The use of blood transfusion (BT) in the clinical practice of medicine has brought untold benefits to countless individuals. It would not be an overstatement to assert that medical practice as we know it today could not exist without the BT support. Open heart surgery and other major surgical procedures, the support of patients with neoplastic diseases, and the maintenance of patients with chronic anaemias, are some examples of therapies that would be impossible without the availability of blood for transfusion. Thus, reliance on transfusion support has been routine, and perhaps casual.

Blood is a heterogeneous mixture of diverse cellular elements and plasma constituents that is transfused from one immunologically distinct individual to another. Diseases that are present in the blood donor may also be transmitted to susceptible recipients. The metabolic products that are inherent in the anticoagulant-preservative and those which are further generated by cells during storage period may present additional risks to the recipients. Finally, iron overload is a major cause of morbidity in patients with large, chronic transfusion requirements. Although BT is not 100% safe, most of the clinical problems with transfusion are resolved and transfusion of blood is usually a safe and effective, albeit temporary, form of therapy.

During the last decade, a novel and distinct feature of transfusion therapy has emerged, i.e. immunological effects of BT. This characteristic became evident while analysing data from kidney transplant studies, which demonstrated that BT is one of the most significant factors responsible for enhanced allograft survival. Subsequently, the immunomodulatory effects of BT have also been examined in cancer patients undergoing surgery. BT has also been successfully utilized to treat women with recurrent spontaneous abortions.
Several factors play important roles in the ultimate outcome of renal transplantation. Some of these factors, such as surgical techniques and immunosuppressive therapy, are well defined. Patient survival has improved in the last two decades largely as a result of changes in the clinical management of the allograft recipients. The allograft rejection, however, still remains the major obstacle to successful human transplantation. Induction of tolerance to the renal allograft is dependent on the use of immunosuppressive agents, and the use of these toxic drugs over long periods of time often results in a number of undesirable and occasionally life-threatening complications.

The nature of rejection and the factors determining the host’s immunological reactivity to the allograft remain the subject of intensive investigation. Immunological factors, such as matching donor and recipient for HLA antigens, clearly enhance the beneficial effects of the newer and more-effective immunosuppressive drugs. Multifactorial analysis of the transplant data as well as clinical trials have confirmed that other non-pharmacological factors also play a significant role in determining the fate of the graft. One of the most significant factors that improve renal allograft survival is pretransplant BT.

**Historical**

The role of BT in renal transplantation has been highly controversial and at times confusing. In the era prior to 1973, a great effort was made to limit the exposure of potential allograft recipients to any blood component containing HLA antigens. This restrictive transfusion policy was based on the observation that the recipients who had developed lymphocytotoxic antibodies following BT had worse graft survival than the patients without these antibodies. In addition, hyperacute rejection in renal transplant patients was reported by Kissmeyer-Nielsen et al. and Terasaki et al., who demonstrated the presence of lymphocytotoxic antibodies against the donor (positive cross-match) in the pretransplant serum of the recipient and suggested that these antibodies can be induced by BT. It was also recognized that the restricted transfusion policy would reduce the risk of transfusion dependence and blood-borne infections, such as hepatitis and cytomegalovirus. In addition, it was feared that kidney patients who become sensitized to multiple donors would be condemned to a longer waiting period for a cadaver kidney transplant, and in some cases may not be able to receive a transplant at all due to consistently positive crossmatches. Based on these observations, many transplant centres avoided transfusing potential kidney recipients prior to transplantation, and during this transfusion moratorium many patients received renal allografts without having been transfused. In contrast to what had been predicted, the kidney graft survival in this particular group of patients showed no improvement over previous results.

In 1973, Opelz et al. reported that the outcome of renal allografts in patients who were never transfused before transplantation was worse than that of recipients who had been transfused. Initially, their claim was greeted