

APPENDIX B

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:

Percent Fetal Blood = $\frac{\text{Fetal Cells}}{\text{Volume Lost Maternal Cells}} \times 1800 \times 1.22 \times \frac{100}{2 \times 100}$
150 x fetal wt in kg

Or, to simplify,

Percent Fetal Blood = $\frac{\text{Fetal Cells}}{\text{Volume Lost Maternal Cells in kg}} \times 3200 \div \text{fetal wt}$

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:

$200/4800 \times 3200 \div 2.0$, 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**

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<http://www2.marshfieldclinic.org/wissp/wisspers/93940001.htm>