High Dose Chemotherapy and Autologous Stem Cell Transplant

Bone marrow is where the stem cells are produced. Stem cells are immature cells that are produced in the soft, spongy, marrow-filled cavity of bones. When the stem cells enter the blood stream, they develop into a variety of mature blood and immune cells. Red blood cells carry oxygen throughout the body, platelets help prevent bleeding and white blood cells fight infection. High doses of chemotherapy destroys the ability of the bone marrow to produce stem cells. Therefore, stem cells are collected prior to treatment and given back afterward to restore (rescue) the bone marrow and blood system. This treatment is only effective for certain cancers.

This is a complex treatment, which can be broken down into phases:

Outpatient

*Apheresis* is the procedure during which blood is filtered and returned to you. The filter collects your stem cells, which are then frozen and stored for later reinfusion. Apheresis is an outpatient procedure that is done in the Vince Lombardi Cancer Clinic at Aurora St. Luke’s Medical Center. Typically, this procedure takes 2 to 4 days and requires several hours each day. Patients are encouraged to bring movies to watch, crafts, or someone to talk with during the apheresis.

Inpatient

Patients generally are hospitalized for 2 to 4 weeks. This is where your chemotherapy is given and where you receive your stem cells back. This is done during the first week of your stay and your remaining weeks; inpatient is for your body’s recovery. The ASCT Unit at Aurora St. Luke’s Medical Center has eight private rooms that are equipped with a special air filtration system to protect patients with lowered resistance to disease. Visitors and staff take special precautions to protect patients from exposure to germs. Because of the prolonged hospitalization required, these rooms are equipped with DVD players and exercise bikes, and patients are encouraged to bring books, magazines and laptops or tablets.

Conditioning regimen

During the conditioning regimen, the patient receives high doses of chemotherapy through an IV, in order to kill the cancer cells. While chemotherapy affects the cancer cells, normal cells also may be affected. The major side effect is bone marrow damage, which causes low blood cell counts. A patient who is receiving chemotherapy may experience nausea, vomiting, lack of appetite, sore throat and mouth, fatigue, hair loss and skin changes. There are medications to prevent or decrease some of these side effects.

Stem cell reinfusion

Following the completion of the conditioning regimen, the patient’s stem cells are reinfused (returned to the patient). The stem cells travel through the blood to the bone marrow, where they produce healthy new blood cells. The side effects of reinfusion generally are minimal and may include diarrhea, abdominal cramping, and shortness of breath, chest pain and garlic-like odor. Any side effects should last no more than 24 hours.
Recovery
Patients remain hospitalized for 1 to 2 weeks after the stem cell reinfusion and are watched closely for signs of side effects, such as bleeding, infection and low red blood cell counts. As required, patients are given medications and blood transfusions, as well as support from the patient care team of nurses, doctors, physical and occupational therapists, social worker and chaplain. During recovery, patients are taught how to recognize signs and symptoms of infection, and prepare to take care of themselves at home.

Going home
Patients are discharged from the hospital when there is no sign of infection, side effects have been reduced and the patient is producing new blood cells. Special instructions, doctor appointments, prescriptions and possibly home care will be arranged prior to discharge. Because it takes several weeks to regain strength and for blood cells to mature, patients should not resume their usual activities immediately.

Outpatient follow-up
For at least 100 days after the reinfusion, patients will be closely monitored with frequent blood draws until blood counts stabilize. X-rays and weekly doctor appointments will be needed as well. Some patients may require additional blood transfusions and medications. When this follow-up period is over, patients return to their own doctors who will continue to monitor their progress.