“D (Rh) Type” and “D Variant” Antigen

What is the D antigen?
D antigen is a protein with many parts, found on the surface of red blood cells. The D antigen is also known as the “Rh factor” and it tells us your blood type. People are either D (Rh) negative or D (Rh) positive. If your blood type is D negative, your red blood cells do not have the D antigen.

What is D variant antigen?
For some people, the D antigen may show up only weakly. Red blood cells from these people are known as “D variant.” There are two types of D variant antigen:
- **“Weak D”** means all parts of the D antigen are present, but weakly found on the red cell surface.
- **“Partial D”** means that one or more parts of the D antigen are missing.

When people with D variant antigen are tested for their blood type, their red blood cells will show a weak positive reaction or a negative reaction. There are several different blood typing methods used by different labs. This means a person with D variant red cells may be told they are Rh positive by one lab and Rh negative by another lab.

What does this mean for a person needing a blood transfusion?
Blood typing will tell what type of blood you have (A, B, AB or O, and your Rh factor) and what type you will receive if you need a transfusion.
- People who are “weak D” have all parts of the D antigen, so they are most often treated as Rh positive and can safely receive Rh positive blood.
- People who are “partial D” are usually treated as Rh negative and should receive Rh negative blood.

Why is this important during pregnancy?
Mothers who are “partial D” should be considered D (Rh) negative. These mothers could build up antibodies to the part of the “D” antigen they lack. If their baby is D (Rh) positive, the antibodies could destroy the baby’s red blood cells. This leads to hemolytic disease of the fetus and newborn, or “HDFN.” **These mothers will need treatment during pregnancy to prevent HDFN.**

Mothers who are “weak D” can be considered Rh positive, so they do not need this treatment.

How is HDFN prevented?
The best way to prevent hemolytic disease of the fetus and newborn is to give a pregnant woman an injection of RhIG (Rh immune globulin) during pregnancy and shortly after the birth of her baby. RhIG is a medication that contains large amounts of “D antibody.” The D antibody removes any of the baby’s Rh positive red blood cells from the mother’s bloodstream. This will not harm the woman or the baby. RhIG should also be given if a Rh negative woman has a miscarriage or has certain procedures done during her pregnancy.

What will my blood type be if I continue as a blood donor?
Both “weak D” and “partial D” people are considered Rh positive as donors. The law requires blood centers to label blood as Rh positive if it contains any amount of the D antigen. Earlier we explained that “partial D” people, who have one or more parts of the D antigen missing, are treated as Rh negative when receiving a blood transfusion. But when donating, their blood must be labeled as Rh positive because some parts of the D antigen are present.

So, whether you are “weak D” or “partial D,” your blood will be given only to people who are Rh positive.

The information presented is intended for general information and educational purposes. It is not intended to replace the advice of your health care provider. Contact your health care provider if you believe you have a health problem.