A
Acquired dilated cardiomyopathies (ADCM), 104–105
Acquired heart disease
  congenital disease
    atrial septal defect, 106
    AVSD, 106
    congenitally corrected TGA, 107
    Ebstein’s anomaly, 108
    Eisenmenger syndrome (ES), 109–110
    fontan circulation, 108, 109
    TGA, 107
inherited disease
    ARVC, 106
    familial hypertrophic cardiomyopathy, 105–106
    FDCM, 105
    left ventricular non-compaction, 105, 106
valvular disease
    ADCM, 104–105
    IHD, 103
    native obstructive disease, 102
    PPCM, 105
    prosthetic heart valves, 103–104
    regurgitant valve lesions, 103
Acquired thrombophilia, 84–85, 241–242
Activated partial thromboplastin time (aPTT), 135, 228
Activated protein C resistance (APCR), 77, 84
Antenatal management
  corticosteroids, 176–177
  fetal blood sampling, 175
  goal of, 175
  ICH, 177
  implications, 177
  intrauterine platelet transfusions, 175
  intravenous immunoglobulin, 175–176
  noninvasive prenatal diagnosis, 177–178
  PCR amplification, 177
Anticoagulant therapy, 59
Antiphospholipid syndrome (APS)
  aPL pregnancy loss, mechanisms of, 74
  factor V Leiden mutation, 76–77
  neonatal complication, 76
  outcome of untreated pregnancy, 73–74
  pregnancy morbidity, 73
  prevalence, 73
  thrombophilias, 21, 84–85
  treatment of, 74–76
  venous thromboembolism, 34–35
Antithrombin, 5, 17–18
Antithrombotic therapy
  antenatal care, 99
  antiplatelet agent, 99
  heart disease (see Acquired heart disease)
  ischemic heart disease, 100
  rheumatic heart disease, 100
  TE risk factor, 99
  thromboprophylactic agent
    aspirin, 100
    clopidogrel, 100–101
    dipyridamole, 101
    LMWH, 101, 102
    unfractionated heparin (UFH), 101
    warfarin, 101
Arrhythmogenic right ventricular
cardiomyopathy (ARVC), 106

B
Bernard-Soulier syndrome (BSS), 143–146, 221

C
Cerebral vein thrombosis (CVT), 57
Chromogenic assay, 22
Coagulation system, 3–5
Complement 4b-binding protein (C4BP), 6
Congenital amegakaryocytic thrombocytopenia
  (CAMT), 222
Congenitally corrected TGA (CCTGA), 107

D
Danaparoid, 38–39
D-dimer, 57
Deep vein thrombosis (DVT), 54–55
Dextran, 39
Disseminated intravascular coagulation (DIC), 1, 230–231

E
Ebstein’s anomaly, 108
Eisenmenger syndrome (ES), 109–110
Endothelial cell protein C receptor (ECPR), 5
Enzyme-linked immunosorbent assay (ELISA), 18

F
Factor VIII (FVIII), 131–132
Factor V Leiden (FVL) mutation, 19–20
fetal loss, 89–90
heritable thrombophilia, 84
IUGR, 86–87
placental abruption, 88–89
placental finding, 85
pre-eclampsia, 87–88
Factor XI deficiency
antenatal management, 121
epidural anesthesia, 122
FFP, 120
inheritance and clinical picture, 120
intrapartum management, 121–122
plasma-derived FXI concentrate, 120–121
postpartum management, 122
prenatal diagnosis, 121
recombinant VIIa, 121
tranexamic acid, 121
Familial dilated cardiomyopathy (FDCM), 105
Familial hypertrophic cardiomyopathy (FHCIM), 105–106
Fetal/neonatal alloimmune thrombocytopenia (FNAIT)
diagnosis of, 173–174
HPA antibodies, 172, 173
HPA type, 172
incidence of, 172
management (see Antenatal management)
neonatal treatment, 178–179
preconception counseling, 179
RhD disease, 173
risk of, 174
screening for, 179
timing/mode of birth, 178
F2G20210A, 20
Fibrinolytic system, 7–8
Fondaparinux, 39
Fresh frozen plasma (FFP), 120
Functional assay, 22

G
Glanzmann thrombasthenia (GT), 143–145
Graduated compression stockings (GCS), 40–41

H
Hematocrit, 3
Hemoglobinopathy
sickle cell disease
blood transfusion, 202
fetal and neonatal morbidity, 200
Hbs-beta thalassemia, 198
hemolytic anemia, 198
maternal morbidity, 199–200
maternal mortality data, 198–199
multidisciplinary care, 198
perinatal mortality data, 199
pregnancy care, 201–202
pre-pregnancy care, 200–201
prophylactic blood transfusion, 198
SCD contraception, 202–203
sickle cell trait
genetic counseling, 203–204
pregnancy complication, 204
thromboembolism, 204
thalassemia intermedia (TI)
anemia management, 211–212
management issues, 211
pregnancy outcome, 211–212
thrombotic risk management, 212
β-thalassemia major (TM)
endocrine complications, 205–206
pregnancy outcomes, 204–205
pre-pregnancy assessment, 206–207
thalassemia care (see Thalassemia)
α and β-thalassemia trait, 212–213
vasoocclusive crisis, 197
Hemophilia A/B, 131
bleeding disorder, 124
delivery management, 125–126
genetic counseling and carrier detection, 123–124
genetic diagnosis, 124
healthy children, testing of, 123–124
inheritance, 122, 123
postpartum management, 126
pregnancy, 125
prenatal diagnosis, 125
regional analgesia and anesthesia, 126
Hemostasis
acquired coagulation
DIC, 230–231
Vitamin K deficiency bleeding, 229–230
anticoagulant pathways, 5–7
coaugulation system, 3–5
DIC, 1
fibrinolytic system, 7–8
hematocrit, 3
inherited coagulation
diagnosis, 229
hemophilia, 228
treatment, 229
von Willebrand disease, 228–229
measures, coagulation, 8–9
microparticles, 9
platelets, 2
PT and APTT, 228
rare coagulation
  afibrinogenemia/hypofibrinogenemia, 229
  factor VII deficiency, 229
  factor X deficiency, 229
  factor XIII deficiency, 229
uteroplacental circulation, 9
von Willebrand factor (VWF), 2–3, 227
VTE, 1
Heparin binding site (HBS), 18
Hereditary and acquired thrombophilias
APCR, 77
APS
  aPL pregnancy loss, mechanisms of, 74
  factor V Leiden mutation, 76–77
  neonatal complication, 76
  outcome of untreated pregnancy, 73–74
  pregnancy morbidity, 73
  prevalence, 73
  treatment of, 74–76
clinical problem, 71–72
recurrent miscarriage, 72–73
thrombin-antithrombin level, 77
thromboelastography, 77–78
Heritable thrombophilia, 84
Hormone replacement therapy, 238
Hypereosinophilic syndrome, 185
Hyperhomocysteinemia, 20–21

I
Immune thrombocytopenic purpura (ITP)
  clinical features, 161
  hemorrhagic manifestations, 162
  pathophysiology, 159–160
  risks of, 161–162
  terminology and classification, 159
  treatment of
    anesthetic, 165–166
    corticosteroids, 162–163
inherited thrombocytopenias, 221
  onset of
    Bernard-Soulier syndrome, 221
    bone marrow infiltration, 222
    CAMT, 222–223
    chronic fetal hypoxia, 221
    inherited disorder, 222
    Kasabach-Merritt syndrome, 222
    Klesbiella sp., 222
    late-onset sepsis, 223
    lysosomal storage disease, 222
    metabolic disease, 222
    necrotizing enterocolitis, 223

Intra-uterine fetal death (IUF), 90
Intravenous anti-D immunoglobulin (IV anti-D), 164
Intravenous immunoglobulin (IV Ig), 163
Ischemic heart disease (IHD), 100, 103

J
JAK2V617F mutation, 188

L
Late-onset sepsis, 223
Left ventricular non-compaction (LVNC), 105, 106
Low molecular weight heparin (LMWH), 27, 38, 58–59, 90–92, 101–102

M
Myeloproliferative neoplasms (MPN)
  clinical features, 186
  diagnosis, 186–187
  hypereosinophilic syndrome, 185
  indolent stem cell, 185
  management of, 188–189
  natural history, 187–188
  pregnancy outcome, 190–191
  therapeutic strategy
    breast-feeding, 193
    fertility treatment/contraception, 191
    fetal assessment, 193
    high-risk pregnancies, 191–192
    intrapartum, 193
    postpartum, 193
    pregnancy management, 191
    thromboprophylaxis, 192

N
Neonatal thrombocytopenia
  causes of, 219–220
  clinical feature
    alloimmune, 220
    aneuploidies, 220–221
    autoimmune, 221
    congenital infection, 220
    inherited thrombocytopenias, 221
    onset of
      Bernard-Soulier syndrome, 221
      bone marrow infiltration, 222
      CAMT, 222–223
      chronic fetal hypoxia, 221
      inherited disorder, 222
      Kasabach-Merritt syndrome, 222
      Klesbiella sp., 222
      late-onset sepsis, 223
      lysosomal storage disease, 222
      metabolic disease, 222
      necrotizing enterocolitis, 223
Neonatal thrombocytopenia (cont.)
perinatal asphyxia, 221
perinatal infection, 221
TAR syndrome, 222
thrombotic disorder, 222
treatment of, 223
Neonatal thromboembolism
clinical presentation
perinatal stroke, 226
renal vein thrombosis, 225–226
umbilical catheterization, 225
etiology of, 224–225
treatment of, 226–227
O
Ovarian hyperstimulation syndrome (OHSS), 237
P
Peripartum cardiomyopathy (PPCM), 105
Pharmacological therapy
coumarin, 57
fondaparinux and hirudin, 57–58
LMWH, 58–59
unfractionated heparin, 58
Platelet function disorders (PFDs)
abnormal pregnancy, 144
adequate hemostasis, 143
classification of
BSS, 145–146
GT, 145
non-severe, 145, 146
diagnostic features of, 143–144
Glanzmann thrombasthenia, 143, 144
management of
alloantibody formation, 151–152
fetal bleeding, risk of, 152
measures, 150
postpartum hemorrhage, 150–151
preconception counseling, 149–150
normal pregnancy, 144
pregnancy outcome
fetal alloimmune
thrombocytopenia, 147
fetal bleeding, 147
maternal bleeding, 146–147
pro-proliferative activities, 143
treatment and prevention
desmopressin, 148
measure and antifibrinolytics, 148
platelet transfusion, 149
recombinant FVIIa, 148–149
Pleiotropic (PE), 18
Post-thrombotic syndrome (PTS), 66
Prophylactic blood transfusion, 198
Protein C/S, 5–7, 18–19
Prothrombin time (PT), 22, 228
Pulmonary embolus, 55–57
Purpura fulminans, 29
R
Rare bleeding disorder (RBD)
bleeding during pregnancy, 134
classification of, 132–133
inherited deficiency, 131–132
menorrhagia, 133
miscarriage, 133–134
molecular diagnosis, 136
mucosal tract bleeding, 133
multidisciplinary clinic, 137–138
phenotype analysis, 135–136
postpartum hemorrhage, 134–135
prevalence of, 132
therapeutic management, 136–138
Reactive site (RS), 18
Regional anesthesia and heparin, 64–65
Rheumatic heart disease (RHD), 100
Rotational thromboelastometry (RoTEM), 8
S
Sickle cell disease (SCD)
blood transfusion, 202
fetal and neonatal morbidity, 200
HbS-beta thalassemia, 198
hemolytic anemia, 198
maternal morbidity, 199–200
maternal mortality data, 198–199
multidisciplinary care, 198
perinatal mortality data, 199
pregnancy care, 201–202
pre-pregnancy care, 200–201
prophylactic blood transfusion, 198
SCD contraception, 202–203
T
Thalassemia
cardiac risk, 208–209
chelation therapy, 208–209
delivery time and method, 210
endocrine issues, 210
infection risk, 210
postnatal care and complication, 210–211
thrombosis risk, 209
transfusion, 207–208
Thalassemia intermedia (TI)
anemia management, 211–212
management issues, 211
pregnancy outcome, 211–212
thrombotic risk management, 212
β-Thalassemia major (TM)
endocrine complications, 205–206
pregnancy outcomes, 204–205
pre-pregnancy assessment, 206–207
thalassemia care
cardiac risk, 208–209
chelation therapy, 208–209
delivery time and method, 210
diabetes issues, 210

Thrombocytopenia
fetal/neonatal alloimmune thrombocytopenia
diagnosis of, 173–174
HPA antibodies, 172, 173
HPA type, 172
incidence of, 172
management (see Antenatal management)
neonatal treatment, 178–179
preconception counseling, 179
RhD disease, 173
risk of, 174
screening for, 179
timing/mode of birth, 178

gestational
aggregates or clumps, 158
antiphospholipid syndrome, 157
ex vivo, 158
HIV or malaria infection, 157
incidence of, 158
platelet count, 158–159
variables, 158

Thrombocytopenia-absent radius (TAR) syndrome, 222

Thromboelastography (TEG), 8, 77–78

Thrombophilies
acquired thrombophilia, 84–85
clinical management, 15–16
fetal genotype, 92–93
fetal loss, 89–90
hemostatic change, 83–84
heritable thrombophilia, 84
and IUGR, 86–87
limitations of, 21–23
LMWH, 27
management, 90–92
and placental abruption, 88–89
placental finding, 85–86
and pre-eclampsia, 87–88
preeclampsia and intrauterine
growth restriction, 24–25, 28
pregnancy-associated venous
thrombosis, 23–27
pregnancy loss, 24–25, 27–28, 93
pupura fulminans, 29
randomized controlled trial, 28–29
systematic review, 24–25, 27
venous thrombosis, risk of
antithrombin, 17–18
APS, 21
factor V Leiden, 19–20
factor XIII gene, 20
F2G20210A, 20
hyperhomocysteinemia, 20–21
protein C, 18–19
protein S, 19

Thrombotic and hemostatic aspects of assisted conception
acquired thrombophilia, 241–242
adverse incidents, 240
diagnosis of OHSS-related thrombosis, 239–240
hemostatic changes associated with assisted conception, 238
heparin, role of in assisted conception, 240
hormone replacement therapy, 238
incidence of OHSS-related thrombosis, 237–238
IVF treatment, 237
mechanism of venous and arterial thrombosis in assisted conception, 238–239
OHSS, 237
prevention of OHSS, 240–241
protein C and S, 238
prothrombotic mechanism, 238
Treatment of OHSS-related thrombosis, 240
Thrombotic disorder, 222
Tissue plasminogen activator (tPA), 7
Transposition of the great arteries (TGA), 107

U
Urokinase-type plasminogen activator (uPA), 7

V
Venous thromboembolism (VTE), 1
acute maternal collapse, 61–63
anticoagulant therapy, 59
delivery planning
elective caesarean section, 63–64
induction of labor, 64
primary aim, 63
regional anesthesia and heparin, 64–65
spontaneous labor, 63
diagnosis of
CVT, 57
DVT, 54–55
pulmonary embolus, 55–57
epidemiology, 52–53
initial dose of drug, 60–61
management, 65–66
antithrombin deficiency, 44–45
delivery mode, 45–46
obesity, 45
prothrombotic change, 46–47
risk assessment tool, 42
risk stratification, 43, 45
thrombophilia, 43–44
thrombophilia testing, 45
pathophysiology, 53–54
pharmacological therapy
coumarin, 57
fondaparinux and hirudin, 57–58
LMWH, 58–59
unfractionated heparin, 58
PTS, 66
risk factor
Venous thromboembolism (VTE) (cont.)

- age, 36
- antithrombin, 34
- APS, 34–35
- delivery mode, 37
- factor V Leiden and prothrombin G20210A, 32–34
- first-trimester event, 36–37
- heterozygote carrier, 36
- hospitalization, 37
- immobility, 37
- MTHFR, 34
- obesity, 36
- prior estrogen provoked, 35
- protein C/protein S, 34
- recurrent VTE, 35
- temporary risk factor, 35
- unprovoked, 36

Thromboprophylaxis
- danaparoid, 38–39
- dextran, 39
- duration, 41–43
- efficacy, 37–38
- fondaparinux, 39
- GCS, 40–41
- LMWH, 38
- low dose aspirin, 39
- monitoring, 41
- oral thrombin and Xa inhibitor, 40
- pharmacological contraindication, 40
- timing, 41

Unfractionated heparin, 38
Warfarin, 39

Venous thrombosis
- pregnancy, 23–27
- risk factor
  - antithrombin, 17–18
  - APS, 21
  - factor V Leiden, 19–20
  - factor XIII gene, 20
  - F2G20210A, 20
  - hyperhomocysteinemia, 20–21
  - protein C, 18–19
  - protein S, 19

Vitamin K deficiency bleeding (VKDB), 229–230
von Willebrand disease (VWD), 131, 134, 188, 228–229
  - antenatal management, 116–118
  - bleeder family, 115, 116
  - classification of, 116
  - clotting factor, 118
  - DDAVP, 118
  - inheritance and clinical picture, 115–116
  - miscarriage, 118
  - postpartum management, 119–120
  - prepregnancy counseling, 116
  - regional analgesia and anesthesia, 118–119

von Willebrand factor (VWF), 2–3, 227

W
Warfarin, 39
Wiskott-Aldrich syndrome, 221