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METABOLIC FATE OF INFUSED ERYTHROCYTES

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Blood transfusions have been recommended for the nutritional therapy of the sick or injured. The view that infused erythrocytes are a particularly good source of nutritive protein has been based on observations indicating little increase in nitrogen excretion following such infusions. Retention has been arbitrarily equated with utilization. Data contrary to this view point have been obtained in patients in anabolic and catabolic nutritional states.

Patients with various types of serious injury or illness were maintained on constant oral dietary intakes. After suitable control periods, serologically identifiable erythrocytes were infused. Observations were made of body weight, nitrogen, sodium, and potassium balances, plasma and red cell volumes, erythrocyte survival, bone marrow morphology, and various liver functions. The apparent positive nitrogen balance immediately following the red cell infusions does not connote rapid metabolic utilization of the red cell protein. Rather, the rise in urinary nitrogen is slight because the red cell nitrogen participates directly in the body metabolic pool only over a period of many weeks. In no instance was the survival of the infused cells markedly shortened. A limited amount of nitrogenous compounds are made available indirectly through an associated depression of erythropoiesis. The decrease in red cell production is proportional to the quantity of red cells infused. Once the period of relative increase is over, erythropoiesis proceeds normally. The quantity of nitrogen which might be available as a result of depressed erythropoiesis even if complete is small, and only a similar relatively small quantity can be expected from

the normal breakdown of infused cells. Erythrocytes, once anemia has been corrected, should not be infused for "feeding purposes" — the small contribution to the nutritional requirements of the patient does not warrant the associated risks.