OneMatch Network Overview
and
Stem Cell/Bone Marrow Transplantation

Blood Matters
2010-10-29
Sue Smith, Executive Director
Declaration

• The presenter does not have any involvement with the industry that may be perceived as potentially influencing the presentation of the educational material contained within.
Objectives

1) To provide and overview of the OneMatch program
2) To review the matching process of donor and patient
3) To provide and overview of Stem Cell/Bone Marrow Transplantation
OneMatch Overview

• Recruits and maintains volunteer unrelated donor information
• Searches for matched donors for patients
  • Ensures donors are healthy and able to donate
• Coordinates the collection of stem cells in Canada and around the world
OneMatch Fast Facts – October 2010

• Searchable donors: **264,876**
• Canadian Transplant Centres: **18**
• Canadian Collection Centres: **10**
• International Registries: **64**
  – Over **14,531,945** registrants worldwide
• International Cord Blood Banks: **44**
  – Over **443,840** umbilical cord blood units

Francis,
OneMatch Registrant
Stem Cell/Bone Marrow Transplant Indications

Adults and children with life threatening diseases, such as:

– leukemia

– aplastic anemia

– immune dysfunctions

– genetic disorders

Danny,
OneMatch Registrant
Why Unrelated Donors?

• HLA Typing: inherited genetic markers

• Only 30% of patients have a match in family

• Unrelated donors are often from the same ethnic group as the patient

Leila,
OneMatch Registrant
& whole blood donor
How Are Stem Cells Collected?

- Marrow - surgical procedure in hospital
- Peripheral Blood - injections, then apheresis
- Umbilical Cord blood is obtained at birth, stored and frozen in a “bank”
- Donor’s marrow replaced in 4-6 weeks

Mike,
Stem cell & whole blood donor
Hematopoetic Stem Cells

- Hematopoetic stem cells are “not yet mature” (undifferentiated) cells that can divide and develop into any one of the three main types of cells found in the blood:
  - Red blood cells, which carry energy-giving oxygen from the lungs to the entire body;
  - White blood cells, important immune cells that play an important role in fighting bacteria and viruses that cause infection; and
  - Platelets, which help blood to clot when bleeding occurs.
How Are Donors and Patients Matched?

- Stem cell matches are determined according to DNA markers on white blood cells called Human Leukocyte Antigens (HLA).

- A buccal (cheek) swab sample is collected and tested for six of these antigens (HLA-A, HLA-B and HLA-DRB1).
The Matching Process
Diagram of HLA Inheritance

Mom
A3  A32
B35 B27
DR13 DR14

Dad
A2  A30
B7  B44
DR15 DR4

Child #1
A3  A2
B35 B7
DR13 DR15

Child #2
A3  A30
B35 B44
DR13 DR4

Child #3
A32 A2
B27 B7
DR14 DR15

Child #4
A32 A30
B27 B44
DR14 DR4
Is HLA the only factor in matching patients and donors?

- Other factors:
  - ABO blood group
  - CMV (cytomegalovirus) status
  - Donor’s age
  - Donor’s sex
  - Donor’s history of antigen exposure (previous blood transplants, pregnancies, etc.)
How To Become a Donor?

• You must be between ages 17- 50
• Must be healthy, and committed to all patients
• Register at www.onematch.ca
• Buccal Swab collection at enrolment
• You’re registered until 60th birthday
• Confirmatory Testing: potential match
• Workup: you’re the “one match” to save a life
Three Matching Scenarios

- Canadian Donor for Canadian Patient
- Canadian Donor for International Patient
- International Donor for Canadian Patient
OneMatch Donor Matching Process

Patient needs transplant

Recruitment → Registration → HLA Typing → Search → Extended HLA Typing/Confirmatory Typing

Successful

Registrant eligible

Sit on Registry

Potential donor identified

Post-Donation Follow-up

Workup

Best match identified
Canadian Patient Searches - The Demand And Need Continues to Increase

All patient ethnic origins

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Total
Canadian Patients Transplanted

Canadian Unrelated Transplants 2002-2010

- International Donor
- Canadian Donor
Canadian Patients Transplanted With Cord Blood Stem Cells

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<td>2009/2010</td>
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Canadian Stem Cells To International

Percentage of Canadian Exports

- United States
- Germany
- Italy
- Australia
- United Kingdom
- Argentina
- Netherlands
- France
- Spain
- Israel
- Other

25
20
15
10
5
0
International Stem Cells To Canada

Percentage of Stem Cells Imported

- United States
- Germany
- United Kingdom
- Italy
- France
- Other
Ethnic Composition of OneMatch Network

264,876 Canadian Registrants

Caucasian, 81.9%

Other, 3.1%

South Asian, 0.4%

Chinese, 2.0%

East Indian, 1.9%

Unknown, 4.8%

Aboriginal, 0.9%

Hispanic, 0.5%

Asian, 3.3%

Black, 0.6%

Multi-ethnic, 0.3%

Southeast Asian, 0.2%
OneMatch Recruitment – Last 6 Years
(New HLA Typed Registrants Added)
Patient & Transplant Liaison Specialist
(Halifax, Toronto, Vancouver)

- Provide information on stem cell transplants to patient, their friends, and family members
- Provide generic information on search process, specifics are for medical team
- Help organise education and swabbing events to promote registration, particularly for non-Caucasian registrants
- Strengthens messages patients receive from TC
Questions?

Thank you!

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