Estimation of severity of feto-maternal haemorrhage

To determine if a positive test for FMH should be considered as the likely cause of fetal death, the *percent of total fetal blood volume lost* should be calculated. Such a calculation uses the following correction factors: fetal red cells are 122% the size of adult red blood cells; 92% of fetal red cells are detected by the Kleihauer-Betke test on average; maternal red cell volume near term averages about 1800 ml; average fetal hematocrit is about 50%; fetal blood volume is about 150 ml per kilogram of body weight. Combining all of these then means that:

$$\text{Percent Fetal Blood} = \frac{\text{Fetal Cells} \times 1800 \times 1.22 \times 100}{\text{Volume Lost Maternal Cells} \quad 92 \times 2 \times 100 \quad 150 \times \text{Fetal Weight (kg)}}$$

or, to simplify,

$$\text{Percent Fetal Blood} = \frac{\text{Fetal Cells} \times 3200}{\text{Fetal wt}}$$

Volume Lost Maternal Cells (kg)

So, for example, if the Kleihauer–Betke shows that *200 of 5000* cells counted are fetal and the fetus weighs *2.0 kg,* then the estimate of percent blood volume loss would be *200/4800 x 3200 ÷ 2.0,* or *66%.*

Probably less than 20% volume loss is enough to cause death if it happens all at once. On the other hand, much larger volumes can be lost over a long period and the fetus can compensate. Unfortunately there is no straightforward way to know whether one is dealing with acute or chronic haemorrhage. This makes determination of whether a haemorrhage is or is not causal more problematic.

Taken from
Fetal-Maternal Hemorrhage and Stillbirth, Richard M. Pauli, M.D., Ph.D.