chemically they were quite different from factor VIII concentrates.

Hepatitis

During the early 1970's it became apparent that haemophiliacs treated with blood products occasionally developed jaundice as a result of hepatitis and the outbreak in Bournemouth highlighted that this could also be transmitted by commercial imported concentrates. From 1977 onwards, studies revealed that the from the hepatitis B virus, despite screening for HbSAg by very sensitive third generation techniques at Blood Transfusion Centres, as well as NANBV. It was estimated that in the UK that approximately 1% of blood donors could transmit NANBH to patients. Thus any haemophiliac who received more than approximately 100 donations (perhaps 5-10 treatment episodes) of cryoprecipitate was very likely to develop hepatitis.

It was against this background that plasma fractionators attempted to reduce the transmissibility of hepatitis viruses by Pasteurisation of factor VIII concentrates. It had been known for a long time that heating albumen solution at 60° for 10 hours rendered it non-infectious for hepatitis. One commercial company, Behring in West Germany, produced very small amounts of a factor VIII concentrate treated in this way and during studies in the early - mid 1980's it became evident that this material had a markedly reduced ability to transmit hepatitis. Other studies attempted to inactivate hepatitis viruses by heating the factor VIII concentrate in the dry state; the advantage of this

method was that the loss of factor VIII was less than heating it in solution. Studies in monkeys demonstrated that dry heating at rendered the concentrate apparently free of virus when tested in primates. When this material, Haemophil T (Travenol), was given to humans during studies initiated in 1983 it resulted in patients getting hepatitis. In the same year another commercial concentrate, Factorate HT (Armour), treated in a similar way (60°C for 30 hours) also caused hepatitis in patients. Thus the initial dry heat treatment processes were not able to prevent transmission of hepatitis.

Von Willebrand's Factor

Von Willebrand's disease is a distinct disorder from haemophilia A and is due to a congenital deficiency of the von Willebrand factor. This protein acts as a carrier for factor VIII within the plasma. Patients may experience bleeding from the nose, in the gut and heavy menstrual periods. Treatment is by the use of factor VIII containing blood products which also usually contain reasonably large amounts of von Willebrand factor. Because bleeding in most patients is uncommon, treatment from the 1970's until the mid 1980's was usually with DDAVP or cryoprecipitate. Cryoprecipitate was used in preference to factor VIII concentrate partly because it contained a higher concentration of von Willebrand factor and because it reduced the risk of hepatitis transmission as patients with vWD only required an occasional transfusion.