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Calculations for Predicting Blood Transfusion Needs

To the Editor:—The following formulas for calculating the volume of blood or packed cells needed to produce a predictable change in hematocrit have been proposed by Bennett.¹

ml of packed cells required

= desired change in hematocrit

× body weight (kg) × 1.5

ml of whole blood required

= desired change in hematocrit

× body weight (kg) × 2.5

These formulas were proposed originally as a guideline for transfusion in infants. A circulating blood volume of 100 ml/kg was assumed, therefore. The hematocrit of packed cells was assumed to be approximately 70% and that for whole blood, 40%.

Using the same hematocrit values, we have scaled down these formulas so that they can be used in patients having a circulating blood volume of 70 ml/kg.

ml of packed cells required

= desired change in hematocrit

× body weight (kg) × 1.0

ml of whole blood required

= desired change in hematocrit

× body weight (kg) × 1.75

The circulating blood volume in children at 2–5 years of age is approximately 75 ml/kg,² and in adults it is 70 ml/kg. Therefore, in practice, the formulas can be used in adults and in children over the age of 2 years.

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REFERENCES

1. Bennett EJ: Fluid balance in newborn. *ANESTHESIOLOGY* 43:210–224, 1975
2. Rees JG, Gray CT: Paediatric anaesthesia, trends in current practice. London Butterworths, 1981, p 170

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Errata

On page 375, volume 58 of *ANESTHESIOLOGY*, on line 1 the dosage in parentheses should be (0.075 mg/kg), not (0.75 mg/kg).

On page 155, volume 59 of *ANESTHESIOLOGY*, reference 2 should be: Dundee JW, Wyant GM: *Intravenous Anaesthesia*. London, Churchill Livingstone, 1974.