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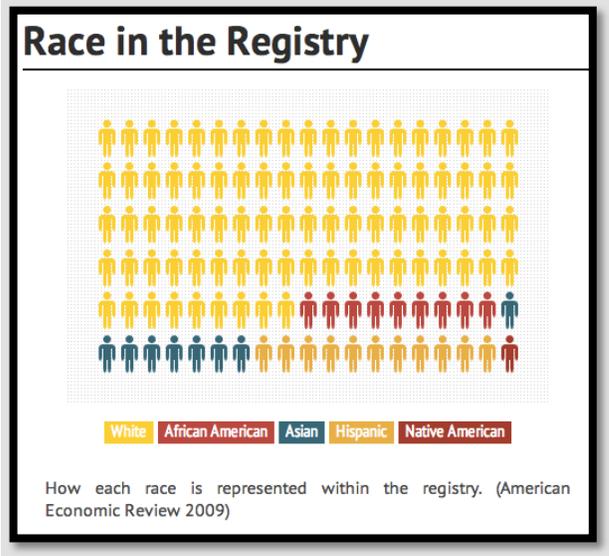
Linear Essay

Every four minutes someone is diagnosed with a blood cancer. For many of these patients, a bone marrow transplant or a peripheral blood stem cell (PBSC) transplant is their only chance for a cure. Only 30% of patients find a perfect Human leukocyte antigen (HLA) match within their family. The remaining 70% of patients are left with the international bone marrow, stem cell, and chord blood donor registry as their only hope for finding a match. It is wonderful that such a database is set up to help link patients with generous donors who register in hopes of saving a life.

The first registry in America was the National Bone Marrow Donor Registry (now known as Be the Match) started in 1979. Many countries have their own registries, and many have multiple. Today most of them combine to make up Bone Marrow Donors Worldwide (BMDW). Today BMDW is made up of 58 stem cell donor registries as well as 38 chord blood banks. By connecting the world's registries, BMDW facilitates the process of finding an unrelated donor for patients around the world.

However, while there are 7,500 Americans seeking a donor in the registry on any given day, only about 3% of the eligible American population is in the registry. A person is considered eligible if they are in general good health, between the ages of 18 and 55, at least 4'10" and 110 pounds, and weight less than the maximum weight at recruitment guidelines. While the database has grown greatly over the past decade, patients do not have decent odds of finding a match. The probability of not finding a match is even higher and scarier for minority patients. While Caucasians are able to find a donor about three quarters of the time, Hispanics drop drastically to 45%, and then Asians at 40%, and Blacks to 25%. Multi-racial patients have an even harder time finding a donor.

While a perfect HLA match is not dependent upon race, people of similar ancestry generally match better. People that are not Caucasian or are of mixed descent have the hardest time finding their life-saving match from the registry. Also, when called to be a donor, minority donors are more likely to back out or not be located. Below is an info-graphic illustrating race representation in the registry.



It is important to grow the registry, especially with potential donors of diverse backgrounds. Much research has been done about the recruitment process for bone marrow donors. Hyde and White (2013) even isolated the characteristics of a person most likely to register. In 2001, Laver wrote about a specific education program that could target African Americans to encourage joining the registry. Equally helpful, Johansen, Schneider, McCaffree, and Woods (2008) discussed very particular reasons that could cause donors (specifically African Americans) to drop out of the donor pool. Some of the most prevalent observations were that females were more likely to consider joining than males, and that blood donors often showed more interest as well (my findings pictured below). Also, the most significant difference I could determine from my own research between the data of the females versus the males is that while 3 girls said they would not

go to a swab drive and 3 were indifferent, this only made up 3.8% of the girls who had no inclination to attend. While the male counterpart had only 1 in this category, he decided he was "indifferent," he makes up 6.25% of the male sample. Thus it is clear the sample size of the male population should be grown for further research.

Regular Blood Donors Registered



Regular Blood Donors

Every single student who donates blood, platelets, or plasma regularly, is already registered as a bone marrow and PBSC donor.

However a large interference was often fear and convenience. It wasn't until after subjects learned about how noninvasive the donation procedure was as well as the fact that everything is free of charge, did they really start to express interest in joining the registry. A big motivator was the convenience and opportunity of having a swab drive immediately in a potential donors presence. If someone would have to find a donation center or register online on her own, she likely would never pull the trigger and actually join.

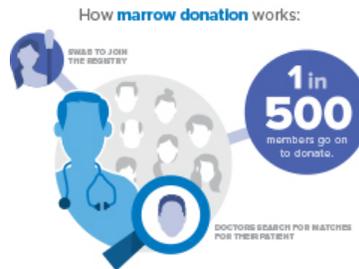
Studies showed that a major reason some people hadn't joined the registry was just because they were never given the opportunity. Left up to their own devices, individuals rarely register on their own. This is why swab

drives are so important, especially on college campuses. My research showed that about 78% of students would be willing to attend a swab drive to get more information and or register. Another 68% said convenience would be a key factor for bringing in themselves and their peers.

Some of our most successful drives have been held in high schools where teachers, parents, and seniors could easily register in the gym throughout the day. Especially successful drives are held in tandem with blood drives. My readings as well as my own research prove that there is a strong relationship between regular blood donors and people likely to join the registry. In America when we get our drivers licenses we sign up to be organ donors, why can't we swab as well like they do in Germany? It's not like an extra minute would really change the dreaded lines at DMVs anyways.

A swab drive is an event held in order to generate new volunteer donors for the registry. All that is required to join the bone marrow and stem cell donor registry is a cheek swab and a little paperwork. This cheek swab collects DNA that is sent to a lab and tested to find your 10 human leukocyte antigen (HLA) markers. This is the part of your DNA that must match up perfectly with the recipient if an unrelated transplant is to take place. This

minimizes the risk of host vs. graft diseases which is essentially when the body recognized that the new organ/tissue is foreign and attacks itself.



(borrowed from Be The Match)

Only about 1 in every 500 or 540 people swabbed is called to donate. About 1 in 300 may be called as a match and then not chosen to donate though. This is a great responsibility as patients get hope when they hear that they have an unrelated match in the donor pool. For this reason it is important to make sure that someone who swabs at a recruitment drive is sure that they will donate if called upon no matter who for and in either capacity. Remember quality over quantity when it comes to recruiting potential donors. Studies have shown volunteers who felt social pressure to join are most likely to withdraw if called upon anyways.

There are two forms of donation. About 80% of the time it is Peripheral Blood Stem Cells (PBSC) that are donated (picture to the left). The other 20% of the time bone marrow is extracted from the back of the pelvic bone

with a syringe under general anesthesia. Both procedures are completely covered under the health insurance of the recipient and free of charge to the donor.

Germany is a key example of why presenting the opportunity is important for generating new donors. Germany has one of the largest donor registries in the world. A great part of their success is due to their effective and engaging education techniques. From my simple survey of college students, it is clear these tactics can benefit our registries and generate growth in our donor pools. While researchers have discovered that lack of information is often a major factor that either prevents people from volunteering in the first place and often is a reason matched donors back out, my research illustrates a direct need for education on college campuses.

I was impressed that 23 of the 95 surveyed were already registered as donors, however I was also excited to see that 29 had never even heard of registering as a bone marrow donor and 50 of the 95 had no idea how the process of donation works. This means that there is an opportunity to educate these students and potentially garner them into the registry as much needed potential donors. It is also reassuring that these people had the opportunity to select commonly believed myths and horror stories about the

process but instead admitted their ignorance. It gives me hope that they will be more open to learning and accepting information.

Germany has the shortest "search to transplantation time," averaging just under 2 months. This is a result of citizens being easy to locate as they are required to notify the government every time they move. This is also very beneficial for patients seeking a donor who may not have a large window of time for their transplant to take place.

I would like to take these "ideal" qualities of potential donors as well as the perfect setting for recruitment and see if it yields results. I am also interested to notice how diverse the pool of people who register is. In addition to observing these practices, I am surveying anonymously a random sample of the student body and inquiring about their pre-existing knowledge about the registry as well as any reservations or interest in joining. I will be interested to see if there are any differences across ethnic identities and if I can find a way to better target young donors, specifically those who identify as Black, Hispanic, Asian, Native American, and mixed race.

Many of the studies I reviewed suggested that the largest barrier between minorities and the Registry was convenience of joining, education of procedure as well as impact of a transplant, and cost of joining. Other researchers emphasized that female blood donors are the most likely to

register, regardless of race. I surveyed 95 college students of all backgrounds, men and women, and inquired into their knowledge of becoming a bone marrow donor. I am interested in finding any preexisting conditions that may make a person more or less inclined to join the registry.