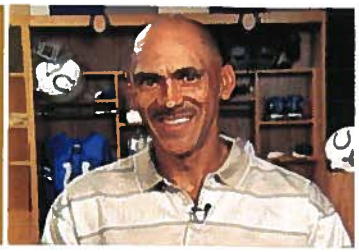

Understanding Sickle Cell Disease

The Need for Blood

Blood transfusions have improved the health of patients with sickle cell disease but there are not nearly enough minority donors to provide the amount of blood needed. Tony Dungy is helping the Indiana Blood Center and the Indiana Hemophilia and Thombosis Center with an educational awareness campaign to African-Americans about the need to donate blood. The most suitable blood for a recipient anywhere in the world is always from someone of the same ethnic, racial and genetic background. However, at the present time, only 5% of eligible donors actually give blood, and only 0.5% of the donors are Hispanics or African-American Blacks.

What is Sickle Cell Disease?

Blood circulation is a part of the body that most of us take for granted. The fluid pumped around the body by the heart, 24 hours a day, 7 days a week, has many functions delivering oxygen and nutrients to our tissues, removing waste materials, and protecting the body from infection and injury. The bloodstream contains red blood cells, tiny disc-shaped cells that travel through the lungs and heart, picking up oxygen, and delivering it to every vital organ and tissue. Normal red blood cells are so flexible that they can squeeze through tiny blood vessels called capillaries and make an oxygen delivery to practically every cell in the body.

Sickle cell disease is an inherited abnormality of red blood cells that causes them to lose their flexibility. Instead of being "squeezable" and Frisbee-shaped, they become stiff and adopt the shape of a sickle hence the name. The sickled red blood cells survive in the circulation for a much shorter time than normal cells. They cause "pile-ups" in the smallest blood vessels, blocking the flow of blood to the tissues, and cutting off the supply of oxygen. This leads to the harmful effects of sickle cell disease including anemia, severe pain, and damage to vital organs such as the brain, lungs, kidney and spleen.

There are more than 80,000 children and adults with sickle cell disease in the United States and at least 90% are of African descent. They often need a blood transfusion to alleviate some of the symptoms and complications of the illness. For example, young children are less likely to have a stroke if they are transfused with normal blood cells on a monthly basis. Blood transfusion can also be used to treat severe bouts of anemia, and to ward off sudden attacks (sickle cell crisis) that might damage other vital organs such as the lungs.

One of the main drawbacks to transfusion for someone with sickle cell disease is a side effect called alloimmunization. This can affect up to 30% of the patients receiving transfusions (the recipients). Before every transfusion, the blood cells of the healthy donor are analyzed so that the blood type (blood group) matches that of the recipient. However, the majority of blood donors are Caucasian Whites, and their blood types are not completely identical to those of the African-American recipients. If the immune system of the recipient recognizes that the donor cells are not a perfect match, it will produce antibodies to attack the transfused red blood cells. If the same recipient needs another transfusion at a later date, his or her immune system will "remember" the previous transfusion, and it will be harder for the blood bank to find a donor who is a good match. This means that the transfusions become less and less effective. The answer to this problem is to increase the number of African-American Blacks who are regular blood donors.

Other African-American Blacks would also benefit from an increase in donation, such as those with diabetes, lupus, and certain types of cancer, conditions that are more frequent or more severe in African-Americans. Anyone who can donate, or increase the awareness of this situation in their school, church or local community will be providing a great service to those who are suffering from these serious illnesses.

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