

Contents

Introduction.....	1
1 Basics of transfusion medicine.....	5
1.1 The ABO and Rh blood group systems	5
1.2 Other blood group systems	14
1.2.1 The MNSS system.....	15
1.2.2 The P system.....	15
1.2.3 The Lutheran system	15
1.2.4 The Kell system	16
1.2.5 The Lewis system	16
1.2.6 The Duffy system	16
1.2.7 The Kidd system.....	17
1.2.8 The Diego system.....	17
1.2.9 The Xg-a system.....	18
1.2.10 The Dombrock system	18
1.2.11 The Colton system.....	18
1.2.12 The Chido/Rodgers system	18
1.2.13 The Cromer system	18
1.2.14 The I/i system	18
1.3 Natural and immune antibodies.....	19
1.4 Transfusion guidelines	21
1.4.1 Indications for the transfusion of concentrated red blood cells	22
1.4.2 Indications for the transfusion of platelet concentrates.....	25
1.4.3 Indications for the transfusion of fresh frozen plasma.....	26
1.4.4 Indications for the transfusion of leukodepleted blood components	27
1.4.5 Indications for the transfusion of irradiated blood components.....	28
1.4.6 Indications for granulocyte transfusions	30
1.4.7 Virus-inactivated blood components.....	30
1.4.8 Complications of transfusion therapy.....	32
2 The transfusion process.....	39
2.1 Blood donation.....	39
2.2 Donating multiple blood components	41
2.3 Preparation of blood and blood components	42
2.4 The immunohematology laboratory	43
2.5 The immunohematology laboratory	48
2.5.1 Studying the Rh system	49
2.5.2 Detecting allo-antibodies to red cell antigens.....	50
2.6 Transfusion request forms and the administration of blood and blood components.....	54

3 Automation and computerization of the transfusion process	59
3.1 Automation as a safety factor	59
3.2 Computerization of the transfusion process: from donor to patient...	64
3.3 The computerized transfusion network	69
3.4 Hemovigilance	71
3.5 What can be improved in the future?	75
4 Biological validation of blood components	77
4.1 Molecular and serological methods	77
4.1.1 Serological investigations	78
4.1.2 Molecular investigations.....	79
4.1.3 Structure of the DNA	79
4.1.4 Real-time PCR.....	82
4.1.5 PCR-TMA	84
4.2 Decision-making and the quality system	88
4.3 Risk management versus patient safety: medicolegal considerations	99
5 Error in transfusion medicine	109
Index.....	113