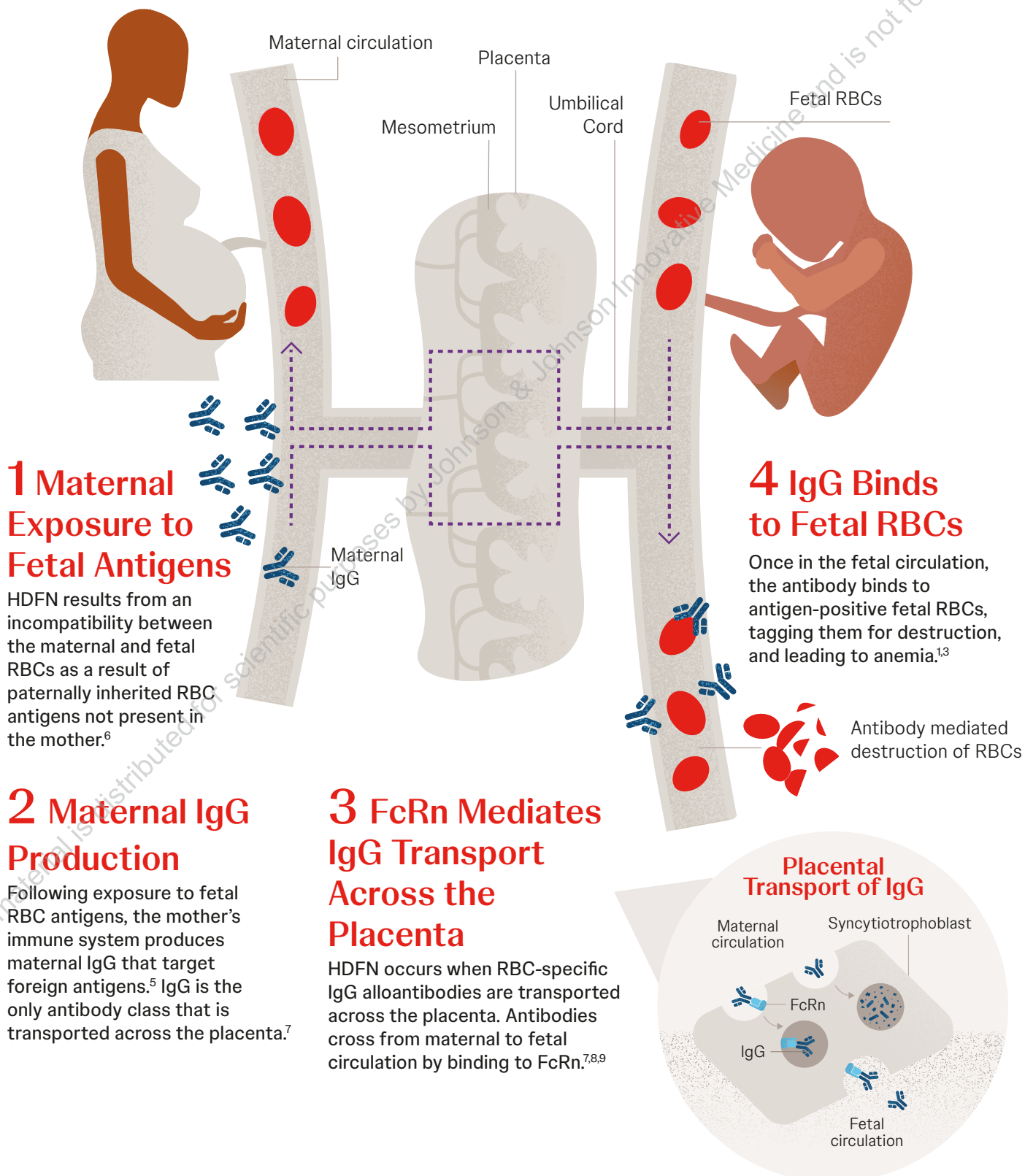


# Hemolytic Disease of the Fetus and Newborn

## What is HDFN?

HDFN is an immune-mediated disorder in which maternal alloantibodies bind to fetal or newborn red blood cells (RBCs).<sup>1,2,3</sup> The primary cause is RBC antigen incompatibility between mother and fetus.<sup>3</sup> Maternal alloimmunization is one of the most common causes of fetal anemia.<sup>4</sup>

RBC antigens that can lead to HDFN include: Rh (D, c, C, E, e), Kell, Kidd, Duffy, MNS, s, ABO<sup>4,5</sup>



# Hemolytic Disease of the Fetus and Newborn

## Impacts on Fetus: Severe HDFN

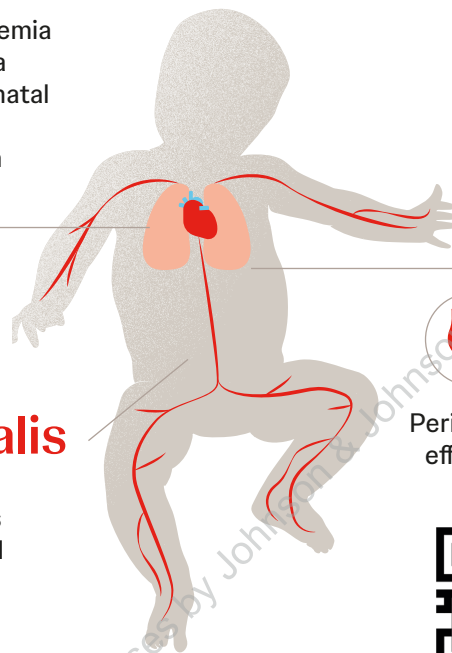
The severity of HDFN is determined by red cell alloantibody specificity, amount of maternal antibody, and IgG class.<sup>10</sup> Alloantibodies directed against some antigens, such as Kell, induce destruction of fetal RBCs and erythroid progenitor cells, leading to anemia without erythroblastosis.<sup>10</sup> This can result in earlier onset and more severe fetal anemia than seen with other alloantibodies.<sup>11</sup> Serial ultrasound with Doppler to assess MCA-PSV is recommended to monitor for disease progression. Many patients are referred to a specialist center for this surveillance.<sup>12</sup>

## 5 Fetal Anemia

Fetuses/neonates with mild anemia may develop hyperbilirubinemia which can be treated with neonatal phototherapy. Severe anemia prior to delivery may require an intrauterine transfusion.<sup>3</sup>

## 7 Stillbirth

There is increased risk of preterm birth (1.4–2.4 relative risk) and an increased risk of stillbirth (1.5–2.6 relative risk) compared to pregnancies not affected by HDFN.<sup>1</sup>



## 6 Hydrops Fetalis

Severe anemia can lead to hydrops fetalis.<sup>1</sup> Hydrops fetalis (fetal hydrops) is a pathological condition of excessive fluid accumulation in at least two extravascular compartments.<sup>13</sup>



Pericardial effusion



Pleural effusion



Skin edema



Ascites



Scan here to view and download information on HDFN.

Data rates may apply.

## Research Horizons

Advancing research in HDFN involves a thorough understanding of the transplacental journey of maternal IgG alloantibodies, the differences between various maternal IgG alloantibodies, the extent to which maternal antibody titers rise, and the resulting effects on fetal development. These insights may help us to understand why some fetuses and newborns are more severely affected by HDFN than others and may help drive earlier diagnosis of HDFN.

FcRn, neonatal fragment crystallizable receptor; HDFN, hemolytic disease of the fetus and newborn; IgG, immunoglobulin G; MCA-PSV, Middle Cerebral Artery Peak Systolic Velocity; RBC, red blood cell; Rh, rhesus.

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