

Rh Negative Blood Type and Sensitization

What is Rh negative?

If you have a negative blood type (eg, O-, A-, B-, AB-) then you are Rh negative, which means you do not have the Rh(D) antigen on the red blood cell. Exposure to the blood of an Rh(D) positive fetus may cause a maternal antibody response to that antigen that could put future Rh(D) positive fetuses at risk for hemolytic disease. Mixing of maternal and fetal blood (fetomaternal transfer) is uncommon during pregnancy and is more likely to occur during the third stage of labor². Prenatal and post partum administration of anti-D immunoglobulin (RhoGAM) is recommended to prevent a maternal antibody response and ensuing complications for future fetuses.

Risk to the fetus

When a person with a negative blood type is given blood that is a positive type, or is pregnant with a baby with a positive blood type and their blood mixes, she will produce antibodies (this is called being **sensitized**) that are able to pass through the placenta and to the baby. If a woman is not previously sensitized, it is her second and subsequent pregnancies that are at risk after the birth of an Rh positive baby. If the mother is sensitized and the next baby has a positive blood type, these antibodies will attack his/her red blood cells and that baby is at risk for severe anemia in the womb (hemolytic disease). Often, a blood transfusion is required before birth. The most mild reaction a baby might have is jaundice.

The chance of your blood and your baby's blood mixing is rare, but it can occur during abdominal trauma, in the event of a particularly bloody birth, or during the delivery of the placenta.

If the baby has a negative blood type there are no risks. If the father of the baby is also Rh(D) negative, the fetus will have an Rh(D) negative blood type as well and Rh immune globulin is not necessary. Note that a father with weak D Rh status may test negative although his blood type is actually positive.

Can I find out my baby's blood type before birth?

Yes. Nearly 1/3 Rh(D) negative women are carrying an Rh(D) negative fetus and will not require Rh(D) immune globulin. Rh Genotyping is a way to determine the blood type of the fetus, but may be cost-prohibitive. Currently this test costs around \$400 and insurance does not cover it.

At the time of your baby's birth, blood type will be tested (twice if the first result is negative) using Eldon cards. If your baby tests negative, you will not need treatment.

Can sensitization be treated?

Yes. RhoGAM is an immune globulin that blocks production of antibodies in the mother's blood and has been successful in nearly eradicating hemolytic disease of the newborn¹.

It is recommended that an injection of 300 mcg be given at 28 weeks gestation and within 72 hours of birth. RhoGAM is dispensed with a prescription.

Are there risks to using RhoGAM?

The risks of RhoGAM are similar to that of any other blood product. Potential blood borne pathogens may be present despite screening. Anaphylactic shock is another potential side effect in the rare case of allergies to ingredients in the injection. It is important to note that reaction to the RhoGAM injection is rare.

Are there alternatives to using RhoGAM?

There are no studied and vetted alternatives to using RhoGAM. However, if you want to refuse the RhoGAM injection it is highly encouraged that you work to maintain healthy placental function with a balanced diet and adequate mineral intake. You should limit any invasive procedures and aim for an unmanaged third stage (no pulling on the cord, delivery of the placenta should be with your own efforts).

If you refuse RhoGAM injection there is a lab test that can be done to see if you have any antibodies in your blood after your birth to a positive blood type baby. This is called an Indirect Coomb's test. If this antibody screen is positive, any future pregnancies will require care by an obstetrician and perinatologists and will be potentially complicated.

A Direct Coomb's test can be done on your baby's cord blood also to see if this pregnancy was affected by sensitization

References

- 1) Crowther, C., & Middleton, P. (2010). Anti-D administration after childbirth for preventing Rhesus alloimmunisation. *Cochrane Database Of Systematic Reviews*, 7.
- 2) King, T., Brucker, M., Fahey, J., Kriebs, J., Gegor, C., & Varney, H.(2015). *Varney's midwifery*. (5th ed.) Burlington: Jones & Bartlett Publishing.
- 3) National Institute for Health and Clinical Excellence, (2008). *Routing antenatal anti-d prophylaxis for women who are rhesus D negative*. London: National Institute for Health and Clinical Excellence.
- 4) Tharpe, N. (2013). *Clinical practice guidelines for midwifery & women's health*. (4th ed.) Sudbury, Mass.: Jones and Bartlett Publishers.