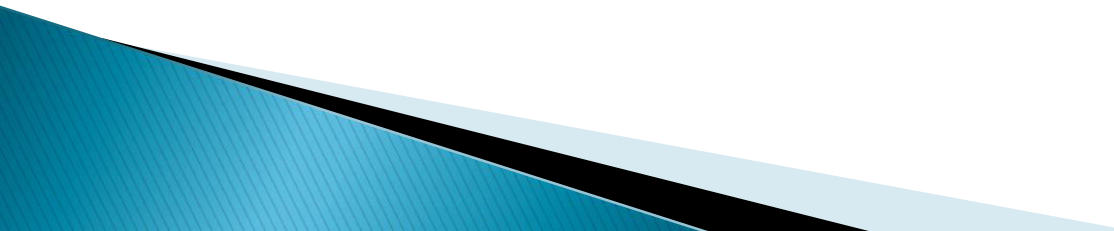


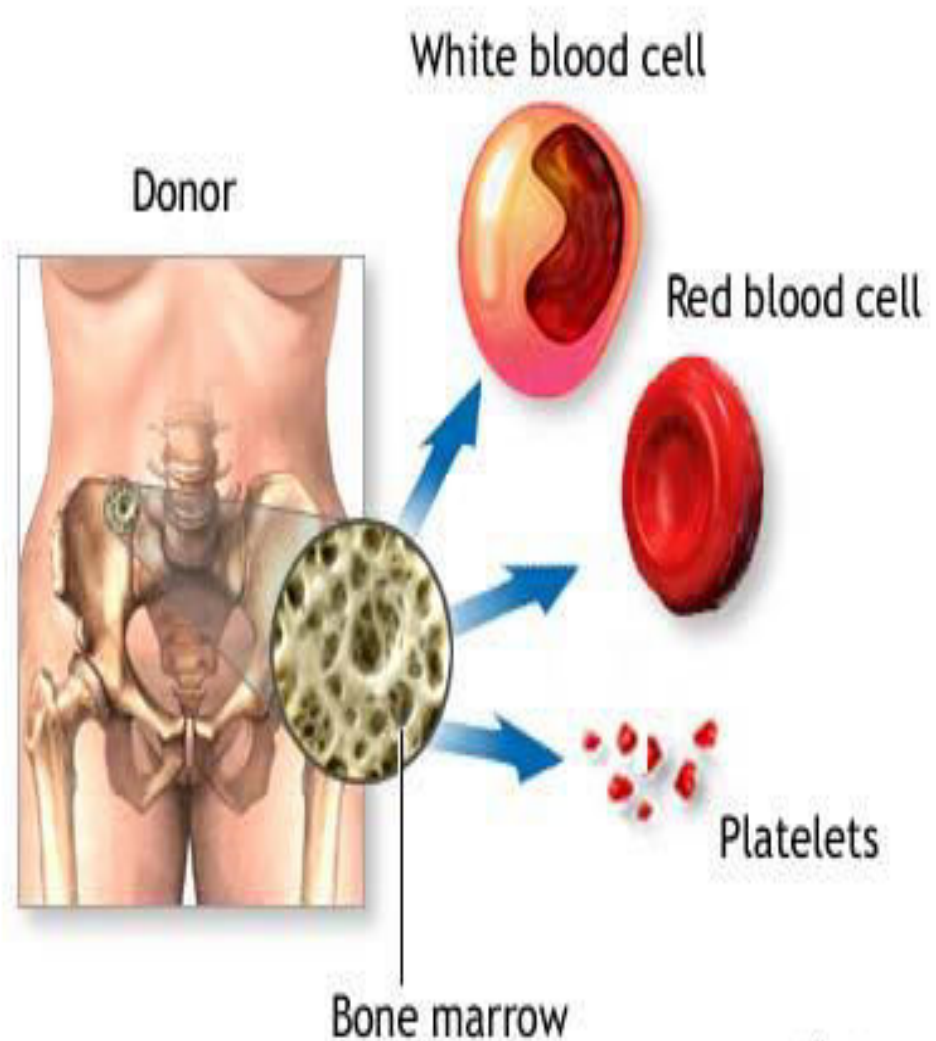
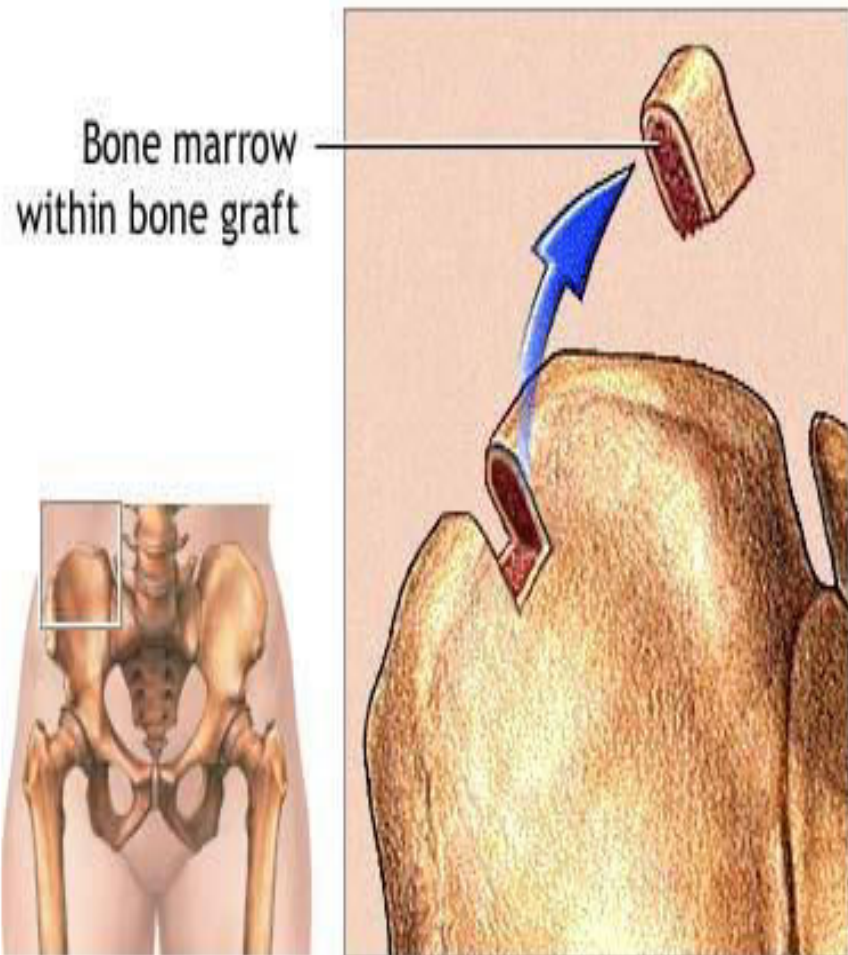


# Nursing Management Bone Marrow Biopsy

# Specific Objectives

- ▶ At the end of the class the students will be able to:-
  - ▶ Define Bone Marrow Biopsy.
  - ▶ Enlist the Types of BMT.
  - ▶ Describe the Nursing Management of BMT.
- 

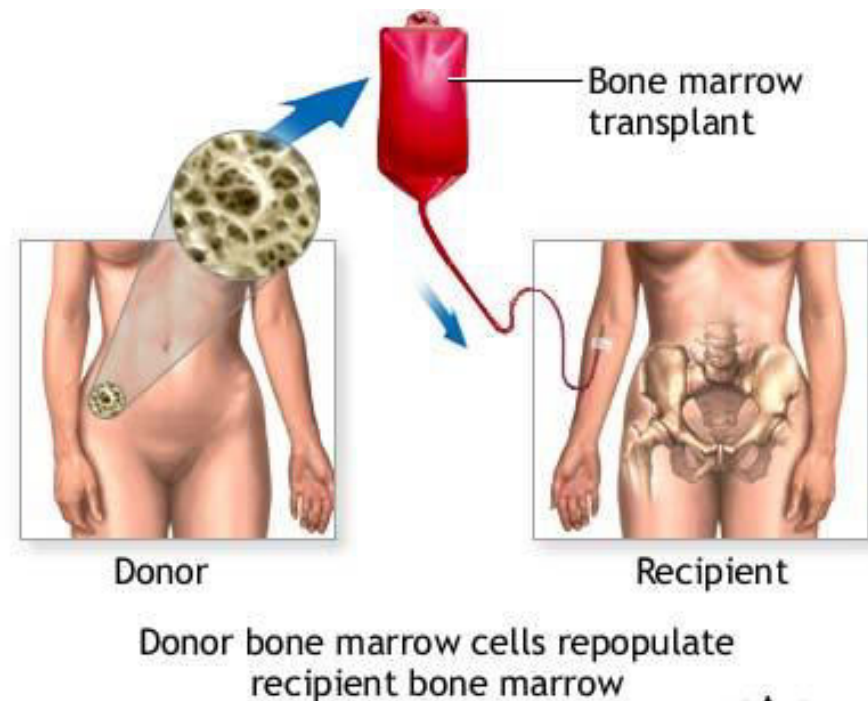
# Bone Marrow



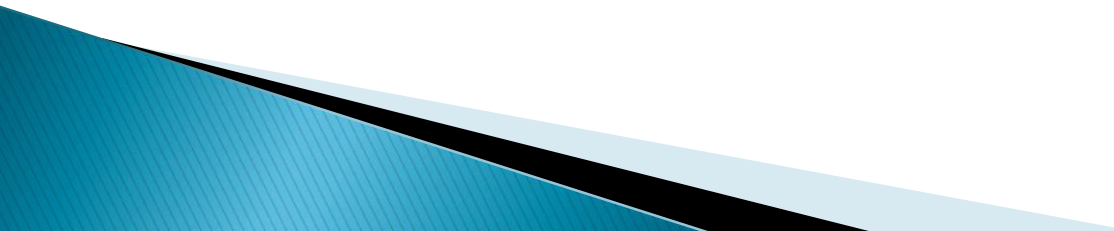


# Definition

- ▶ BMT is a therapeutic modality that offers the possibility of cure for some patients with hematologic disorders such as severe aplastic anemia, some forms of leukemia, and thalassemia.



# Types of BMT based on the source of donor cells include:

- ▶ 1. Allogeneic (from a donor other than the patient)
  - ▶ 2. Autologous (from patient)
  - ▶ 3. Syngeneic (from an identical twin)
- 

# Types of Transplants

**Allogeneic:  
Family/  
Unrelated Donor**



**Autologous:  
Self-Donation**



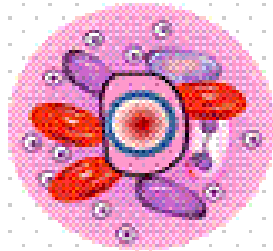
**Syngeneic:  
Identical Twin**



## The Autologous Transplant Process

### 1. Collection

Stem cells are collected from the patient's bone marrow or blood.



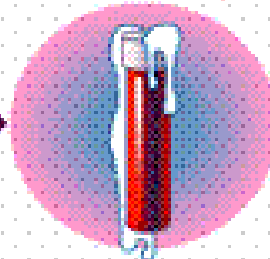
### 2. Processing

Blood or bone marrow is processed in the laboratory to purify and concentrate the stem cells.



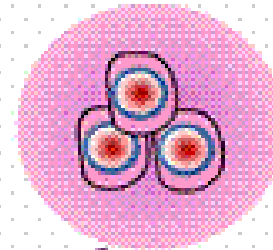
### 3. Cryopreservation

Blood or bone marrow is frozen to preserve it.



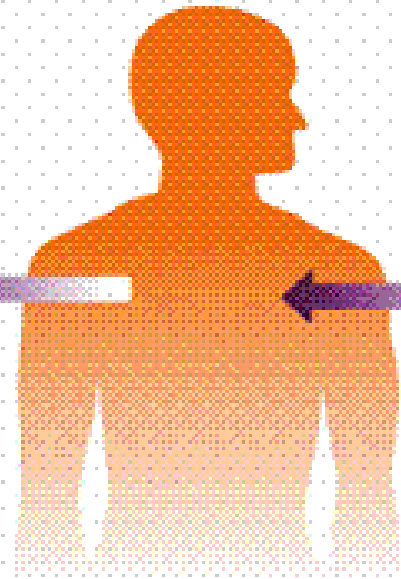
### 5. Reinfusion

Thawed stem cells are reinfused into the patient.

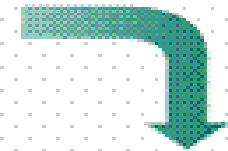
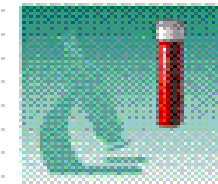
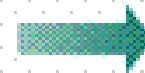
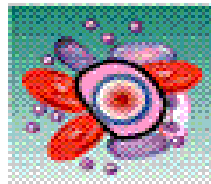
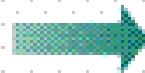
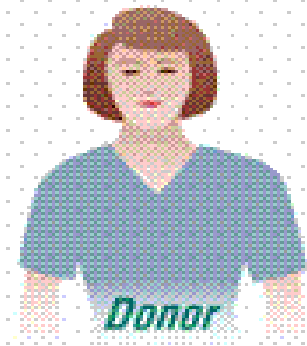


### 4. Chemotherapy

High dose chemotherapy and/or radiation therapy is given to the patient.



# The Allogeneic Transplant Process

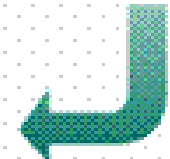
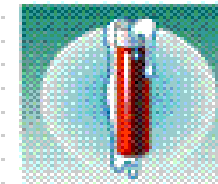
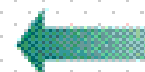
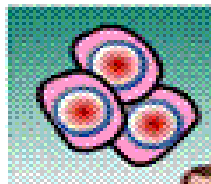
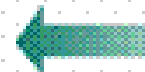
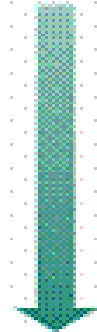


## 1 *Collection*

Stem cells are collected from the patient's bone marrow or blood.

## 2 *Processing*

Bone marrow or peripheral blood is taken to the processing laboratory where the stem cells are concentrated and prepared for the freezing process.



## 3 *Cryopreservation*

Bone marrow or blood is preserved by freezing (cryopreservation) to keep stem cells alive until they are infused into the patient's bloodstream.

## 4 *Chemotherapy*

High dose chemotherapy and/or radiation therapy is given to the patient.



## 5 *Infusion*

Thawed stem cells are infused into the patient.



# Nursing Management in Bone Marrow Transplantation

- ▶ IMPLEMENTING PRETRANSPLANTATION CARE
- ▶ PROVIDING CARE DURING TREATMENT
- ▶ PROVIDING POSTTRANSPLANTATION CARE
- ▶ CARING FOR THE DONORS

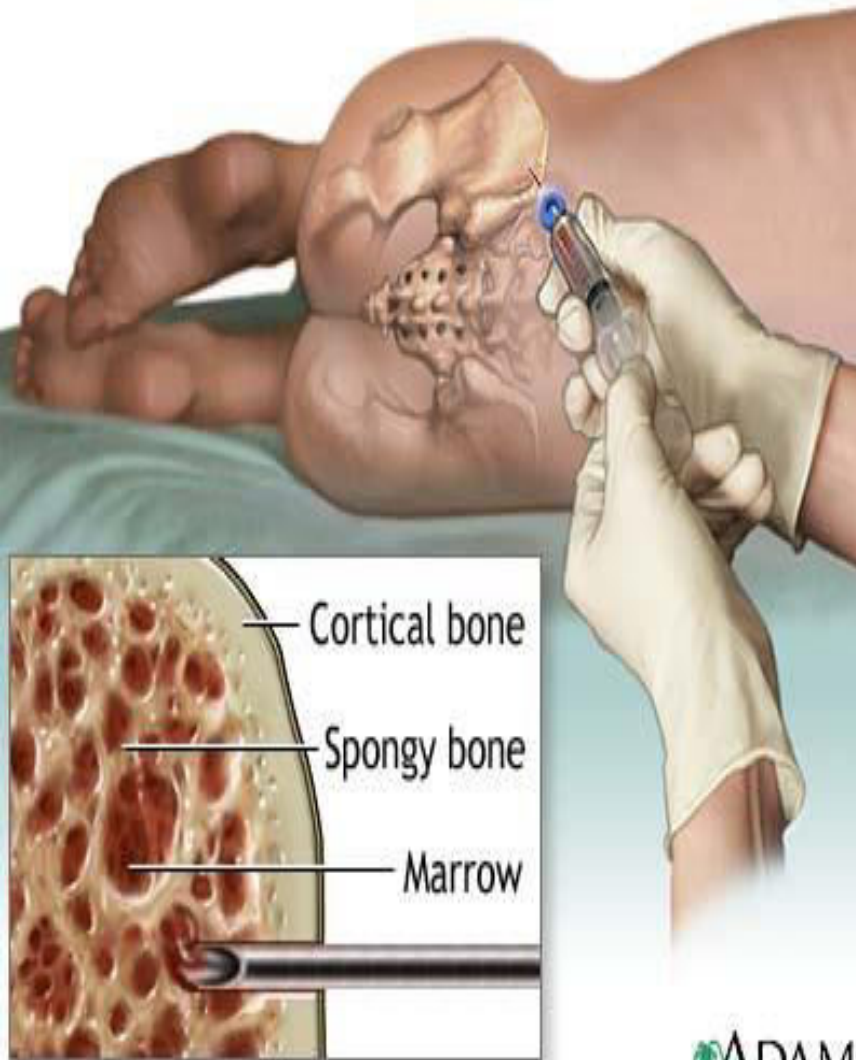


# IMPLEMENTING PRETRANSPLANTATION CARE

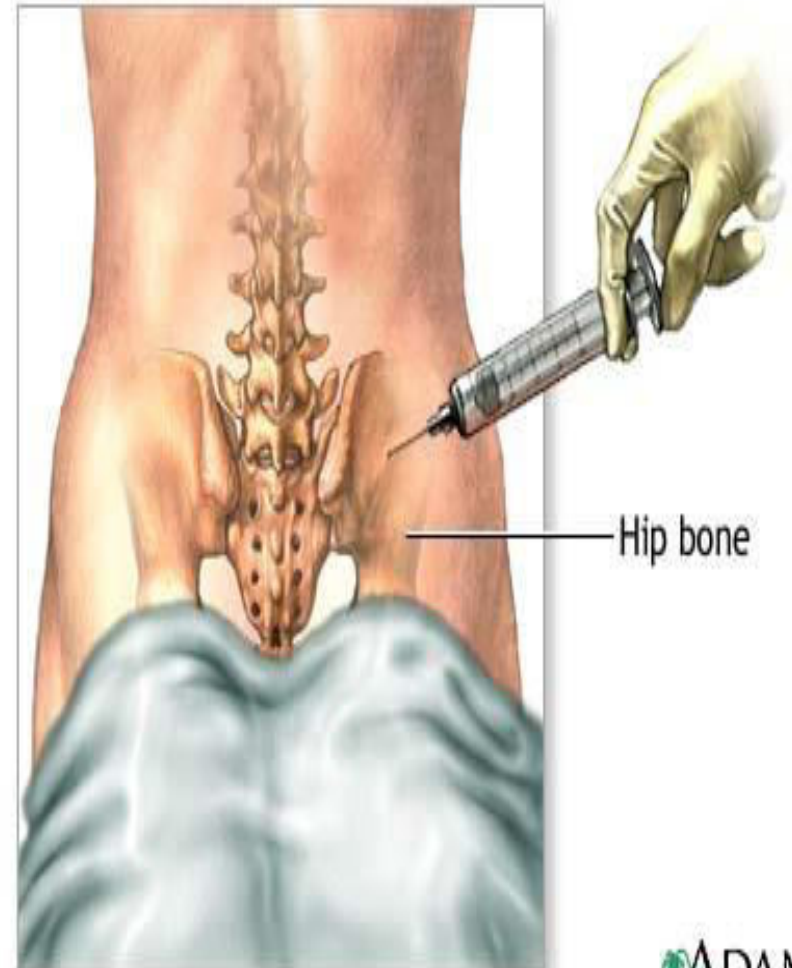
## ***EXTENSIVE PRETRANSPLANTATION EVALUATIONS TO ASSESS THE CURRENT CLINICAL STATUS OF THE DISEASE.***

- ▶ Nutritional assessments,
- ▶ extensive physical examinations and
- ▶ organ function tests
- ▶ psychological evaluations are conducted.
- ▶ Blood work includes assessing past antigen exposure (for example, to hepatitis virus, cytomegalovirus, herpes simplex virus, HIV, and syphilis).
- ▶ The patient's social support systems and financial and insurance resources are also evaluated.
- ▶ Informed consent and patient teaching about the procedure and pretransplantation and posttransplantation care are vital.

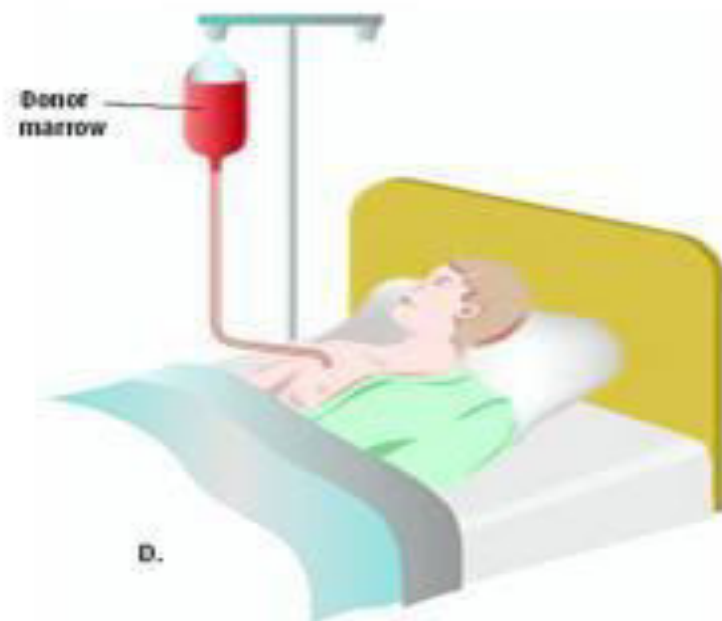
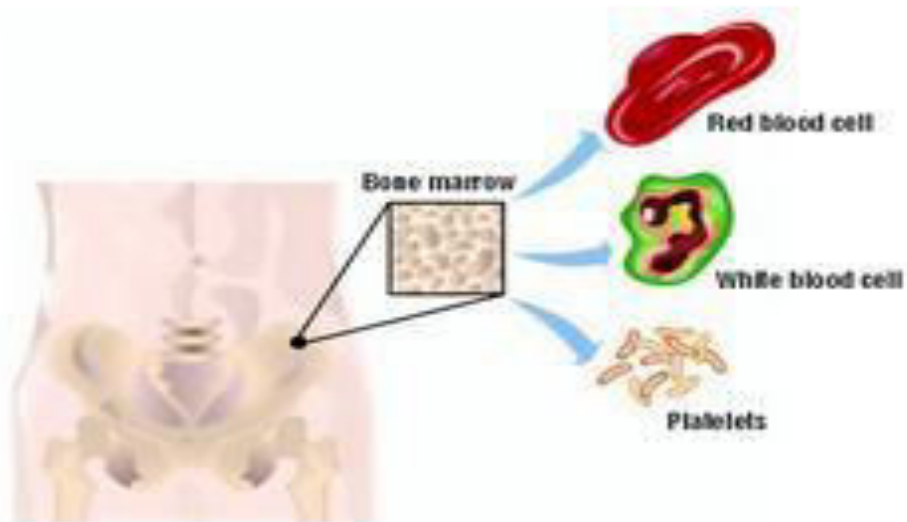
# Bone marrow aspiration



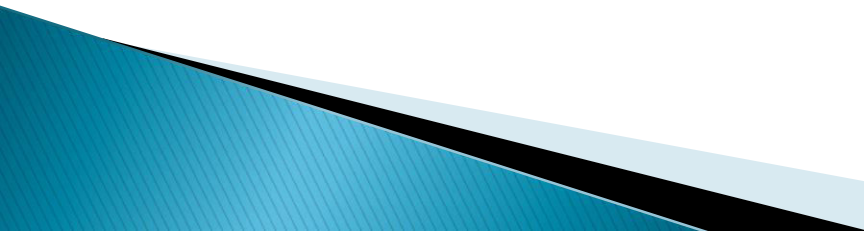
Harvesting bone marrow from the donor



## Bone marrow transplant




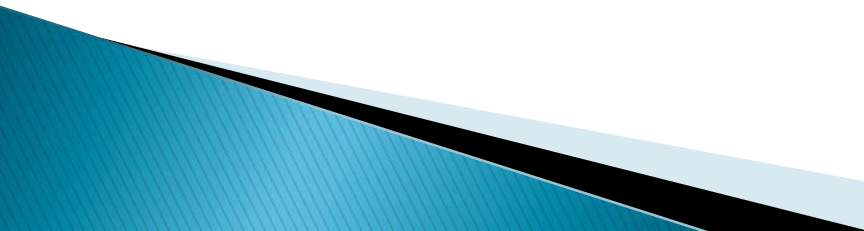
# PROVIDING CARE DURING TREATMENT (1)

- ▶ Nursing management during the bone marrow or stem cell infusions consists of
  - ▶ Monitoring the patient's vital signs and blood oxygen saturation
  - ▶ Assessing for adverse effects, such as fever, chills, shortness of breath, chest pain, cutaneous reactions, nausea, vomiting, hypotension or hypertension, tachycardia, anxiety, and taste changes
  - ▶ Providing ongoing support and patient teaching
- 

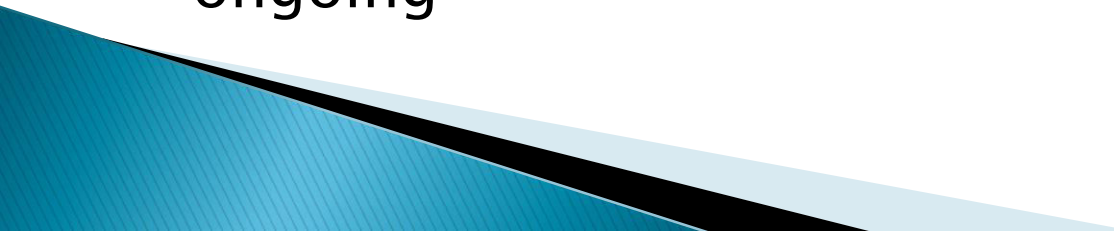


# Throughout the period of bone marrow aplasia until engraftment of the new marrow occurs – **DEATH POSSIBLE**

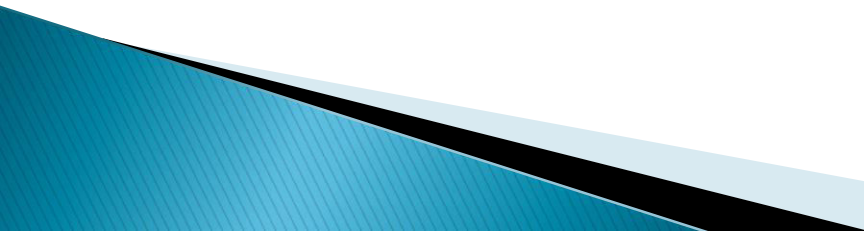
- ▶ Patients require support with blood products and hemopoietic growth factors.
  - ▶ Potential infection may be bacterial, viral, fungal, or protozoan in origin.
  - ▶ Renal complications arise from the nephrotoxic chemotherapy agents used in the conditioning regimen or those used to treat infection (amphotericin B, aminoglycosides).
  - ▶ Tumor lysis syndrome and acute tubular necrosis are also risks after BMT.
- 

- ▶ Graft versus–host disease (GVHD) requires skillful nursing assessment to detect early effects on the skin, liver, and gastrointestinal tract.
  - ▶ Venous Occlusive disease (VOD) resulting from the conditioning regimens used in BMT can result in fluid retention, jaundice, abdominal pain, ascites, tender and enlarged liver, and encephalopathy.
  - ▶ Pulmonary complications, such as pulmonary edema, interstitial pneumonia, and other pneumonias, often complicate the recovery after BMT.
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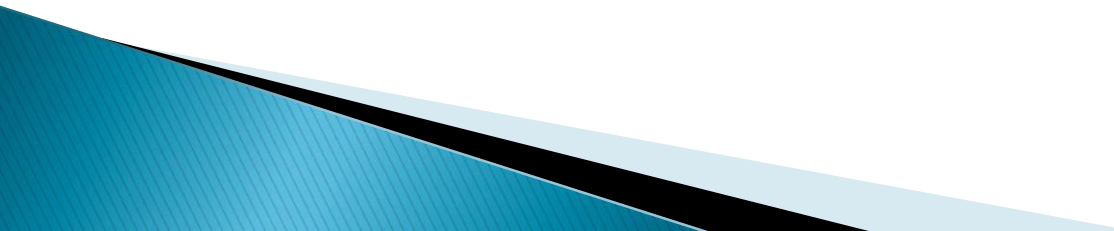
# PROVIDING POSTTRANSPLANTATION CARE

- ▶ Ongoing nursing assessment in follow-up visits is essential to detect late effects of therapy in BMT patients.
  - ▶ Late effects include infections, such as varicella zoster infection, restrictive pulmonary abnormalities, and recurrent pneumonias.
  - ▶ Sterility often results.
  - ▶ Chronic GVHD involves the skin, liver, intestine, esophagus, eye, lungs, joints, and vaginal mucosa. Cataracts may also develop after total body irradiation.
  - ▶ Psychosocial assessments by nursing staff must be ongoing
- 

# CARING FOR THE DONORS

- ▶ Donors commonly experience mood alterations, decreased self esteem, and guilt from feelings of failure if the transplantation fails.
  - ▶ Family members must be educated and supported to reduce anxiety and promote coping during this difficult time. Family members must also be assisted to maintain realistic expectations of themselves as well as of the patient.
- 

# Conclusion

- ▶ The student are able to :-
  - ▶ Define Bone Marrow Biopsy.
  - ▶ Enlist the Types of BMT.
  - ▶ Describe the Nursing Management of BMT.
- 



# Thank You

