Sources of stem cells

- Bone Marrow
- Peripheral Blood
- Placental Cord Blood

- Must not be rejected when infused
- Must "match"
The 6/6, 8/8, and 12/12 match

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Big vs Mini Transplants

**Big**
- High doses of chemo or radiation to obliterate marrow
- Infusion of stem cells
- Monitor for GVHD
- Good for diseases that relapse quickly like advanced MDS (IPSS > 2)

**Mini**
- Low to moderate doses of chemo or radiation to suppress immune system
- Infusion of stem cells
- Monitor for GVHD
- Good for diseases that relapse slowly like early MDS (IPSS < 2)
Graft versus Host Disease

- Immune reaction of Donor against Host
- Occurs 100% of the time without prevention
- Occurs 30-50% of the time with prevention
- Potentially fatal, and potentially incurable
Acute GVHD of the skin

Survival After Allogeneic BMT in Patients With Acute GVHD

GVHD

- GVHD is bad because it is toxic and potentially fatal requiring immunosuppressive medicines with significant side-effects
- GVHD is good because it reduces the risk of relapse
- The trick is to have only a little GVHD

Requirements for SCT

- A matched donor
- A healthy patient
- A good reason
  - High IPSS score
  - High risk for transformation to acute leukemia
  - Intolerable transfusion requirement
  - Neutropenia
- Some patients do not have a donor
- Some patients are not healthy enough by virtue of other illnesses
- Some patients do not have enough support
- Some patients with MDS have a good prognosis without BMT
Proceed to Transplant?

### Why?
- Cure rate for low risk disease is >50%
- Cure rate for high-risk disease is 1/3
- No difference in outcome between matched siblings and matched unrelated donors
- Placental cord blood transplantation is an option for those without donors

### Why not?
- Most patients with low risk MDS don’t need BMT
- Death rate for high-risk disease is 1/3
- An unrelated donor search takes 2-3 months and the donor decides date and source of cells
- Very little experience with CBU transplant

Transplant now or get a remission first?

- **BMT**
  - 30 survivors
  - 100 pts with MDS
  - Treat First
    - 50 CR
    - 35 No CR
  - 15 die
  - 25 survive
  - 5 survive

SCT for MDS

- Potentially curative
- Dangerous
- Innovations to improve cure rate and reduce danger:
  - Improve treatments to induce remission before transplant
  - Improve ability to predict relapse after transplant
  - Improve treatments and supportive care for GVHD