with patients' reproductive and sexual functioning. Premenopausal women may become amenorrheic and infertile (women under age 35 are more likely than older women to regain their fertility after chemotherapy). Men may experience decreased libido, interruption in sperm formation and production, impotence, and ejaculation problems.

These topics may be difficult for your patients to discuss. Your teaching—supplemented with printed teaching materials—can reassure them that alterations in sexual functioning are a normal reaction to chemotherapy. Encourage patients and their partners to express their feelings and concerns to each other and to explore possible solutions—cuddling, for example, if intercourse isn't possible. Refer the couple for sexual counseling if it's appropriate.

Because many chemotherapy

drugs are teratogenic, patients and their partners must practice birth control during therapy and for 1 to 2 more years after the completion of therapy (or for as long as the physician recommends).

### Knowledge is power

Understandably, patients undergoing chemotherapy are frightened and sometimes overwhelmed by the potential for adverse reactions. By teaching them what to expect, you can help them anticipate possible problems and care for themselves at home. ■

#### SELECTED REFERENCES

Burke, M., et al.: *Cancer Chemotherapy: A Nursing Process Approach*, 2nd edition. Sudbury, Mass., Jones and Bartlett Publishers, 1996.

DeVita, V., et al. (eds): *Cancer: Principles and Practice of Oncology*. Philadelphia, Lippincott-Raven Publishers, 1997.

Fischer, D., et al.: *The Cancer Chemotherapy Handbook*, 5th edition. St. Louis, Mosby-Year Book, Inc., 1997.

Groenwald, S., et al. (eds): *Cancer Nursing: Principles and Practice*, 4th edition. Boston, Jones and Bartlett Publishers, 1997.

#### SELECTED WEB SITES

American Cancer Society: <http://www.cancer.org>

Oncolink: <http://www.oncolink.upenn.edu>



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