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:

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

Or, to simplify,

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

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:

\[
200/4800 \times 3200 \div 2.0, \text{ or 66%}
\]

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