The following key points should be always borne in mind when transfusion of blood and blood products is planned: 1.These components may be processed further by, for example: o Leukocyte (white cell) removal o 'Pooling' (combining platelets separated from 4 to 6 donations to produce a therapeutic dose for an adult patient), as shown in the Figure 14.2.Cryoprecipitate, prepared from fresh frozen plasma, which is rich in Factor VIII and fibrinogen Plasma derivative: Human plasma proteins prepared under pharmaceutical manufacturing conditions, such as: o Albumin o Coagulation factor concentrates o Immunoglobulins * Apheresis: a method of collecting plasma or platelets directly from the donor, usually by a mechanical method WHOLE BLOOD Whole blood is obtained from human blood donors by venesection.The biochemical and metabolic effects of storage are as follows: o Reduction in the pH (blood becomes more acidic) o Rise in plasma potassium concentration (extracellular K+) o Progressive reduction in the red cell content of 2,3 diphosphoglycerate (2,3 DPG) which may reduce the release of oxygen at tissue level until 2,3 DPG is restored o Loss of all platelet function in whole blood within 48 hours of donation o Reduction in Factor VIII to 10 to 20 percent of normal within 48 hours of donation.Coagulation factors such as VII and IX are relatively stable in storage Advantages of Whole Blood o Requires only simple and inexpensive single collection packs o No special equipment is needed for processing o For patients with hemorrhage, whole blood supplies red cells,volume and stable coagulation factors.Whole blood must be collected, tested and processed to high safety standards BLOOD COMPONENTS / BLOOD PRODUCTS Whole blood may be suitable for transfusion in many clinical situations, such as red cell replacement in acute blood loss where there is also hypovolemia.Plasma derivatives are made by a pharmaceutical manufacturing process from large volumes of plasma comprising many individual blood donations.Factors VIII and IX and immunoglobulins are also made by recombinant DNA technology and are often favored because there would be no risk of transmitting infectious agents to the patient.The preparation of blood components allows a single blood donation to provide treatment for two or three patients and also avoids the transfusion of elements of the whole blood that the patient may not require.DEFINITIONS Whole blood: Unseparated blood collected into an approved container containing an anticoagulantpreservative solution.During donation, blood is collected into a sterile, disposable, plastic pack which contains an anticoagulant–preservative solution.However, the separation of whole blood into its constituent components––red cells, platelets and plasma––is widely practiced for use when these specific components only are required.The process of separation requires specialized plastic bags, more equipment, a higher level of expertise and more work to ensure the quality of the components produced.This solution usually contains citrate, phosphate, dextrose and often adenine (CPDA).There are variations in the volume of blood collected and the type of anticoagulant–preservative solution used in different hospitals.An infectious agent present in the donated blood may be transmitted to all recipients of the components prepared from a single donation.Plasma can transmit most of the infections present in whole blood and there are very few indications for its transfusion.A constituent of blood, separated from whole blood, such as: o Red cell concentrate o Red cell suspension o Plasma o Platelet concentrates 2.During storage, metabolism continues in the red cells and platelets, while some plasma proteins lose their biological activity.Disadvantages Whole Blood o For patients at risk of circulatory overload, whole blood contains a higher volume than red cell

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concentrate.When the plasma is removed from whole blood, the red cells can be used as a red cell concentrate or can be formed into a red cell suspension by the addition of an additive diluentPlasma or platelets collected by apheresis 3.Safe blood products, used correctly, can be lifesaving.Each unit should be tested and labelled to show its ABO group and its RhD group.Whole blood can be transfused to replace red cells in acute bleeding when there is also a need to correct hypovolemia.Blood components can also be collected by apheresis.However, even where quality standards are very high, transfusion carries some risks.If standards are poor or inconsistent, transfusion may be extremely risky.No blood or blood product should be administered unless all nationally required tests are shown to be negative.They .must be tested to minimize the risks of transmitting infection.2.3.4.5.6.7.8

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