

**Life After Allogeneic Stem Cell
Transplantation**
Leukemia and Lymphoma Society
November 6, 2009

Noelle Frey, MD

Assistant Professor of Medicine

University of Pennsylvania

Jacqueline Smith, MSN; CRNP; AOCNP

Coordinator Allogeneic Transplant Program

University of Pennsylvania

Allogeneic Stem Cell Transplantation

GOAL=CURE

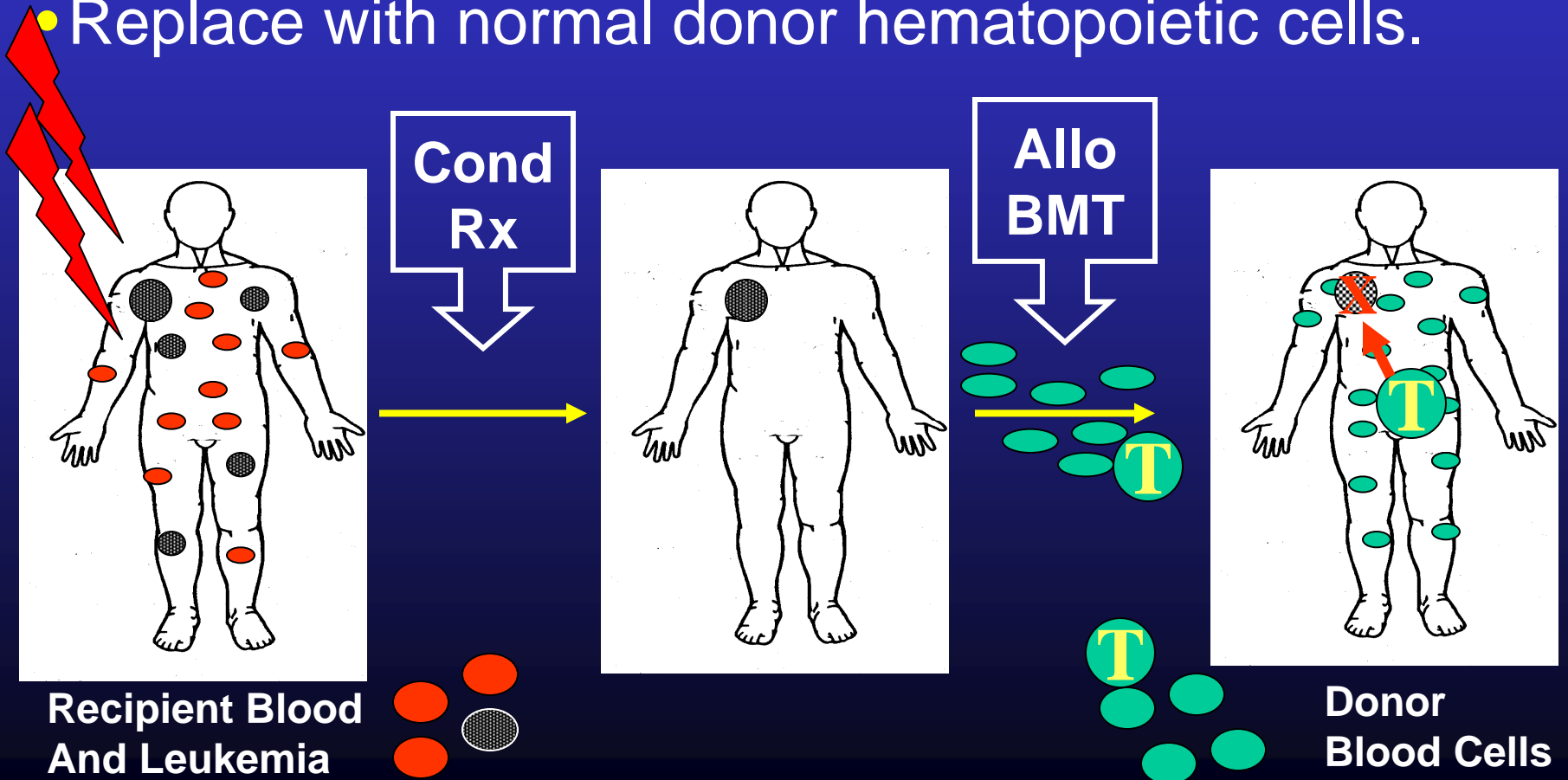
Allogeneic Stem Cell Transplantation

Cures Disease in Two Ways:

1. Intensive chemotherapy and/or radiation
 - More therapy is better
 - Receiving stem cells makes “safe”
2. New Immune system from the donor
 - Graft versus tumor effect
 - Graft versus host disease
 - Medications to weaken immune system
 - Infections

Allogeneic Bone Marrow Transplantation

- High dose chemotherapy \pm XRT :
 - Anti-tumor effects, immunosuppression, myeloablation
- Replace with normal donor hematopoietic cells.



Allogeneic SCT: Side Effects and Complications

High Dose Therapy

- Infections: short term
- Heart & Lung Problems
- Infertility
- Neurocognitive

Donor Immune System

- Infections: short term and long term
- GVHD
- Graft Failure

Other

- Relapse
- Graft Failure
- Psychological

Phases of Life After Transplant

- 2-6 Months Post Transplant: The Immediate post-transplant phase
 - Weekly visits
 - Common readmission
 - Frequent testing
- 4-12 Months Post Transplant: The “I should be feeling better but...” phase
 - Visits space out
 - Complications possible but less common
- 1 or 2 years and longer Post Transplant: The long-term follow-up phase

The Immediate post-transplant phase (2-6 months)

- Frequent visits and blood tests
- Assess symptoms
 - Infections (fevers, cough, diarrhea, urinary problems)
 - Graft-vs-host disease
 - Rash, diarrhea, nausea, loss of appetite
 - Sleeping, appetite, fatigue and activity, etc...
- Adjust medications
 - GVHD prophylaxis or therapy (cyclosporine, tacrolimus, steroids, other)
 - Antibiotics (typically 1-3 different medications)
 - Blood pressure
 - Magnesium, potassium and other electrolytes

Common medications in early post-transplant phase

- Adjust medications
 - Tacrolimus
 - Cyclosporine
 - Prednisone
 - Cellcept
 - Bactrim or Dapsone
 - Fluconazole or voriconazole
 - Acyclovir
 - Magnesium
 - Potassium
 - Blood pressure pills
 - Sleeping medication
 - Anti-anxiety therapy (Ativan, etc...)
 - Anti-depressant
 - Vitamins
- Issues
 - Too many
 - Complicated
 - Too big
 - Side effects

The “I should be feeling better but...” phase (4-12 months)

- Visits space out to every 4-12 weeks
 - Blood tests
 - Assessments for GVHD, infection, disease recurrence
- GVHD a major issue
- Other complications possible but less common
- Beginning to be more active and return to “life” a major focus.

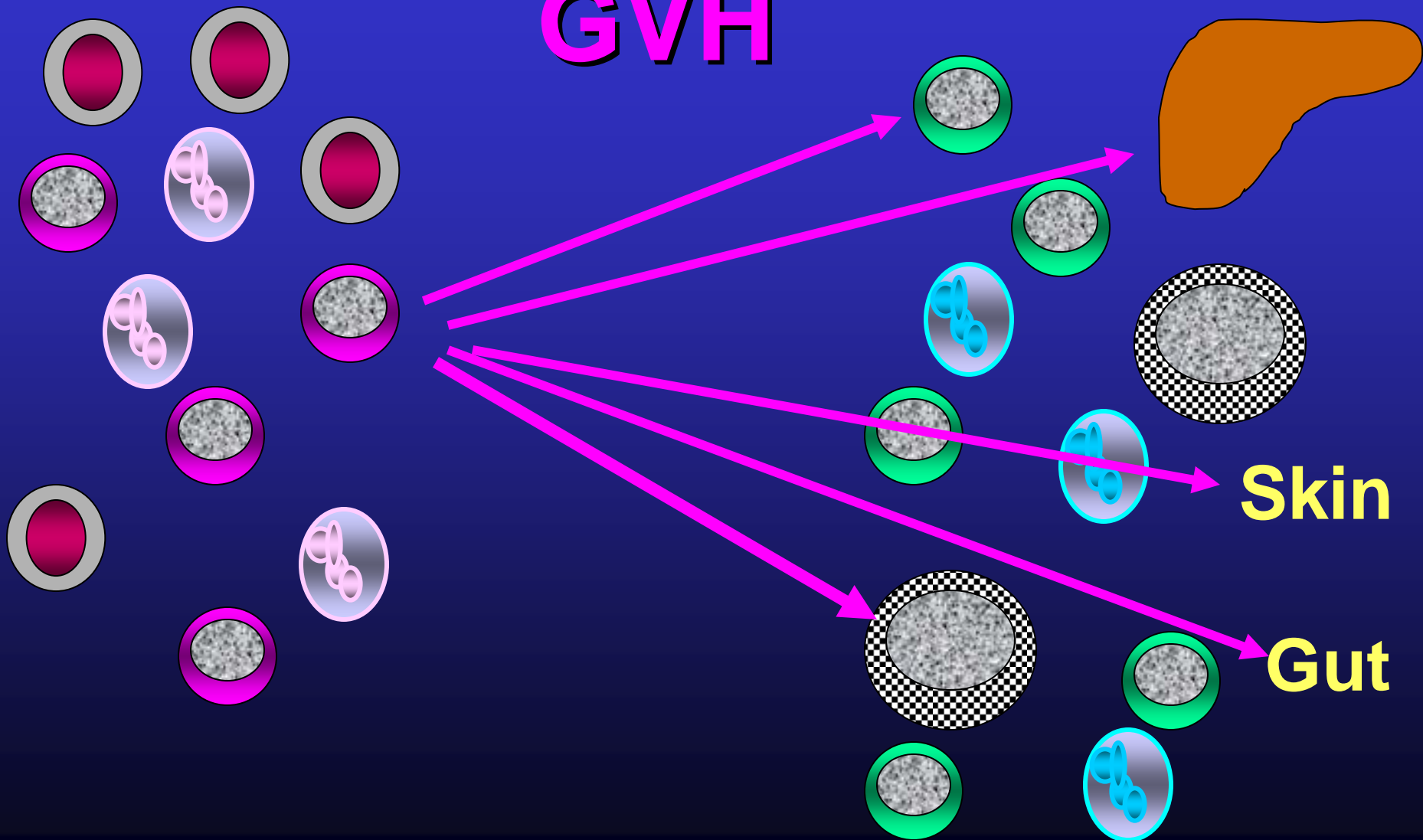
The Long Term Follow Up Phase: 1-2 Years and More after SCT

- Visits with Oncologist REALLY space out
 - Quite Variable depending on need
 - Please stay in touch
- Care shared with primary physician, cardiologist, gynecologist, endocrinologist etc.
- Relapse and GVHD become less frequent
- Risks of secondary cancers
- Return to “life” a major focus.

DONOR

HOST

GVH



Graft-vs-Host Disease

- Donor immune cells (graft) recognize the patient's cells (host) as foreign.
- Acute (early) GVHD typically in first 100 days
- Chronic (late) GVHD after 100 days and up to several years after BMT
- Can occur in 30-70% of patients
- May be triggered by infection, sunburn.
 - Dry eyes, dry mouth, skin rashes and tightness, trouble swallowing, eating, vaginal dryness and strictures, lung damage, weight loss, infections.

Acute Graft-vs-Host Disease

- Skin:
 - Mild rash
 - blistering and desquamation
- Liver:
 - cholestasis; mild to severe liver failure
- GI:
 - cramps, anorexia, diarrhea
- Anywhere: (Lung, Eye, Joints)

Chronic Graft-vs-host disease

Typically more than 100
days after BMT

Chronic GVHD

- Mucous membranes
 - Dry eyes
 - Dry mouth
 - Vaginal dryness and strictures
- Skin
 - Hypo or hyperpigmentation (dark and light spots)
 - Loss of hair
 - Thickening
 - Tightness
- Joint contractures limiting mobility
- Muscle wasting
- Weight loss (“wasting syndrome”)

GVHD: TREATMENT

- Treatment
 - Immune suppression with steroids and other medications
 - Often long term
 - 80% of all patients ultimately off therapy.
 - Side effects from medications often as bad as GVHD.
 - Muscle wasting and weakness (steroid myopathy)
 - Increased risk of infection
 - Other
 - Ophthalmology, dental evaluations as needed
 - **Physical therapy!!**
 - **Exercise**

Allogeneic SCT: Infections

- Highest risk in first year or with GVHD
- Bacterial
 - Risk with neutropenia
 - Risk with Central lines
 - Vaccinate!
- PCP: Pneumocystis
 - Prophylaxis: Bactrim or Dapsone
- Fungal:
 - Prophylaxis with fluconazole or voriconazole
 - Risk with neutropenia, steroids and GVH
- Viral
 - CMV: blood work to screen for early infection/re-activation
 - VZV (chickenpox, “shingles”) & HSV: Acyclovir prophylaxis
 - Flu; H1N1: Vaccinate!

Allogeneic SCT: Prevention of Infections

- Most patients will take prophylactic antibiotics for 3-12 mo and during GVHD.
- Vaccinations (at least 12 and 24 mo)
 - Flu, pneumovax, Hib, diptheria, tetanus
 - 2 yr add MMR
 - Hepatitis if high risk
 - Yearly flu shot
- Wash hands
- Common sense!!

But
don't
carry it
too far!



Allogeneic SCT: Relapse

- Risk of relapse decreases with time
- Risk of relapse is dependent on type of disease
- **TREATMENT: DLI: Donor Leukocyte Infusion**
 - Used (either with or without chemo) to invoke Graft vs Tumor response with goal of cure
- Clinical Trials:
 - New medications and chemotherapy drugs
 - New ways to make DLI more effective

Second cancers

- Definition: biologically distinct cancer developing after the first
- Second cancers are of two types: leukemia/MDS and solid tumors
- Leukemias usually occur within the first few years, solid tumors usually much later
- When you look at adult survivors, risk is modest 1.3-1.7x general population
- Among children survivors, risk is higher but when you look at all survivors over time the individual risk per year is rather small; standard screening for 'screenable' tumors is usually started earlier.

Allogeneic SCT: Heart Complications

- Heart Failure: “Pump not working as well”
 - much less common now with attention to chemo doses and radiation fields
 - Usually within 1- 5 years; later complications rare
- Prevention: other comorbid conditions remain important (obesity, blood pressure, etc)
- Difficult to establish benefit of antioxidants, vitamin therapy in humans
- Follow –up heart studies are very common in patients with prior anthracyclines +/- radiation to the chest

Allogeneic SCT: Heart Complications

- Pericarditis (inflammation of the outer lining of the heart)-
 - rare; associated more with prior radiation than chemo and is usually rather delayed (>10 years)
- Possible higher incidence of heart attacks from coronary artery disease; associated more with radiation exposure.
 - Has not been shown to be largely increased compared to the general population

Life after Transplant: Long term care

- Infections
 - If chronic GVHD or on steroids
 - Vaccinate
- Fatigue
 - Physical therapy and exercise
- Oral complications
 - Increased risk caries, dry mouth, mouth sores
 - Dental evaluation at 6-12 mo, annually, and as needed
- Eyes
 - Dry eyes
 - Cataracts
 - Routine exams at 1 year and annually
- Hypothyroidism (~25%) in ~25%
 - Thyroid testing yearly or as needed
- Respiratory
 - Possible long term damage. Assess as needed.

Life after Transplant

- Muscles and joints
 - Osteoporosis particularly with long term steroid use.
 - Avascular necrosis (permanent damage) to joints
 - Muscle weakness particularly with steroids
- Sexual dysfunction
 - Psychological and physical
 - Discuss with caregivers
 - Hormonal testing and replacement as needed
 - Common sense
- Premature menopause and infertility
 - Most patients
 - Not a method of birth control
 - Yearly exams and testing as needed
- Quality of life and psychosocial adjustment

Life after Transplant

- Quality of life and psychosocial adjustment
 - Chronic fatigue
 - Anxiety
 - Relapse
 - Other cancers
 - Concentration
 - Job loss
 - Changes in personal relationships
- Discuss with
 - Medical care team
 - Professional counseling
 - Support groups
 - Other patients
 - And remember...

Depression and Anxiety

- A certain level of depression or anxiety are normal and expected.
- Ongoing high levels of psychological distress should be treated aggressively
- Seek support from family, friends and professionals (social work, physicians, psychologists)

How Do I Cope?

- Everyone is different and different coping strategies work differently for everyone
- Reduce as many stressors as possible
- You are more than your illness
- Talking helps: Can relieve distress and help integrate your trauma into your life
- Engage in activities that you enjoy/new activities
- Set short term goals

Managing Relationships with Friends and Family

“An Individual Doesn’t Get Cancer,
A Family Does”

(Terry Tempest Williams)

Conclusion

- “The diagnosis of cancer creates a sense of urgency about time that goes along with the uncertainty it causes. However, the person who can say “I’m just going to take one day at a time” is able to stay focused on the tasks of that day. The person who hardly enjoys today because of concerns and worries about tomorrow has a much harder time dealing with illness....Hard as it is to keep thinking that way, coping with cancer is easier if you try not to focus on all the challenges that may lie ahead, but rather, stay focused on today, during which you can accomplish something despite the problems caused by the treatment.” (Dr. Jimmie Holland, 2000)

Resources

- ❑ Leukemia & Lymphoma Society www.lls.org or 1-800-482-2873
- ❑ National Marrow Donor Program- Office of Patient Advocacy www.marrow.org or 1-888-999-6743
- ❑ National Bone Marrow Transplant Link www.nmbtlink.org or 1-800-546-5268
- ❑ Onco Link www.oncolink.upenn.edu
- ❑