The isolation of Borrelia burgdorferi from blood raises the possibility of bloodborne transmission of Lyme borreliosis through transfusions. To assess this possibility, the ability of B. burgdorferi to survive in human blood processed for transfusion was studied. Human blood was inoculated with B. burgdorferi type strain B-31 (ATCC 35210) at 0.2, 20, or 2000 viable cells/ml, processed by conventional blood banking procedures, stored at 4 degrees C, and cultured for B. burgdorferi at 12, 23, 36, and 48 days of storage. After processing, most B. burgdorferi were found in the packed cell fraction. At inoculum levels of 20 or 2000 viable cells/ml, B. burgdorferi survived in processed blood through 48 days of storage at 4 degrees C. B. burgdorferi was isolated from packed cells after 36 days of storage at 4 degrees C even when the initial inoculum level was as low as 0.2 cells/ml. The data demonstrate that B. burgdorferi can survive the blood processing procedures normally applied to transfused blood in the USA. Since hematogenous spread of the spirochete seems to occur early in the illness, primarily in symptomatic patients, the risk of transfusion-associated Lyme disease may be small. However, the possibility of survival of B. burgdorferi under blood banking conditions warrants a heightened awareness of this potential problem.