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

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)
Figure 1. NRM and REL cumulative incidence estimates (36-month) from a competing risk model, estimated separately for both conditioning regimens.


http://www.marrow.org/PATIENT/Undrstnd_Disease_Treat/Lrn_about_Disease/MDS/index.html

Probability of Survival After Allogeneic Transplant for MDS, Age >20 Years, 1998-2006
By Disease Status and Donor Type
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


Time From BMT, Months

Proportion Surviving

Surviving Grade II

Surviving Grade III

Surviving Grade IV

Surviving Grade V

Graft vs MDS effect

Relapse

% Relapse

Days

0 1000 2000 3000

GVHD

No GVHD

p=0.017

29%

Solomon et al. BBMT 11:619, 2005

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?

- 100 pts with MDS
  - 50 CR
  - 50 No CR
  - 30 BMT survivors
  - 5 CR
  - 15 CR
  - 30 survivors

- Treat First
  - 15 CR
  - 15 No CR
  - 30 survivors
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