



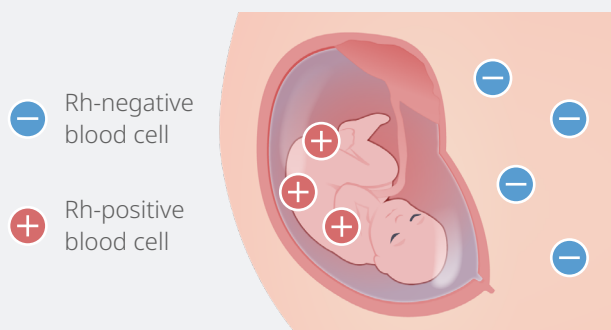
Rh INCOMPATIBILITY



Blood type refers to the molecules on the surface of red blood cells. An individual's blood type is determined by the presence or absence of A or B antigens and the Rhesus (Rh) factor. When Rh factor proteins are present on the red blood cells, the individual is Rh-positive, while Rh-negative individuals have no Rh factor proteins.

Rh incompatibility

Rh incompatibility is the discordant pairing of a pregnant person with Rh-negative blood type and a Rh-positive fetus.



Rh alloimmunization

When FMH occurs, the Rh D antigen on fetal blood cells is perceived as a threat, prompting the pregnant client's immune system to produce anti-D antibodies.

Antibody types

| | | |
|-----|--|--|
| IgM | | <ul style="list-style-type: none"> Produced during primary immune response Are large and cannot cross the placenta |
| IgG | | <ul style="list-style-type: none"> Produced upon subsequent exposure Smaller, able to cross placenta membrane |

The fetus triggering alloimmunization is protected from large IgM antibodies by the placenta and remains unaffected. But, if the sensitized client has another Rh+ fetus in a subsequent pregnancy, fetal red blood cells are targeted by IgG antibodies, causing hemolytic disease of the neonate.

Fetomaternal hemorrhage (FMH)

Fetal blood may enter the pregnant client's blood stream if there is a breach of the placental membrane, such as:

- Unexplained vaginal bleeding
- Traumatic injury
- Invasive prenatal testing (CVS, amniocentesis)
- During labor and birth

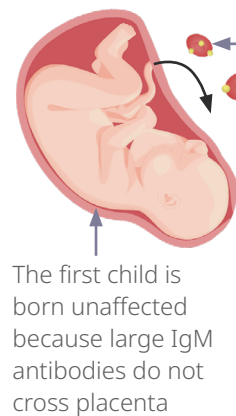
Prevention

Rh(D) immunoglobulin (RhIg) mimics the body's innate antibodies. If the pregnant client is exposed to Rh-positive fetal blood, their body does not react as it perceives that the needed antibodies are already present. This prevents alloimmunization.

RhIg is routinely administered via IM injection:

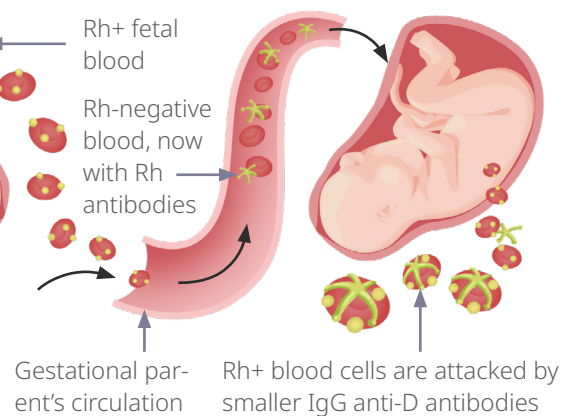
- At 28 weeks
- Within 72 hours of birth
- As needed < 28 weeks if concern for FMH

First pregnancy



The first child is born unaffected because large IgM antibodies do not cross placenta

Second pregnancy



Rh+ blood cells are attacked by smaller IgG anti-D antibodies

Hemolytic disease of the newborn (HDN)

Symptoms of HDN range from mild to severe, including:

- Self-limiting hemolytic anemia
- Severe anemia
- Hydrops fetalis