

Extracorporeal Photopheresis (ECP): A Treatment for Some Patients with Graft-versus-Host Disease (GVHD)

**Celebrating a Second Chance at Life
Survivorship Symposium**

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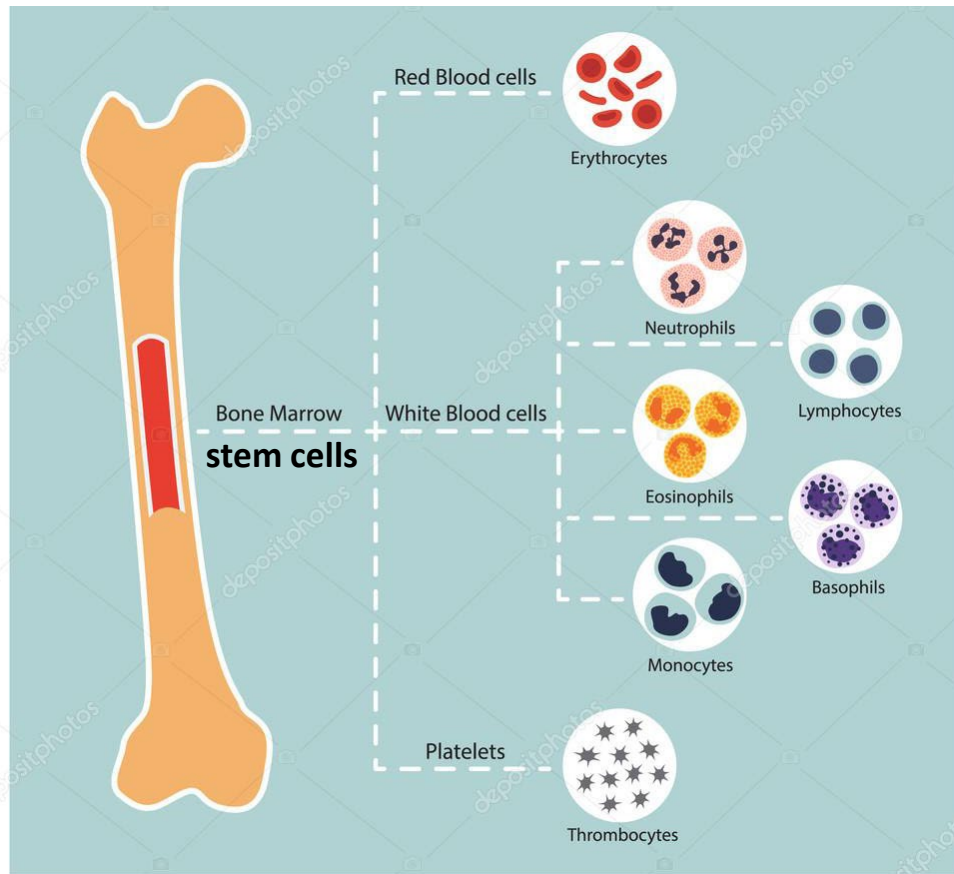
Learning Objectives

- Learn how ECP works
- Understand how ECP differs from other treatments for graft vs. host disease
- Identify who might benefit from ECP

Outline

- How graft vs. host disease develops
- Usual approach to graft vs. host disease treatment
- How ECP works
- Pros and Cons of ECP treatment

Graft vs. Host Disease Review

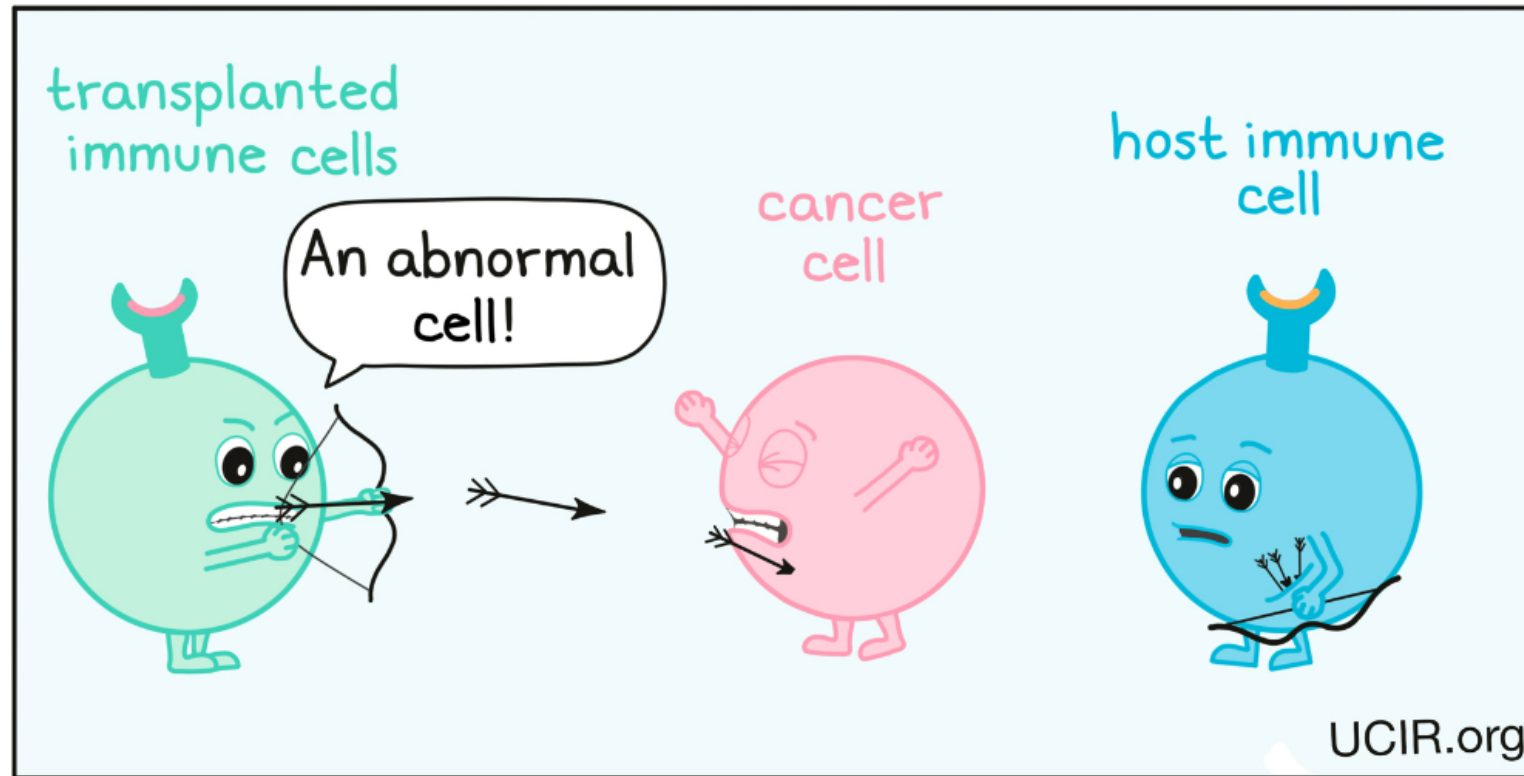


- Bone marrow = factory where blood cells are made
- Stem cell = single prototype that can develop into any kind of blood cells
- Donor's stem cells have 2 jobs:
 1. **Manufacturing:** supply new stem cells (prototypes) to regrow a healthy marrow
 2. **Surveillance*:** supply new immune cells to protect against cancer relapse

*For patients who get a transplant to treat cancer

The Transplanted Immune System

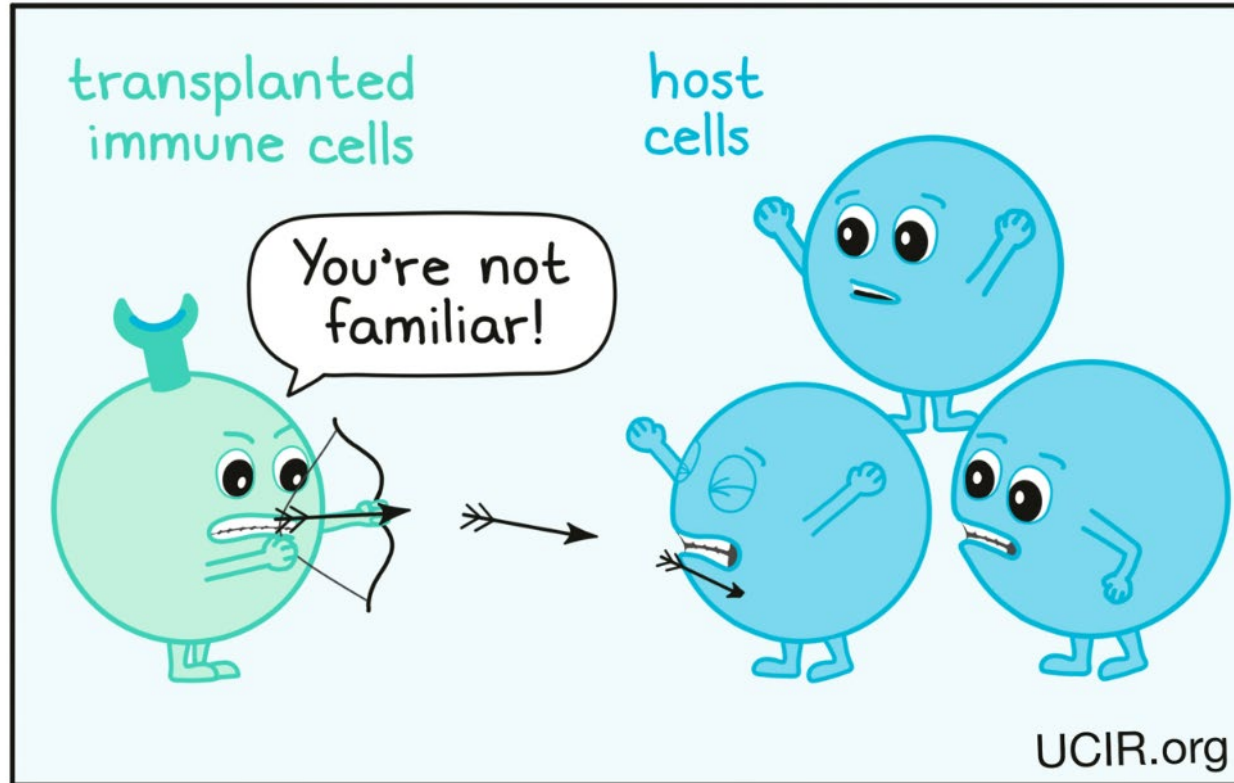
Graft-versus-Leukemia effect



transplanted (grafted) cells attack and kill cancer cells

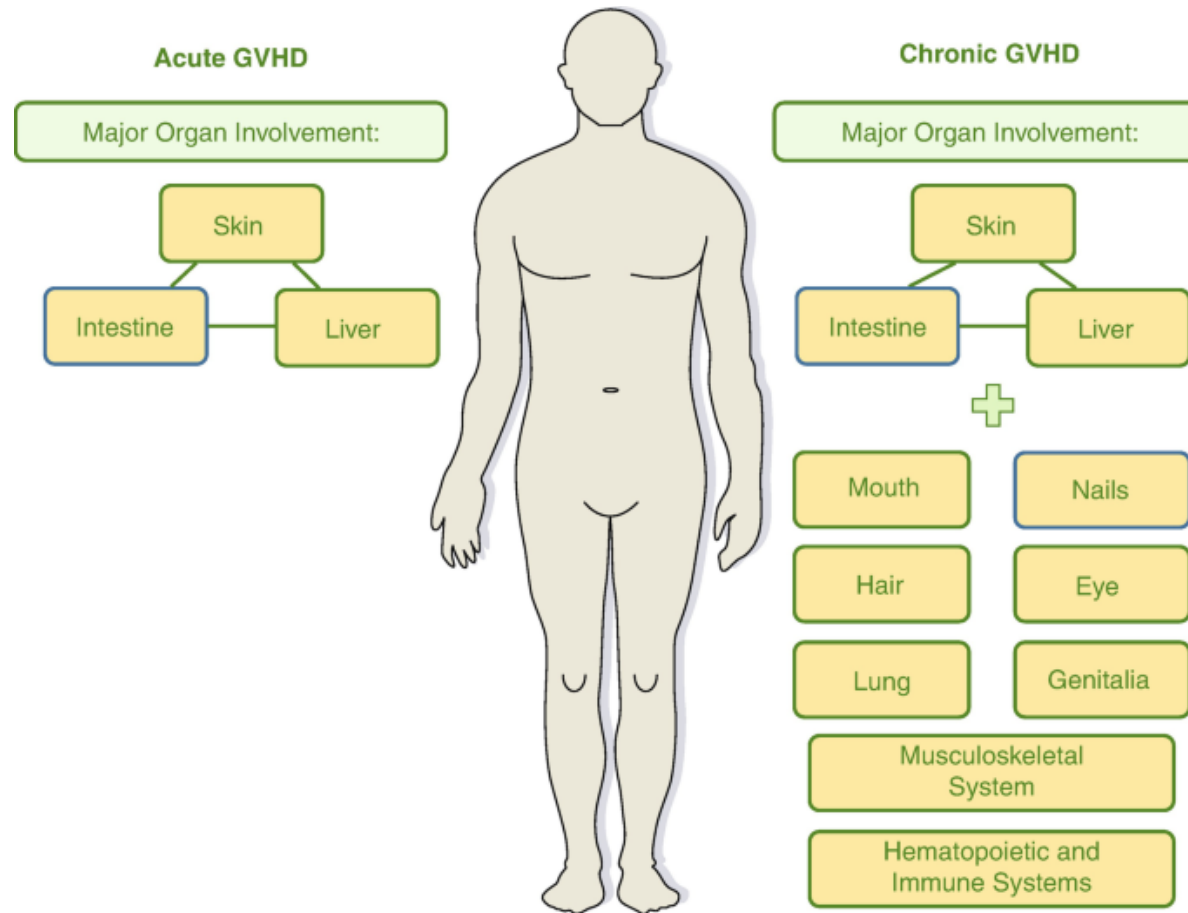
The Transplanted Immune System

Graft-versus-Host Disease

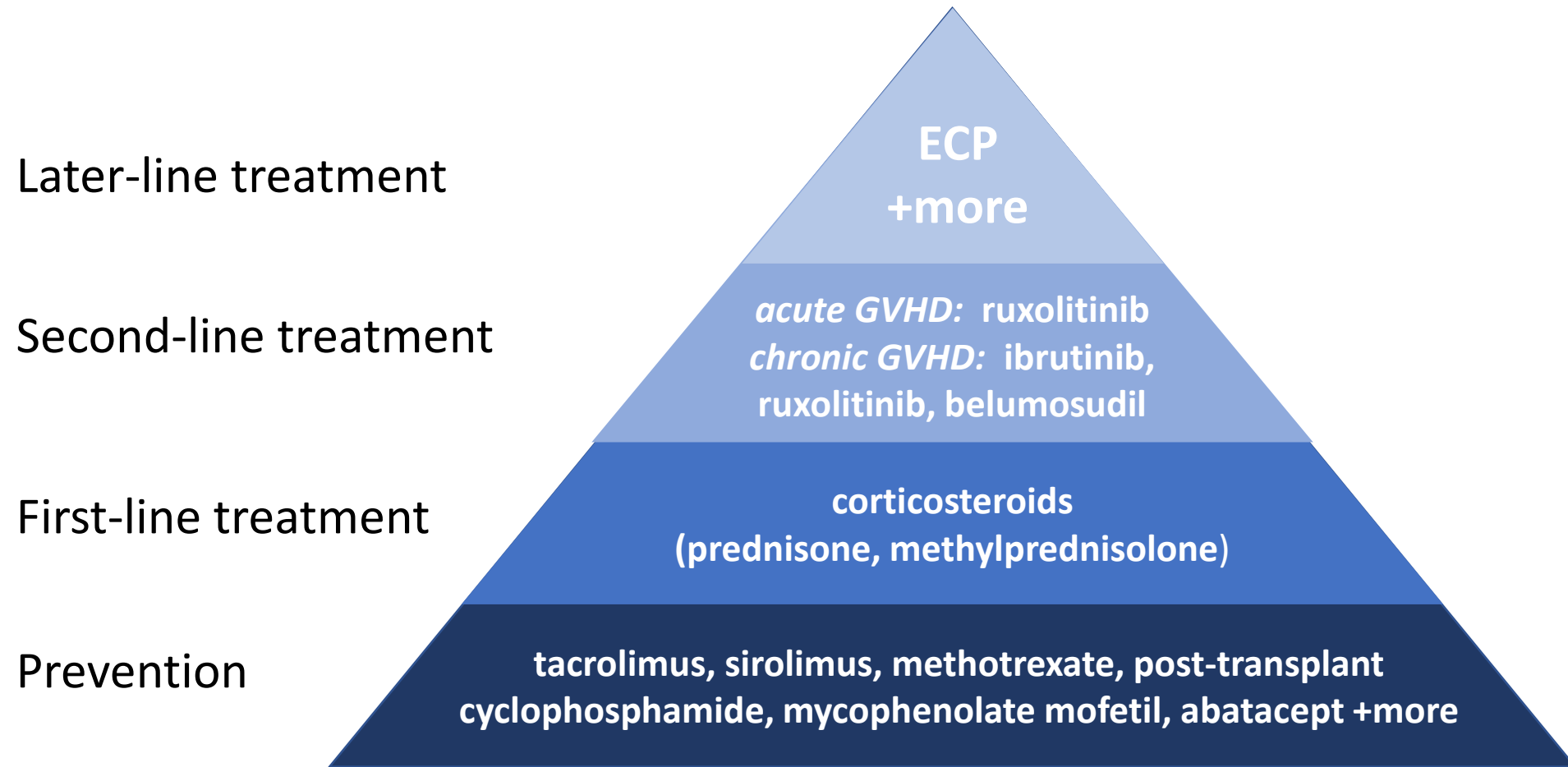


transplanted (grafted) cells
attack and kill host cells

Targets of Graft vs. Host Disease



Graft vs. Host Disease Prevention & Treatment*



Ahmed Z & Vierling JM, *Liver Immunology* (2020) pp. 551-582. *Usual approach.

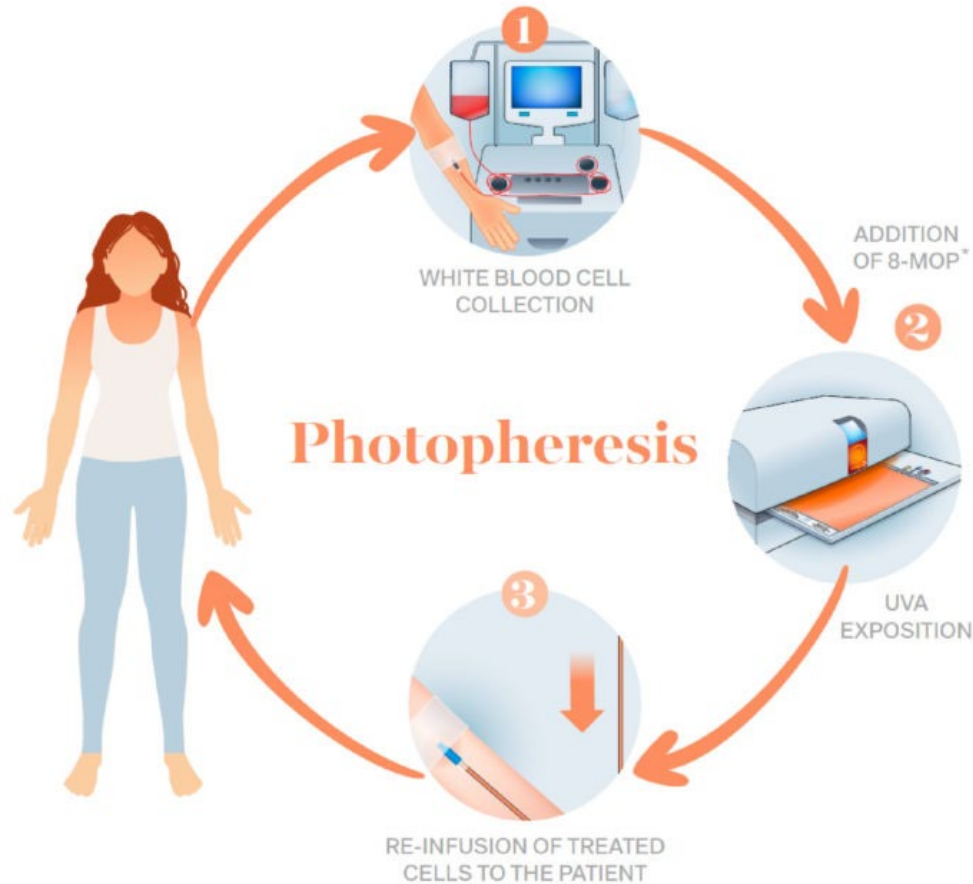
Introduction to Extracorporeal Photopheresis (ECP)

Extracorporeal Photopheresis (ECP)

- extra = outside
- corporeal = the body
- photo = light
- pheresis = removing blood from the body, manipulating it, then returning it to the body

ECP = light therapy performed on blood cells which are removed from the body and then returned

Introduction to Extracorporeal Photopheresis (ECP)



- Patient is connected to an apheresis machine
- Blood is removed and blood cells are separated
- A light sensitizer is added (8-methoxypsoralen)
- Blood + sensitizer mixture is exposed to ultraviolet A light
- Treated blood cells are returned to the patient

Image: macopharma.com

How Extracorporeal Photopheresis Works

- Changes the levels of chemicals (cytokines) that affect inflammation
- Decreases levels of immune cells that contribute to GVHD
- Increases levels of “tolerant” immune cells



Is Extracorporeal Photopheresis Effective?

- Limitations of most published studies: small numbers of patients, variation in patient populations and ECP schedules, retrospective design

Acute GVHD:

- Reported response rates 60% and higher
- Best responses in patients with skin involvement, early initiation (15 vs. 21 days)

Chronic GVHD:

- Reported response rates more variable (30%-75%)
 - Best responses in patients with skin, oral cavity, GI, and liver involvement
- Your care team can compare ECP to other therapies to predict what treatment has the best balance of risks and benefits

Extracorporeal Photopheresis: Logistics

Treatment Schedule

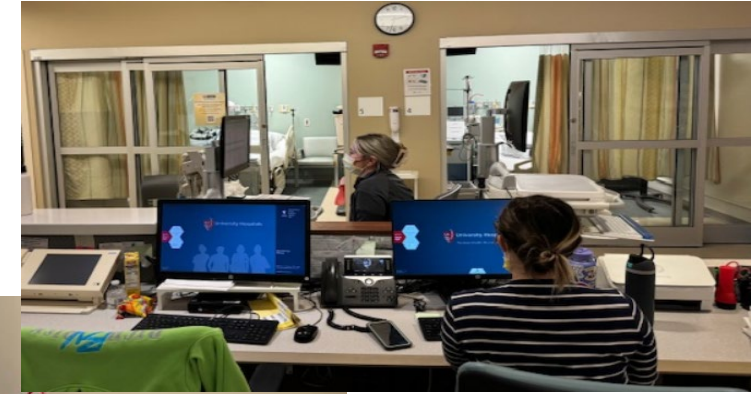
- Twice weekly, then weekly, then every 2 weeks

Typical appointment

- Vital signs, labs
- IV access
- Transfusions or electrolyte infusions if needed
- ECP procedure

Duration of treatment

- Months to years



Seidman Cancer
Center Apheresis Unit

Pros and Cons of Extracorporeal Photopheresis

Pros

- Low risk of infection
- Doesn't decrease blood counts
- Can be added to other treatments
- Can be given in or out of the hospital

Cons

- May be inconvenient
- May require port placement
- Can take time to work
- May not be available at transplant center

Candidates for Extracorporeal Photopheresis

- Moderate to severe symptoms of graft vs. host disease
- Partial response or lack of response to steroids
- Appropriate IV access
- Laboratory criteria
- Availability at transplant center

Acknowledgments

Cell Therapy Program at Seidman Cancer Center

- Director: Koen van Besien, MD, PhD
- GVHD Clinic: Linda Baer, CNP
- Apheresis nurses
- Patients and caregivers



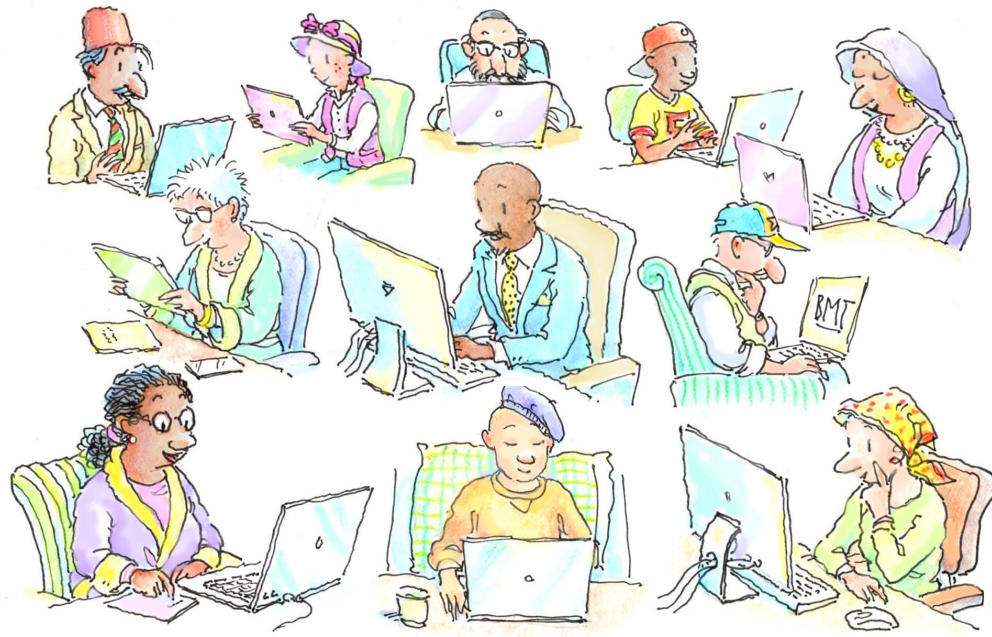


Questions?



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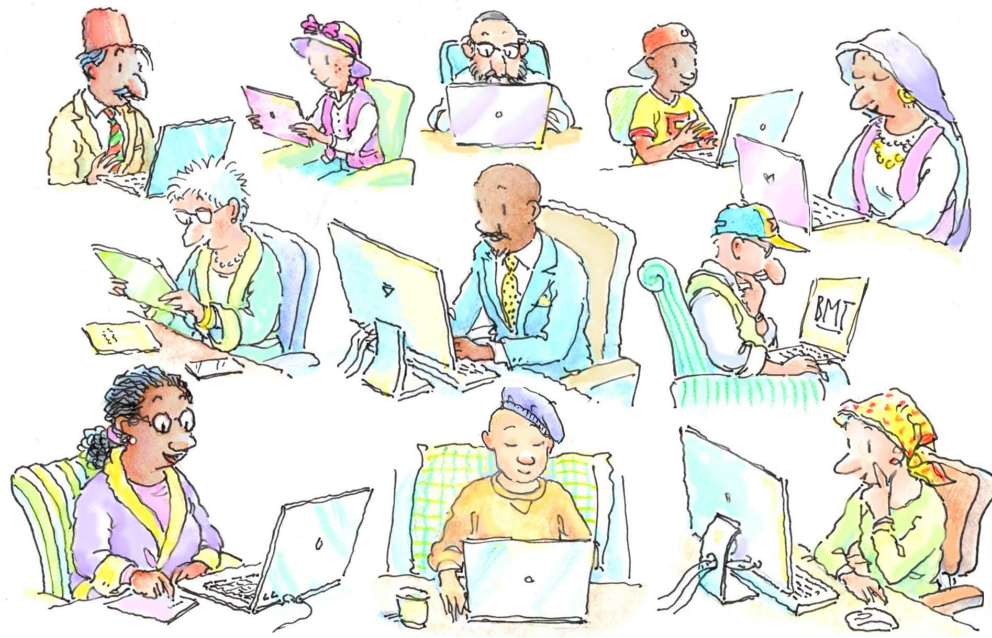


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