Contents

Introduction .................................................................................................................. 1

Overview of ICD-10 .................................................................................................. 1
Getting Ready for ICD-10 ...................................................................................... 2
Using This ICD-10-CM Workbook ......................................................................... 3
Workbook Guidelines ............................................................................................ 4
Summary .................................................................................................................. 4

Case Studies and Questions ..................................................................................... 5

Case Study #1—Pulmonary Embolism ................................................................... 5
Case Study #2—Heart Failure ................................................................................. 9
Case Study #3—Left Upper Extremity Deep Venous Thrombosis ...................... 13
Case Study #4—Takotsubo Cardiomyopathy ..................................................... 15
Case Study #5—Pulmonary Hypertension ............................................................ 18
Case Study #6—Myocardial Infarction ................................................................. 21
Case Study #7—Ischemic Cardiomyopathy ......................................................... 26
Case Study #8—Calf Pain .................................................................................... 31
Case Study #9—Pacemaker Replacement ............................................................. 34
Case Study #10—Chest Pain ............................................................................... 36
Case Study #11—Sudden Cardiac Arrest and Placement of AICD ................. 38
Case Study #12—Syncope and Bradycardia ....................................................... 40
Case Study #13—Status Post Heart Transplant ................................................. 42
Case Study #14—Pericardial Effusion ................................................................ 45
Case Study #15—Aortic Stenosis ...................................................................... 48
Case Study #16—Open Chest Effusion ................................................................. 51
Case Study #17—Myocardial Infarction and Cardiogenic Shock .................... 53
Case Study #18—Postoperative Infection Status Post Transapical Aortic Valvular Implantation (TA-TAVI) ............................. 56
Case Study #19—Stable Angina ......................................................................... 58
Case Study #20—Carotid Artery Stenosis ......................................................... 62
Case Study #21—Postoperative Septic Shock .................................................... 65
Case Study #22—Hypertensive Kidney Disease ................................................. 68
Case Study #23—Rupture of Ventricular Septum after Myocardial Infarction .... 72
Case Study #24—Varicose Veins ..................................................................... 74
Case Study #25—Mesenteric Angiography ......................................................... 76
Case Study #26—Ventricular Septal Defect ....................................................... 78
Case Study #27—Metabolic X Syndrome ............................................................. 81
Case Study #28—Aortic Aneurysm .................................................................... 84
Case Study #29—Rheumatic Heart Disease ...................................................... 87
Case Study #30—Wolff-Parkinson-White Syndrome ....................................... 90
Case Study #31—Common Carotid to Subclavian Artery Bypass .................... 93
Case Study #32—Renovascular Hypertension ................................................... 96
Case Study #33—Borderline Cardiomegaly ....................................................... 99
Case Study #34—Peripartum Cardiomyopathy after Delivery ......................... 102
Case Study #35—Cerebrovascular Accident ................................................... 105
Case Study #36—Myocarditis due to Infection with Rickettsia Tsutsugamushi .... 109
Case Study #37—Bypass Graft Occlusion ......................................................... 112
Case Study #38—Angina Equivalent ................................................................ 114

© 2015 Optum360, LLC
Case Study #39—Placement of Port for Chemotherapy ................................................................. 117
Case Study #40—Discoloration of the Foot .................................................................................. 119
Case Study #41—Sick Sinus Syndrome ....................................................................................... 122
Case Study #42—Infected Pacemaker Pocket .............................................................................. 124
Case Study #43—Removal of Clotted AV Graft after Attempted Thrombectomy ....................... 128
Case Study #44—Femoral-Popliteal Bypass ................................................................................ 131
Case Study #45—Atrial Septal Defect in an Adult ....................................................................... 133
Case Study #46—Atrial Myxoma ................................................................................................. 136
Case Study #47—Chest Pain Due to Cocaine Use ...................................................................... 138

Answers and Rationales ............................................................................................................. 143
Case Study #1—Pulmonary Embolism ....................................................................................... 143
Case Study #2—Heart Failure ..................................................................................................... 145
Case Study #3—Left Upper Extremity Deep Venous Thrombosis .................................................. 147
Case Study #4—Takotsubo Cardiomyopathy .............................................................................. 149
Case Study #5—Pulmonary Hypertension ................................................................................... 151
Case Study #6—Myocardial Infarction ......................................................................................... 153
Case Study #7—Ischemic Cardiomyopathy ............................................................................... 156
Case Study #8—Calf Pain ........................................................................................................... 159
Case Study #9—Pacemaker Replacement .................................................................................. 161
Case Study #10—Chest Pain ....................................................................................................... 163
Case Study #11—Sudden Cardiac Arrest and Placement of AICD ................................................ 165
Case Study #12—Syncope and Bradycardia .............................................................................. 167
Case Study #13—Status Post Heart Transplant .......................................................................... 170
Case Study #14—Pericardial Effusion ......................................................................................... 172
Case Study #15—Aortic Stenosis .................................................................................................. 174
Case Study #16—Open Chest Trauma ....................................................................................... 176
Case Study #17—Myocardial Infarction and Cardiogenic Shock ............................................... 179
Case Study #18—Postoperative Infection Status Post Transapical Aortic Valvular Implantation (TA-TAVI) .................................................................................................................. 181
Case Study #19—Stable Angina .................................................................................................. 183
Case Study #20—Carotid Artery Stenosis .................................................................................. 185
Case Study #21—Postoperative Septic Shock ............................................................................. 188
Case Study #22—Hypertensive Kidney Disease ........................................................................ 190
Case Study #23—Rupture of Ventricular Septum after Myocardial Infarction ......................... 192
Case Study #24—Varicose Veins ................................................................................................. 194
Case Study #25—Mesenteric Angiography ............................................................................... 196
Case Study #26—Ventricular Septal Defect .............................................................................. 198
Case Study #27—Metabolic X Syndrome .................................................................................. 200
Case Study #28—Aortic Aneurysm ............................................................................................. 202
Case Study #29—Rheumatic Heart Disease .............................................................................. 204
Case Study #30—Wolff-Parkinson-White Syndrome .................................................................. 206
Case Study #31—Common Carotid to Subclavian Artery Bypass ............................................. 208
Case Study #32—Renovascular Hypertension .......................................................................... 210
Case Study #33—Borderline Cardiomegaly ............................................................................. 212
Case Study #34—Peripartum Cardiomyopathy after Delivery ................................................... 214
Case Study #35—Cerebrovascular Accident ............................................................................ 216
Case Study #36—Myocarditis due to Infection with Rickettsia Tsutsugamushi ....................... 218
Case Study #37—By-pass Graft Occlusion ................................................................................. 220
Case Study #38—Angina Equivalent ......................................................................................... 222
| Case Study #39—Placement of Port for Chemotherapy | 224 |
| Case Study #40—Discoloration of the Foot | 226 |
| Case Study #41—Sick Sinus Syndrome | 228 |
| Case Study #42—Infected Pacemaker Pocket | 230 |
| Case Study #43—Removal of Clotted AV Graft after Attempted Thrombectomy | 233 |
| Case Study #44—Femoral-Popliteal Bypass | 235 |
| Case Study #45—Atrial Septal Defect in an Adult | 238 |
| Case Study #46—Atrial Myxoma | 240 |
| Case Study #47—Chest Pain Due to Cocaine Use | 242 |

**Appendix A. Quick Coding Reference** ................................................................. 245

| How to Use | 245 |
| Hypertensive Diseases | 246 |
| Angina Pectoris Without Atherosclerotic Heart Disease | 249 |
| Chronic Ischemic Heart Disease With or Without Angina | 251 |
| Chronic Heart Valve Disorders | 255 |
| Heart Block and Conduction Disorders | 258 |
| Heart Failure | 261 |
| Inflammatory Conditions of the Heart | 264 |
| Cerebral Infarction | 267 |
| Sequelae of Cerebral Infarction | 270 |
| Atherosclerotic Vascular Disease | 275 |
| Phlebitis and Thrombophlebitis | 280 |

**Appendix B. ICD-10-CM Draft Official Guidelines for Coding and Reporting 2014** ................. 285

| Section I. Conventions, general coding guidelines and chapter specific guidelines | 290 |
| Section II. Selection of Principal Diagnosis | 342 |
| Section III. Reporting Additional Diagnoses | 344 |
| Section IV. Diagnostic Coding and Reporting Guidelines for Outpatient Services | 345 |
Case Study #28—Aortic Aneurysm

1. Assign the appropriate ICD-10-CM diagnosis code for the condition that preceded surgery:
   a. I77.811 Abdominal aortic ectasia
   b. I71.02 Dissection of abdominal aorta
   c. I71.4 Abdominal aortic aneurysm, without rupture
   d. S25.09XA Other specified injury of thoracic aorta, initial encounter

   An aortic aneurysm can develop when the wall of the artery is weakened and becomes distended like a balloon. They are further defined by the location in the body where they occur, such as the upper part of the aorta which is in the chest, or the lower part of the aorta in the abdomen. When the aneurysm spans both areas, it is referred to as thoracoabdominal. Both types may rupture if they become too large and the massive bleeding that can occur is life-threatening. ICD-10-CM also classifies the location of the aortic aneurysm based on the location in the thorax or abdomen. The condition is further classified by the status of the aneurysm as ruptured or not. Dissection of the aorta occurs when the inner layer of the aortic wall tears, causing the layers to separate. Aortic aneurysms may be round (saccular) or tube-shaped (fusiform). Motor vehicle accidents and falls may also cause damage to the aorta and result in an aneurysm. While an arterial aneurysm is generally defined as arterial dilation of greater than 50 percent of the normal diameter, the term “ectasia” is defined as arterial dilatations of less than 50 percent of the normal diameter of the vessel.

2. Which of the following are risk factors for AAA?
   a. Age over 65
   b. Smoking
   c. Hypertension
   d. Both a and c
   e. All of the above

   Risk factors for AAA include those greater than 65 years of age, a history of smoking, and hypertension. Other risk factors include peripheral atherosclerotic vascular disease and chronic obstructive pulmonary disease (COPD). Other less common causes are Ehlers-Danlos and Marfan syndromes, collagen vascular diseases, and a first degree relative with AAA.
3. **Assign the appropriate ICD-10-CM diagnosis code(s) for this patient’s diabetes mellitus.**

   a. E11.9 Type 2 diabetes mellitus without complications

   b. E11.69 Type 2 diabetes with other specified complication

   c. E13.59 Other specified diabetes mellitus with other circulatory complications

   d. E11.9 Type 2 diabetes mellitus without complications; Z79.4 Long term (current) use of insulin

   While diabetes mellitus is a risk factor for AAA, a cause and effect relationship between the two conditions cannot be assumed, especially since the patient has several other risk factors as well. It is not unusual for diabetic patients undergoing surgery to require temporary administration of insulin postoperatively. ICD-10-CM specifically addresses the temporary use of insulin by a diabetic patient in guideline Section I.C.4.a.3, which directs coders not to assign code Z79.4 when the use of insulin is only temporary to bring the patient’s blood sugar under control during an encounter. For that reason, it would not be reported in this scenario.

4. **Assign the appropriate ICD-10-CM codes for this patient’s COPD and smoking history.**

   a. J44 Other chronic obstructive pulmonary disease; Z87.891 Personal history of nicotine dependence

   b. J44.1 Chronic obstructive pulmonary disease with (acute) exacerbation; Z79.51 Long term (current) use of inhaled steroids; Z87.891 Personal history of nicotine dependence

   c. J98.8 Other specified respiratory disorders; Z87.891 Personal history of nicotine dependence

   d. J44.9 Chronic obstructive pulmonary disease, unspecified; F17.211 Nicotine dependence, cigarettes, in remission

   The code for chronic obstructive pulmonary disease is found in the ICD-10-CM alphabetic index under main term “Disease, diseased” and subterms “pulmonary,” “chronic obstructive,” and “with exacerbation (acute),” which reference J44.1. This code most completely identifies the patient’s condition. Since category J44 requires a fourth character for completion, it is not appropriate to report it with three characters. The patient is documented to be on Advair for his COPD, which is a combination of a synthetic corticosteroid and a beta agonist that relaxes bronchial smooth muscle and inhibits the release of hypersensitivity mediators. Therefore, it is appropriate to report his long-term use of inhaled steroids. Lastly, since the patient has a history of smoking, it is appropriate to report a personal history of nicotine dependence, as indicated in ICD-10-CM guideline Section I.C.21.c.4. Although the patient no longer smokes, the condition has the potential to recur and impact treatment of any current conditions.