

## BONE MARROW TRANSPLANT

Bone marrow is the soft material inside the bones of the body that makes blood cells (red cells, white cells, and platelets). As these blood cells go through the body, they bring nutrients and oxygen that the body needs for growth. They also provide protection against infections and bleeding.

Stem cells are formed in the bone marrow and then mature into blood cells. Then they move into the blood stream. If the stem cells are diseased or injured, serious complications, such as aplastic anemia or leukemia, may develop.

### REASONS FOR A BONE MARROW TRANSPLANT

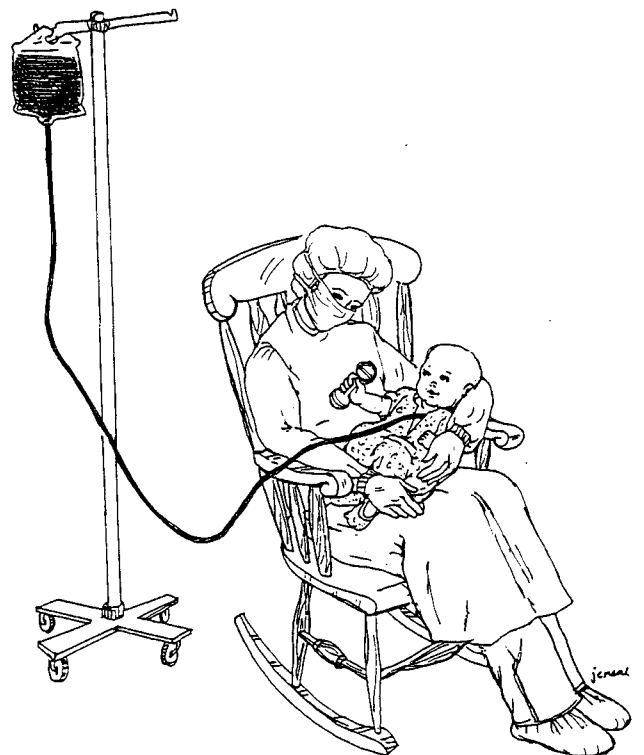
A bone marrow transplant (BMT) replaces diseased bone marrow with healthy bone marrow. In an **autologous** (aw-TAHL-uh-gus) bone marrow transplant, the patient's own bone marrow is treated and reinfused (put back into the patient). In an **allogenic** (ah-low-GEN-ik) bone marrow transplant, healthy marrow comes from a donor.

### FINDING A "MATCH" FOR THE BONE MARROW TRANSPLANT

When you and your doctor decide that an allogenic BMT may help your child, the search for a donor will be started. Usually the child's immediate family members are tested to see if their cells might be nearly the same as the child's cells. This is called HLA (human lymphocyte antigen) identity. This requires taking blood samples from the immediate family members.

The cells of each person are different. This is why the donor must be selected **very carefully**. A donor must be found that has cells most like your child's so that your child's body can use the donor's bone marrow. If the donor's bone marrow has immune cells that see the child's body cells as too different, and the child receives a bone marrow transplant, the donor's bone marrow will make cells to fight rather than to help the child's cells. If a perfect match is not found, the child could develop Graft Versus Host Diseases (GVHD). (Refer to the Helping Hand: *Bone Marrow Transplant: Graft Versus Host Disease*, HH-I-165).

Usually, the child's brothers or sisters are the best matched donors. If no match is found in the family, the Bone Marrow Registry may be checked to try to find an unrelated, matched donor.



**Picture 1** Bone marrow goes into the vein through the I.V.

## BEFORE THE TRANSPLANT

- Your child will be admitted to the hospital for several tests including a bone marrow test, a spinal tap (if necessary), blood tests, X-rays, scans, heart tests, and lung tests. Two central venous I.V. catheters will be needed and these will be placed if your child does not already have them.
- Before the transplant, your child will receive several days of chemotherapy, or chemotherapy combined with radiation therapy, to get rid of any diseased cells in the bone marrow or other parts of the body. During this time your child will not have any defense against infection.
- To reduce the risk of infection, your child will be on **Strict Isolation**. While on isolation, your child will not be allowed out of the room except for tests which cannot be done in the room. You, other visitors, and all hospital staff must wear special gowns, gloves, masks, and shoe coverings. Refer to the Helping Hand: *Bone Marrow Transplant: Isolation Procedures*, HH-I-166.
- Your child will be on a special sterile diet.

## THE TRANSPLANT

- On the day before the transplant, the donor will be admitted to the hospital. The morning of the transplant, the donor will go to the Operating Room and will be put under general anesthesia. Then some of the donor's bone marrow will be removed. This procedure usually takes 2 to 3 hours. The donor's bone marrow (which looks like blood) will be brought to your child and given through the central venous catheter.
- If the patient is the donor, his own bone marrow is collected and frozen. It is reinfused (put back into the patient) when it is needed.
- A nurse will stay in the room during the infusion and closely watch your child and his vital signs (temperature, pulse, and blood pressure).



**Picture 2** At first your child will be on Strict Isolation after the transplant.

## AFTER THE TRANSPLANT

- Your child's bone marrow cells will be treated with chemotherapy before the donor's bone marrow is given, so there will be only a small number of blood cells in circulation. It will take 2 to 3 weeks for the transplanted bone marrow to start producing healthy, working blood cells. During this time, your child may be given antibiotics and a number of blood transfusions to help prevent infection and bleeding.
- During this time your child will be in isolation. (Refer to the Helping Hand: *Bone Marrow Transplant: Isolation Procedures*.) The average length of time in the special isolation room is 4 to 6 weeks, but each child is different.
- Since your child may be nauseated, have a loss of appetite, or have a sore mouth, I.V. nutrition may also be needed to promote healing. (Refer to the Helping Hand: *I.V.: Parenteral Nutrition (PN)*, HH-II-38).
- After the infused bone marrow starts making healthy blood cells, fewer antibiotics and transfusions will be needed.
- If your child received bone marrow from a donor, the nurses and doctors will watch closely for symptoms of Graft Versus Host Disease (GVHD).
- Your child will be visited every day by an occupational therapist, physical therapist, and Child Life specialist. He will also be able to use the VCR, and when he feels well enough, have a school tutor come to his room.

### **WHEN YOUR CHILD MAY GO HOME**

Your child may be able to go home from the hospital in 4 to 6 weeks:

- If your child has mild or no symptoms of Graft Versus Host Disease (GVHD).
- If your child's new bone marrow is producing enough healthy blood cells.
- If your child is eating well.
- If your child has no infections.

### **FOLLOW-UP APPOINTMENTS**

- At first your child will need to go to the Day Treatment Unit for frequent check-ups, perhaps every day. If you do not live close to the hospital, you will need to make arrangements to stay nearby. The social worker can assist you with this if necessary.
- Frequent check-ups will be needed the first year after the bone marrow transplant. After that, check-ups will be done at least once a year for several years.

We are sure you will have many questions or concerns. Please be sure to ask your doctor or nurse.

## THINGS YOU MAY BRING TO THE HOSPITAL (BMT AND PBSCT)

As you get ready for the transplant, you'll need to know what you may bring to the hospital. There are some limits because your child must be protected from any items that may place him or her at risk for infection.

### Clothing

You may bring your child's own clothes, but please prepare the clothing in a special way. Wash the clothes separately in hot water with bleach or colorfast bleach. Then dry them on high heat. Put the clothing in a plastic bag and seal. By following these steps you will help get rid of germs that may cause infection.

Clothing must be changed every day while in the hospital. There's limited storage, so you may bring only 4 to 5 sets of clothes at a time. You can replace your child's dirty clothes with clean ones anytime.

#### You May Bring

- A new pair of slippers
- 4 to 5 sets of clothing which may include pajamas, T-shirts, underwear, socks, shorts, sweatpants, etc.
- Hats, scarves, turbans

#### Do Not Bring

- An old pair of slippers
- A robe. Since it must be changed every day, it's easier to wear the hospital robe.

### Things to Pass the Time

We suggest that you bring some items to pass the time. Games, books, magazines, writing paper, a radio, or crafts, are good choices. A general rule is that things made of paper should be **new**. This means that books, magazines, bibles, game boards, and puzzles need to be new, unopened, **or** unused. If items can be wiped off or cleaned with a damp cloth, they do not need to be new.

#### You May Bring

- New, unopened or unused books, bibles, puzzles, games, playing cards. Bring only 4 or 5 items at a time. You can exchange them for different items anytime.
- Newspapers or magazines with newspaper print. They must be thrown out after reading.
- 2 electrical items such as: radio, keyboard, cassette/CD player, blow dryer, electric razor, computer, Nintendo®.
- Battery-operated games such as Nintendo Game Boy, Walkman® radio

#### Do Not Bring

- A printer for a computer, radio, guitar, keyboard, etc.
- A speaker or amplifier for the radio, guitar, keyboard, etc.

## **Food Items**

Your child will have a special diet in the hospital. Please tell your family and friends what foods they may bring. Many patients have changes in their sense of taste from the chemotherapy, so “favorite foods” may not taste the same. And many patients will be on Total Parenteral Nutrition (TPN) during the hospital stay and may go home on TPN.

### **You May Bring**

- Food items that are a single serving and have a long shelf life, such as cans of pop or juice, cans of soup, pudding or fruit packs.

### **Do Not Bring**

- Food from **any** restaurants; for example, McDonald’s, Wendy’s, Pizza Hut.
- Home cooked food

## **Other Items**

### **You May Bring**

- New, unopened and unused personal care items such as toothpaste, soft toothbrush, and shampoo (or your child’s nurse can give you these items).
- Silk flowers in small arrangements
- Cards and letters
- One stuffed animal that can be washed weekly.
- Photographs, a calendar, or small trinkets. These items will be placed in a small wall cabinet.
- A new pillow (don’t bring a feather pillow).

### **Do Not Bring**

- Deodorant
- Live or dried plants or flowers. Things to place on the window sill or table. Everything will be put in a drawer or the wall cabinet to cut down on the amount of dust that collects and to keep your room clean.

If you would like to bring items that are not listed, ask your nurse, doctor, or social worker.