Communicating is essential, particularly about the blood-related complications a patient experiences day in and day out. Medications, surgery, radiation, and procedures may cause individuals with cancer to experience anemia, neutropenia, thrombocytopenia, and hypercalcemia. Patients must understand that complications should not be seen as inevitable when facing cancer and should contact their oncology team immediately when problems arise associated with any of these blood-related complications.

Quick Tip: By empowering patients to record and report their laboratory results (CBC, HGB, Ca+, ANC), you can keep track of them to understand when the patient is at risk for infection with neutropenia, or getting into trouble with anemia, thrombocytopenia, or hypercalcemia.

Information should not replace the directions and advice of the provider.

**Key Questions**

1. What treatments are you undergoing - radiation and/or chemotherapy, stem cell or bone marrow transplant?
2. Have you been told that potential side effects of your treatment may include low red blood cell counts (anemia), low white blood cell counts (neutropenia), low platelet counts (thrombocytopenia), or high calcium levels in your blood (hypercalcemia)?
3. Have you noticed that you bleed or bruise more easily than usual?
4. Are you taking any medications that could affect the ability for your blood to clot, such as aspirin and other non-steroidal anti-inflammatory drugs?
ANEMIA

CAUSES
Anemia results from cancer itself, chemotherapy, radiation, blood loss, and lack of dietary vitamins and minerals.

TREATMENT
Treatment depends on severity. Initially, increased dietary or supplemental iron and folic acid may help. Concomitant administration of erythropoietin can be given with some chemotherapy. Blood transfusion is an alternate treatment option.

THROMBOCYTOPENIA

CAUSES
Platelets are destroyed as a side effect of chemotherapy or radiation therapy, leading to thrombocytopenia.

TREATMENT AND TIPS
Treating thrombocytopenia focuses on its underlying etiology, such as medications and chemotherapy. Often treatment or medications may be withheld if platelets are too low.

Members should be advised to take special precautions to reduce the risk of bleeding during periods when thrombocytopenia is present:

- Use of a soft bristle toothbrush or a sponge toothette and brush gently.
- Avoid the use of dental floss or toothpicks.
- Use lubricants on the lips to prevent cracking.
- Use of mouth moisturizers (water, substitute saliva).
- Rinse mouth after meals with 1/4 tsp. baking soda, 1/8 tsp. salt, and 8 oz. warm water.
- Prevent bruises, cuts and scrapes.
- Use of electric razors for shaving body parts.
- Avoid forceful or persistent coughing.
- Avoid forceful nose blowing.
- Avoid straining during bowel movements.
- Avoid insertion of anything into the rectum, such as rectal thermometers, suppositories, or enemas.
- Use sanitary napkins rather than tampons during menstruation; avoid douching.
- Do not use over-the-counter Aspirin or other products containing aspirin, or other non-steroid, anti-inflammatory drugs without first checking with the physician.
- Adjust lifestyle to limit or avoid vigorous activities that may cause injuries or falls including bicycling or skiing.

SIGNS AND SYMPTOMS OF ANEMIA
- Fatigue
- Shortness of breath
- Dizziness
- Tachycardia and chest pain
- Pale skin
- Swelling of hands and feet

SIGNS OF BLEEDING
- Excessive bruising and petechiae
- Bleeding gums
- Excessive bleeding from nosebleed, cuts or any bleeding that does not stop when pressure is applied
- Dark-colored urine, blood in the urine, blood in the stool or tarry stools, unusually heavy menstrual bleeding or bleeding between periods

FAST FACT: Greater than 40% of individuals experience anemia at some point during treatment.

FAST FACT: The average life span of a platelet in the blood is 10 days.

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### NEUTROPENIA

**CAUSES**
In addition to other medications, radiation and chemotherapy puts a person at risk for neutropenia. After most chemotherapy, the absolute neutrophil count (ANC) generally reaches its lowest point approximately 10 to 14 days after treatment, but time can vary by chemotherapy regimen.

**TREATMENT**
Myeloid growth factors increase the production of white blood cells in the bone marrow and may be used to treat neutropenia. However, these medications may involve multiple shots to deliver the medication and can also cause low-grade fever, generally feeling unwell, and bone pain.

**PREVENTION**
Avoidance of infections is essential. Strategies include:
- Frequent hand washing and strict daily personal hygiene.
- Examination of small cuts or tears in the skin.
- Protective clothing - wearing shoes at all times and wearing gloves for household tasks.
- Avoiding crowds to reduce exposure to infections.
- Protecting skin with use of sunscreen and electric razors.
- Receiving vaccinations only if approved by the oncologist.
- Avoiding exposure to people who have recently been vaccinated.

**FAST FACT:** Risk factors for low neutrophils include type of chemotherapy regimen, older age, poor nutrition, open wounds, Chronic Obstructive Pulmonary Disease, Coronary Artery Disease, diabetes, and anemia.

### HYPERCALCEMIA

**CAUSES**
Hypercalcemia occurs when the amount of calcium released from the bones is so great that the kidneys become overworked and cannot excrete enough calcium to maintain homeostasis, causing an elevation of calcium levels.

**TREATMENT**
Hydration, medications to reverse elevated calcium levels, and cancer therapies to ameliorate its cause may help in the treatment of hypercalcemia.

**SIGNS AND SYMPTOMS OF HYPERCALCEMIA**
- Nausea and vomiting
- Altered mental status, including lethargy, delirium, disorientation, hallucinations, and coma
- Constipation
- Flank pain or abdominal pain
- Polyuria
- Thirst and dehydration
- Headache
- Muscle weakness and joint pain

**QUICK TIP:** Because severe hypercalcemia (>15-16 mg/dL) may be life threatening, prompt treatment is critical.

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