

tendency towards hypokalemia. Potassium supplementation sufficed to compensate adequately and reversed the tendency towards poor cardiac function which occurred. Severe acute decreases in red blood cell mass and low absolute levels of hematocrit (approximately 20 per cent) in the acutely and severely traumatized patient are compatible with survival. Blood volume maintenance appears to be a significant factor in prevention of morbidity and mortality. (Gollub, S., and Bailey, C. P.: *Management of Major Surgical Blood Loss Without Transfusion*, J.A.M.A. 198: 1171 (Dec.) 1966.)

BLOOD VOLUME MEASUREMENT

Blood volume measurement is based on the dilution principle. A small volume of tracer material of known concentration is administered into the blood stream. The tracer is allowed to mix with circulating blood for approximately 10 minutes and a sample of blood is withdrawn and analyzed to determine the concentration of the tracer reached after dilution in blood volume. The ratio between the amount of tracer administered and the concentration attained in blood is proportional to the volume of the diluent, which in this instance is blood volume. Plasma proteins and red blood cells are labeled with radioactive elements as tracers. The concentration of the tracer administered is determined by radioactive analysis. The contents of the syringe are placed in a well-type scintillation counter. All of the measured tracer is administered intravenously. Sufficient time is allowed for the tracer material to mix thoroughly with circulating blood and a blood sample is withdrawn for analysis. Red blood cell volume and plasma volume are derived from the volume measured and the hematocrit percentage of the blood sample analyzed. The measured volume with labeled red blood cells or labeled protein differ. This difference is due to the fact that the distribution of the two tracers in the blood stream are not equal, the proportion of red blood cells to plasma varies in different parts of the body and with the caliber of vessels. To correct for these discrepancies, appropriate factors are introduced in the calculations.

(Albert, S. N.: *Blood Volume*, J.A.M.A. 198: 770, (Nov.) 1966.)

DECONDITIONING STUDY Eleven healthy adult men were studied before, during and after three periods of 10 days' recumbency. During one period cuffs were intermittently inflated on the lower extremities and during another period the lower extremities were exercised while supine. In all three periods the plasma volume was significantly decreased over the first several days and the extracellular fluid volume was progressively decreased over the entire period. Neither the cuffs nor the exercises influenced the changes measured. (Vogt, F. B., and Johnson, P. C.: *Plasma Volume and Extracellular Fluid Volume Change Associated with 10 days Bed Recumbency*, *Aerospace Med.* 38: 21 (Jan.) 1967.)

FROZEN BLOOD Developments in the long-term preservation of human red cells with the use of freezing techniques are presented with emphasis on the safety and efficacy of the biologic produce resulting from the use of current processes. Although referred to as "frozen blood," in actual fact the product is frozen erythrocytes and thus essentially represents packed red cells. Therefore, a portion of the volume expansion normally attributed to blood cannot be obtained with the product but must be supplemented with an acceptable volume expander. The product also does not include coagulation factors. Red cells frozen and stored at -79°C . or lower can be preserved for at least two years with acceptable post-transfusional survival. Many techniques of freezing and thawing red cells are proposed. Most result in at least 70 per cent survival after the blood has been stored at 5°C . following thawing and then infused into the patient. It is much more costly to preserve red cells in the freezing methods than by the standard techniques using ACD liquid preservative. However, the cost is justified when storage of rare blood types is indicated. (Valeri, C. R.: *Frozen Blood*, *New Eng. J. Med.* 275: 365 (Aug.) 1966.)

EMERGENCY TRANSFUSION Some hospitals have asked that O Rh-negative blood