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On Cancer

# Some People Who Need a Bone Marrow Transplant Will Never Find a Donor — and What Can Be Done about It

By Julie Grisham, **Wednesday, March 27, 2019**



People of some racial and ethnic backgrounds have difficulty finding matched bone marrow donors.

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## Summary

A study from MSK's bone marrow transplant team followed 1,312 people treated at MSK between 2005 and 2017 who needed a transplant but did not have a suitably matched brother or sister.

For many people who have [leukemia](#), [lymphoma](#), or certain other blood disorders, [stem cell or bone marrow transplantation \(BMT\)](#) offers the best chance of a cure. But only about 25% of people who need an [allogeneic transplant](#) — the type of transplant in which donor cells are used — have a sibling who is a suitable genetic match. The remaining 75% usually look to registries of unrelated adult volunteers to find a compatible donor.

A study from investigators at Memorial Sloan Kettering reports that for people of certain racial and ethnic backgrounds, finding an unrelated donor match can be difficult if not impossible. This is despite huge growth in the pool of volunteer donors who have joined these donor registries, to tens of millions in recent years.

“Our research demonstrates that many people will never find a matched volunteer donor from any registry because of their racial and ethnic background,” says lead author [Juliet Barker](#), a hematologic oncologist who specializes in BMT. “For this increasingly large group of the US population, funding for research into alternative donor options such as [cord blood transplantation](#) is important. These other options can greatly expand access to transplantation for patients without a matched adult donor.”

Cord blood is collected from the umbilical cord and placenta of healthy newborns and donated by the baby's parents at birth.

## Finding a Matched Donor

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As the US population becomes more diverse, problems with finding matched donors will impact more and more transplant centers all over the country.

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The study, [published in \*Blood Advances\*](#), followed 1,312 people treated at MSK between 2005 and 2017 who needed a BMT but did not have a suitably matched brother or sister. The patients were categorized by their racial and ethnic backgrounds based on how they identified themselves and their family history.

Thirty-four percent had non-European backgrounds. This included patients of Asian, white Hispanic, African, Middle Eastern, and other mixed non-European descents.

“MSK is an ideal center to do this kind of study because our patient population is so diverse,” Dr. Barker says. “And this study is important as the US population is increasingly becoming more diverse: The problem of finding matched donors will impact more and more transplant centers all over the country.”

The researchers also reported that despite the notion that people of European descent can more easily find donors, many patients of southern European ancestry had diverse markers and therefore were not able to find a match. This includes people from places such as southern Italy and Greece.

## **The Science of HLA Matching**

Stem cell donors and bone marrow transplant recipients must be matched for their tissue type. Specifically, the matching process looks at markers, or proteins, known as human leukocyte antigens (HLAs). HLA markers are inherited and allow the immune system to recognize which cells belong and which are foreign. Over hundreds of generations, humans in different parts of the world have acquired many different HLA genes. Some people, such as those from Africa, have very diverse HLA types.

A close HLA match is critical when transplanting blood and bone marrow-forming stem cells from an adult donor to a patient. This makes it difficult for people of certain races or mixed ancestry to find a match.

By contrast, cord blood transplants do not require a strict HLA match. Another important finding from the study was that cord blood was able to extend transplant access to people from a wide variety of racial and ethnic backgrounds.

## **Benefits of Cord Blood Transplants**

Cord blood is a rich source of blood-forming stem cells. Like stem cells from adult donors, cord blood is obtained through donor registries. Dr. Barker is an expert in this type of transplant and leads MSK’s Cord Blood Transplantation Program.

A major advantage of cord blood is that the immune system of a newborn baby is not yet fully developed. This means that the match that’s required between the cord blood cells and the cells of the person receiving them is less strict.

“Our research demonstrates that many people will never find a matched volunteer donor from any registry because of their racial and ethnic background.”



**Juliet N. Barker**

Director, Cord Blood Transplantation Program

Dr. Barker explains that for patients in need of a donor transplant who don't have a matched sibling, MSK doctors can determine very quickly, based on the patients' HLA markers, whether they are likely to find a match in unrelated volunteer donor registries.

She says this allows doctors to move very efficiently to alternative donor options for the transplant. “Timing is especially important,” she says. “Many patients will be too sick to have any kind of transplant if they wait too long.”

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