

Index

Note: Page numbers of article titles are in **boldface** type.

A

- AAD. See Acute aortic dissection (AAD)
- ACSs. See Acute coronary syndromes (ACSs)
- Acute anemia
 - TAVR and, 612–614
- Acute aortic dissection (AAD)
 - clinical presentation of, 494–495
 - diagnosis of, 494–495
 - initial evaluation of, 494–495
 - initial therapy for, 495–497
 - mortality associated with, 495
 - risk factors for, 494–495
 - subtypes of, 493
- Acute aortic syndromes, **493–501**
- Acute cardiogenic pulmonary edema
 - NIV for, 627–630
- Acute coronary syndromes (ACSs)
 - antithrombotic therapy for
 - in CCU, 536–538
 - PAC in, 552–554
 - mechanical complications–related, 555–556
- Acute kidney injury (AKI)
 - TAVR and, 615–616
- Acute mitral regurgitation (MR)
 - AMI and, 524–527
 - diagnosis of, 525–526
 - introduction, 524–525
 - outcomes of, 526–527
 - pathophysiology of, 525
 - treatment of, 526
- Acute myocardial infarction (AMI)
 - mechanical complications of, **519–531**, 575–576.
 - See also *specific complications, e.g.,*
 - Ventricular septal rupture
 - acute MR, 524–527
 - free wall rupture, 575
 - LV, 527–528
 - introduction, 519
 - ventricular septal rupture, 519–524
 - VT in patients with, 599
- Acute pulmonary embolism (PE)
 - in CCU
 - management of, 539–540
- Advanced care planning
 - in cardiovascular ICU
 - ethical issues related to, 659
- AF. See Atrial fibrillation (AF)
- AKI. See Acute kidney injury (AKI)
- AMI. See Acute myocardial infarction (AMI)

- Anemia
 - acute
 - TAVR and, 612–614
 - Anti-inflammatory therapies
 - in CS management, 576
 - Anticoagulant(s)
 - in CCU, **533–544**
 - antiplatelet agents with, 538
 - for cardioversion, 539
 - conventional agents
 - limitations of, 535–536
 - described, 533–535
 - newer agents, 536
 - perioperative use, 541
 - Anticoagulation
 - long-term
 - in PE management, 513–514
 - in PE management, 508
 - Antiplatelet agents
 - in CCU, **533–544**
 - for acute VTE, 539
 - for AF, 538–539
 - anticoagulants with, 538
 - conventional agents, 534
 - described, 533–534
 - newer agents, 534–535
 - perioperative use, 541
 - timing of, 538
 - Antithrombotic therapy
 - in CCU, 536–538
 - Arrhythmia(s)
 - mechanical circulatory support for, 586–587
 - ventricular, **595–605**. See also Ventricular arrhythmias
 - Atrial fibrillation (AF)
 - in CCU
 - management of, 538–539
 - new-onset
 - TAVR and, 614–615
- ## B
- Balloon floatation catheter
 - placement of
 - and hemodynamic measurements, 546–550
 - Bleeding
 - control of
 - in CCU, 540–541
 - mechanical circulatory support for, 587–588

- Brain injury
 - in CA
 - pathophysiology of, 638
- Breathing
 - spontaneous
 - cardiovascular system effects of, 620–621
- Brugada syndrome
 - VT in patients with, 600

- C**
- CA. *See* Cardiac arrest (CA)
- Cardiac arrest (CA)
 - brain injury in
 - pathophysiology of, 638
 - hypothermia after
 - with initial nonshockable rhythm, 640
 - with initial shockable rhythm, 639–640
 - targeted temperature management in survivors of, **637–655**. *See also* Mild therapeutic hypothermia (MTH), after CA
 - historical perspective, 637–640
 - introduction, 637
- Cardiac care unit (CCU)
 - acute DVT in
 - management of, 539
 - acute medical illness in
 - thromboprophylaxis for, 540
 - acute PE in
 - management of, 539–540
 - acute VTE in
 - management of, 539
 - AF in
 - management of, 538–539
 - antiplatelet and anticoagulant agents in, **533–544**. *See also* Anticoagulant(s), in CCU; Antiplatelet agents, in CCU
 - antithrombotic therapy in, 536–538
 - bleeding control in, 540–541
 - mechanical heart valve prostheses in, 540
 - perioperative use, 541
 - triple therapy in, 540
- Cardiac catheterization laboratory
 - PAC in, 552
- Cardiac conditions
 - MTH after CA and, 646
- Cardiac critical care
 - after TAVR, **607–618**. *See also* Transcatheter aortic valve replacement (TAVR), cardiac critical care after
 - evolution of, **485–492**
 - contemporary, 487–489
 - early years, 485–486
 - middle ages, 486–487
 - multidisciplinary approach to increasingly complex patients, 489–490
- Cardiac intensive care unit (CICU)
 - ventilator management in, **619–636**
 - cardiac dysfunction, 623
 - for congestive cardiac failure and acute cardiogenic pulmonary edema
 - NIV use, 627–630
 - considerations related to, 626–627
 - intermittent positive pressure ventilation
 - effects on cardiovascular system, 621–622
 - introduction, 619
 - MV
 - indications for, 623–624
 - oxygenation considerations in, 624–626
 - PEEP effects on cardiovascular system, 622–623
 - physiologic basis of, 620
 - spontaneous breathing effects on cardiovascular system, 620–621
 - weaning issues, 630–633
- Cardiac output
 - determination of
 - PAC in, 550–552
- Cardiac surgery
 - VT in patients after, 600
- Cardiogenic shock (CS), **567–580**
 - causes of, 567–568
 - described, 567
 - diagnosis of, 570
 - future directions in, 576–577
 - introduction, 567
 - management of
 - advanced mechanical circulatory support in, 574–575
 - CentriMag in, 575
 - ECMO in, 574–575
 - general considerations in, 570
 - hemodynamic monitoring in, 571
 - IABP in, 573–574
 - Impella Recover 2.5 in, 574
 - initial therapy in, 571
 - novel therapies in, 576–577
 - percutaneous LV assist devices in, 574
 - pharmacologic, 572–573
 - randomized trials of pVADs in, 574
 - reperfusion in, 571–572
 - TandemHeart in, 574
 - outcomes of, 568–569
 - pathophysiology of, 569–570
- Cardiomyopathy
 - ischemic
 - revascularized patients with
 - VT in, 599
 - nonischemic
 - VT in patients with, 599–600
- Cardiovascular disease
 - weaning issues in patients with, 630
- Cardiovascular intensive care unit (ICU)

- communication issues in, 664–665
 - from coronary care unit to, **485–492**. *See also* Cardiac critical care, evolution of
 - ethical issues in, **657–661**
 - advanced care planning and shared decision making, 659
 - described, 658–659
 - futility-related, 660–661
 - interfaced with end-of-life care, 661
 - introduction, 657–658
 - palliative care in, **661–666**
 - barriers to, 663–664
 - described, 661–662
 - reasons for, 662–663
 - sedation in, 665
 - spiritual and emotional support of patients and families, 665
 - structuring of, 663
 - withdrawal of life-sustaining treatments in, 665–666
 - Cardiovascular system
 - intermittent positive pressure ventilation effects on, 621–622
 - PEEP effects on, 622–623
 - spontaneous breathing in effect of, 620–621
 - Cardioversion
 - anticoagulants for, 539
 - CardioWest TAH, 590–591
 - Catheter(s)
 - pulmonary artery, **545–565**. *See also* Pulmonary artery catheters (PACs)
 - Catheter-directed thrombectomy
 - in PE management, 510–511
 - CCU. *See* Cardiac care unit (CCU)
 - CentriMag
 - in CS management, 575
 - Chronic systolic heart failure
 - PAC in, 558
 - CICU. *See* Cardiac intensive care unit (CICU)
 - Communication issues
 - in cardiovascular ICU, 664–665
 - Conduction disturbances
 - TAVR and, 615
 - Congenital heart disease
 - VT in patients with, 600
 - Congenital LQTS
 - VT in patients with, 601
 - Congestive cardiac failure
 - NIV for, 627–630
 - Coronary care unit
 - to cardiovascular ICU, **485–492**. *See also* Cardiac critical care, evolution of
 - evolution of, 582
 - Coronary perfusion pressure
 - in PE management, 512
 - CPVT
 - VT in patients with, 601–602
 - CS. *See* Cardiogenic shock (CS)
- D**
- Deep vein thrombosis (DVT)
 - acute
 - in CCU
 - management of, 539
 - Device alarms and “code” situations
 - mechanical circulatory support for, 589
 - Drug therapy
 - in CS management, 572–573
 - for ventricular arrhythmias, 598–599
 - DVT. *See* Deep vein thrombosis (DVT)
- E**
- ECMO. *See* Extracorporeal membrane oxygenation (ECMO)
 - Embolectomy
 - pulmonary
 - in PE management, 509–510
 - Embolism
 - pulmonary
 - massive, **503–518**. *See also* Pulmonary embolism (PE)
 - Emotional support
 - in palliative care in cardiovascular ICU, 665
 - End-of-life care
 - interface of ethics and, 661
 - ES
 - defined, 602
 - Ethical issues
 - in cardiovascular ICU, **657–661**. *See also* Cardiovascular intensive care unit (ICU), ethical issues in
 - External defibrillation and cardioversion
 - in ventricular arrhythmia management, 596–597
 - Extracorporeal membrane oxygenation (ECMO)
 - in CS management, 574–575
- F**
- Fever
 - TAVR and, 614
 - Fibrinolysis
 - in PE management, 508–509
 - Free wall rupture
 - ACI and, 575
 - LV
 - AMI and, 527–528
 - Futility
 - in cardiovascular ICU, 660–661

H

- Heart(s)
 - structurally normal
 - VT in patients with, 600–602
- Heart disease
 - congenital
 - VT in patients with, 600
 - structural
 - VT in, 599–600
- Heart failure
 - advanced
 - durable mechanical circulatory support in, **581–593**
 - for arrhythmias, 586–587
 - for bleeding, 587–588
 - clinical profiles and device selection, 582–583
 - device alarms and “code” situations, 589
 - future directions in, 591–592
 - for hypertension and hypotension, 586
 - for infections, 588–589
 - long-term devices, 583–584
 - monitoring device function, 585–586
 - for right heart failure, 589–591
 - for thrombosis, 588
 - troubleshooting, 584–591
 - congestive
 - NIV for, 627–630
 - hospitalizations due to, 581
 - right
 - durable mechanical circulatory support for, 589–591
 - systolic
 - chronic
 - PAC in, 558
- Heart transplantation
 - orthotopic
 - VT in patients after, 600
 - PAC after, 559
- Hypertension
 - mechanical circulatory support for, 586
 - pulmonary
 - PAC in, 558–559
- Hypertensive syndromes, **493–501**
- Hyperthermia
 - after MTH, 646, 649
- Hypotension
 - mechanical circulatory support for, 586
 - TAVR and, 611–612
- Hypothermia
 - after CA
 - with initial nonshockable rhythm, 640
 - with initial shockable rhythm, 639–640
 - therapeutic
 - in CS management, 576–577
 - mild
 - after CA, **637–655**. *See also* Mild therapeutic hypothermia (MTH), after CA

I

- IABP. *See* Intra-aortic balloon pump (IABP)
- ICD. *See* Implantable cardioverter-defibrillator (ICD)
- ICU. *See also* Intensive care unit (ICU)
- Idiopathic ventricular tachycardia (VT)
 - VT in patients with, 602
- Impella Recover 2.5
 - in CS management, 574
- Implantable cardioverter-defibrillator (ICD)
 - in ventricular arrhythmia management, 598
- Infection(s)
 - mechanical circulatory support for, 588–589
- Inferior vena cava filter
 - in PE management, 513
- Intensive care unit (ICU)
 - cardiovascular
 - from coronary care unit to, **485–492**. *See also* Cardiac critical care, evolution of
 - PE management in, 511
- Intermittent positive pressure ventilation
 - cardiovascular system effects of, 621–622
- Intra-aortic balloon pump (IABP)
 - in CS management, 573–574
- Ischemic cardiomyopathy
 - revascularized patients with
 - VT in, 599

L

- Left cardiac sympathetic denervation
 - in ventricular arrhythmia management, 598
- Left ventricular (LV) free wall
 - rupture of
 - AMI and, 527–528
- Leukocytosis
 - TAVR and, 614
- Life-sustaining treatments
 - in cardiovascular ICU
 - withdrawal of, 665–666
- Long QT syndrome (LQTS)
 - congenital
 - VT in patients with, 601
- LQTS. *See* Long QT syndrome (LQTS)
- LV free wall. *See* Left ventricular (LV) free wall

M

- Mechanical circulatory support
 - advanced
 - in CS management, 574–575
 - in advanced heart failure, **581–593**. *See also* Heart failure, advanced, durable mechanical circulatory support in

in CS management, 577
 withdrawal of
 in cardiovascular ICU, 666

Mechanical heart valve prostheses
 in CCU, 540

Mechanical support
 in PE management, 512–513

Mechanical ventilation (MV)
 in CICU
 indications for, 623–624
 withdrawal of
 in cardiovascular ICU, 665–666

MI. *See also* Myocardial infarction (MI)

Mild therapeutic hypothermia (MTH)
 after CA, **637–655**
 application of, 640–642
 future directions in, 649
 hyperthermia after, 646, 649
 indications for, 640
 induction of, 640–641
 maintenance of, 641
 outcomes after, 646–649
 problems encountered during, 642–646
 cardiac conditions, 646
 prognostication, 646
 shivering, 642, 644–646
 protective effects of, 638–639
 rationale for, 637
 rewarming, 641–642
 temperature monitoring in, 642

Mitral regurgitation (MR)
 acute
 AMI and, 524–527. *See also* Acute mitral regurgitation (MR)

MTH. *See* Mild therapeutic hypothermia (MTH)

MV. *See* Mechanical ventilation (MV)

Myocardial infarction (MI)
 acute
 mechanical complications of, **519–531**. *See also* Acute myocardial infarction (AMI), mechanical complications of

N

Nitric oxide (NO) inhibition
 in CS management, 576

NIV. *See* Noninvasive ventilation (NIV)

Non acute coronary syndromes (ACSs)
 PAC in, 556–558

Noninvasive ventilation (NIV)
 in congestive cardiac failure and acute cardiogenic pulmonary edema, 627–630

Nonischemic cardiomyopathy
 VT in patients with, 599–600

Nutrition
 in cardiac critical care after TAVR, 611

O

Orthotopic heart transplantation
 VT in patients after, 600

Oxygenation
 in ventilator management in CICU, 624–626

P

Pacemaker(s)
 permanent
 withdrawal of
 in cardiovascular ICU, 666

Pacing
 in ventricular arrhythmia management, 598

PACs. *See* Pulmonary artery catheters (PACs)

Palliative care
 in cardiovascular ICU, **661–666**. *See also* Cardiovascular intensive care unit (ICU), palliative care in described, 661–662

Papillary muscle rupture
 ACI and, 575–576

PE. *See* Pulmonary embolism (PE)

PEEP. *See* Positive end expiratory pressure (PEEP)

Percutaneous LV assist devices
 in CS management, 574

Percutaneous ventricular assist devices (pVADs)
 randomized trials of
 in CS management, 574

Platelet inhibitor drugs
 in CCU
 limitations of, 534

Positive end expiratory pressure (PEEP)
 cardiovascular system effects of, 622–623

Pulmonary artery catheters (PACs), **545–565**
 balloon floatation catheter placement and hemodynamic measurements, 546–550
 in cardiac output determination, 550–552
 clinical applications of, 552–559
 ACSs, 552–554
 mechanical complications-related, 555–556
 cardiac catheterization laboratory, 552
 chronic systolic heart failure, 558
 non ACSs, 556–558
 pulmonary hypertension, 558–559
 RV-MI, 554–555
 transplantation, 559
 complications of, 559–560
 controversial issues related to, 560–561
 evolution of, 545–546
 indications for, 561–562
 introduction, 545
 PA data from, 552

Pulmonary edema
 acute cardiogenic

Pulmonary (*continued*)

NIV for, 627–630

Pulmonary embolectomy

in PE management, 509–510

Pulmonary embolism (PE), **503–518**

acute

in CCU

management of, 539–540

classification of, 503–504

clinical presentation of, 504–505

diagnosis of, 505–507

introduction, 503–504

management of, 507–514

anticoagulation in, 508

long-term, 513–514

catheter-directed thrombectomy in, 510–511

coronary perfusion pressure in, 512

described, 507

fibrinolysis in, 508–509

in ICU, 511

inferior vena cava filter in, 513

mechanical support in, 512–513

outcomes of, 514

pulmonary embolectomy in, 509–510

RV afterload in, 512

RV contractility in, 512

RV preload optimization in, 511–512

massive, **503–518**

pathophysiology of, 504

prevalence of, 503

risk stratification in, 505–507

Pulmonary hypertension

PAC in, 558–559

pVADs. *See* Percutaneous ventricular assist devices

(pVADs)

R

Radiofrequency catheter ablation

in ventricular arrhythmia management, 598

Reperfusion

in CS management, 571–572

Right heart failure

mechanical circulatory support for, 589–591

Right ventricular (RV)-myocardial infarction (MI)

PAC in, 554–555

Right ventricular (RV) afterload

in PE management, 512

Right ventricular (RV) contractility

in PE management, 512

Right ventricular (RV) infarction, 576

Right ventricular (RV) preload

optimization of

in PE management, 511–512

RV-MI. *See* Right ventricular (RV)-myocardial

infarction (MI)

RV preload. *See* Right ventricular (RV) preload**S**

Shared decision making

in cardiovascular ICU

ethical issues related to, 659

Shivering

MTH after CA and, 642, 644–646

Shock

cardiogenic, **567–580**. *See also* Cardiogenic shock (CS)

Spiritual support

in palliative care in cardiovascular ICU, 665

Spontaneous breathing

cardiovascular system effects of, 620–621

Stroke

TAVR and, 614–615

Structural heart disease

VT in, 599–600

SynCardia TAH, 590

T

Tachycardia(s)

ventricular. *See* Ventricular tachycardia (VT)

TADD. *See* Type A aortic dissection (TADD)

TandemHeart

in CS management, 574

TAVR. *See* Transcatheter aortic valve replacement (TAVR)TBAD. *See* Type B aortic dissection (TBAD)

TdP

VT in patients with, 600

Temperature management

in CA survivors, **637–655**. *See also* Cardiac arrest (CA), targeted temperature management in survivors of; Mild therapeutic hypothermia (MTH), after CA

Therapeutic hypothermia

in CS management, 576–577

Thrombectomy

catheter-directed

in PE management, 510–511

Thromboembolism

venous

acute

in CCU

management of, 539

Thrombosis

deep vein. *See* Deep vein thrombosis (DVT)
mechanical circulatory support for, 588

Total artificial heart, 590–591

Transcatheter aortic valve replacement (TAVR)

cardiac critical care after, **607–618**

complications of, 611–616

acute anemia, 612–614

AKI, 615–616

conduction disturbances, 615

- fever, 614
- hypotension, 611–612
- leukocytosis, 614
- new-onset AF, 614–615
- stroke, 614–615
- vascular, 612–614
- global approach to, 610
- managing ventilator in, 610–611
- optimizing nutrition in, 611
- postprocedure communication, 610
- preparation for, 608–610
 - hemodynamic changes–related, 609–610
 - patient-related, 608
 - procedure-related, 608–609
- described, 607–608
- Transplantation
 - heart
 - orthotopic
 - VT in patients after, 600
 - PAC after, 559
- Type A aortic dissection (TADD)
 - surgical management of, 497–498
- Type B aortic dissection (TBAD)
 - management of, 498–499

V

- VADs. *See* Ventricular assist devices (VADs)
- Vascular system
 - TAVR and, 612–614
- Venous thromboembolism (VTE)
 - acute
 - in CCU
 - management of, 539
- Ventilation
 - intermittent positive pressure
 - cardiovascular system effects of, 621–622
 - noninvasive
 - in congestive cardiac failure and acute cardiogenic pulmonary edema, 627–630
- Ventilator(s)
 - in cardiac critical care after TAVR, 610–611
 - in CICU
 - management of, **619–636**. *See also* Cardiac intensive care unit (CICU), ventilator management in

- Ventricular arrhythmias, **595–605**. *See also* Ventricular tachycardia (VT)
 - epidemiology of, 595
 - immediate considerations regarding, 595–596
 - introduction, 595
 - management of
 - ICD and pacing in, 598
 - left cardiac sympathetic denervation in, 598
 - nonpharmacologic modalities in, 596–598
 - pharmacotherapy in, 598–599
 - RFA in, 598
 - prognostic significance of, 595
- Ventricular assist devices (VADs)
 - VT in patients with, 600
- Ventricular septal rupture
 - ACI and, 575
 - AMI and, 519–524
 - controversial issues related to, 522–523
 - diagnosis of, 520–521
 - introduction, 519–520
 - operative technique, 521–522
 - outcomes of, 523
 - pathophysiology of, 520
 - preoperative resuscitation and optimization for, 521
- Ventricular tachycardia (VT). *See also* Ventricular arrhythmias
 - after cardiac surgery, 600
 - after orthotopic heart transplantation, 600
 - in AMI patients, 599
 - in Brugada syndrome patients, 600
 - in congenital heart disease patients, 600
 - in congenital LQTS patients, 601
 - in CPVT patients, 601–602
 - idiopathic
 - VT in patients with, 602
 - in idiopathic VT patients, 602
 - in nonischemic cardiomyopathy patients, 599–600
 - in patients with structural heart disease, 599–600
 - in patients with structurally normal hearts, 600–602
 - in patients with VADs, 600
 - in revascularized patients with ischemic cardiomyopathy, 599
 - in TdP patients, 600
- VT. *See* Ventricular tachycardia (VT)
- VTE. *See* Venous thromboembolism (VTE)