University of Calgary Training Cases #1, April 7, 2018

These training cases were developed for the CIHR-funded study "Testing the World Health Organization's 11th Version of ICD" led by Cathy Eastwood, Danielle Southern, Alicia Boxill, Bill Ghali, Hude Quan, underway at the University of Calgary, Department of Community Health Sciences. This study involves coding 3000 full inpatient discharge records using ICD-11.

These cases were reviewed by Lori Moskal.

Codes were updated as of April 4, 2018.

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ICD-11 Morbidity Coding Field Test Case Scenarios – Final

Case Scenario 1:

Patient presented to the emergency department with a temperature of 38.9. Serial blood cultures found MRSA + Staphylococcus aureus. The patient is diagnosed with methicillin-resistant staphylococcus aureus sepsis with septic shock. The patient was admitted to the nursing unit and placed on precautions. On day 2 of admission he experienced acute hypoxic respiratory failure and was sent to ICU. Despite the efforts, the patient's condition continued to deteriorate and he passed away on day 7 of admission.

Main condition: Acute Hypoxic Respiratory Failure

Other conditions: Sepsis due to staphylococcus aureus + MRSA

Septic shock

Expected Code assignment

Main Condition Code(s) Description	**Codes**
Other Conditions Code(s) Description	

Case Scenario 2:

The patient presented to the emergency department with several days history of fever, chills and small-volume haemoptysis. She had progressively worsening hypoxemia resulting in hypoxic respiratory failure requiring intubation and transfer to the intensive care unit. She had a bronchoscopy which did not reveal any evidence of alveolar haemorrhage. A BAL sample ultimately came back positive for H1N1. She received a course of Tamiflu for this. With these interventions, her respiratory status improved and she was ultimately extubated and transferred to the floor.

Main condition: H1N1 Influenza

Other conditions: Hypoxic Respiratory Failure

Expected Code assignment

Main Condition Code(s) Description	**Codes**
Other Conditions Code(s) Description	

Case Scenario 3:

A patient is admitted with a urinary tract infection (UTI). On admission, a urinalysis and blood cultures were done. The urinalysis confirmed that the UTI was caused by Escherichia coli (E. coli) and the blood cultures were reported as. On day 2, the patient began to deteriorate and repeat blood cultures were taken. The physician documented on day 3 that the patient has generalised sepsis due to E.coli as confirmed by the second blood culture.

Main Condition: Urinary tract infection due to *Escherichia coli*
Other conditions: Sepsis due to *Escherichia coli*

Expected Code assignment

Main Condition Code(s) Description	**Codes**
Other Condition Code(s) Description	

Case Scenario 4:

This 59 year old male with known Hepatitis C and cirrhosis of the liver presented to the Emergency Department (ED) complaining of a 1 week history of diarrhoea, generalised lethargy and confusion. On examination in ED he was febrile with a 39 degree temperature, hypotensive, confused and his abdomen was distended but not tender. During admission, blood results confirmed acute liver failure. A diagnostic and therapeutic ascitic tap was performed which revealed a spontaneous bacterial peritonitis (SBP) and 2.5 litres of fluid was drained.

Main condition: Spontaneous Bacterial Peritonitis
Other conditions: Hepatitis C
Cirrhosis of liver
Acute liver failure

Expected Code assignment

Main Condition Code(s) Description	**Codes**
Other Conditions Code(s) Description	

Case Scenario 5:

Patient was admitted to the medical floor for suspected groin cellulitis and a urinary tract infection (UTI). Urinalysis was positive for E. coli and the patient had signs of dehydration. She was successfully treated with Bactrim. On physical examination, she was found to have an ulcerated lesion on the left vulva that was assessed by a gynaecologist and confirmed to be clinically squamous cell carcinoma of the vulva that was removed by surgical excision.

Main condition: Squamous Cell Carcinoma of vulva
Other conditions: Urinary Tract Infection (UTI) (E. coli)

Expected Code assignment

Main Condition Code(s) Description	**Codes**
Other Conditions Code(s) Description	

Case Scenario 6:

The patient was in a good state of health until recently when she was fatigued and was found to have pancytopenia. She was admitted and a work up was done and she was diagnosed with acute myeloid leukaemia. On day 4 of admission she developed a severe headache and became confused with altered level of consciousness. A CT scan was performed and showed a left temporal cerebral haemorrhage. A neurosurgical consultation was performed and the patient was transferred to the intensive care unit. She is currently being investigated from a medical management perspective.

Main condition: Acute Myeloid Leukaemia
Other conditions: Temporal Cerebral haemorrhage

Expected Code assignment

Main Condition Code(s) Description	**Codes**
Other Conditions Code(s) Description	

Case Scenario 7:

The patient presents with diarrhoea. The patient then undergoes a colonoscopy under IV sedation. The colon was tortuous with some adhesions and angulation. The ileocecal valve was

visualized however the terminal ileum could not be intubated. In the rectum there were some hyperplastic polyps which were the cause of the diarrhoea. These were removed and a biopsy of the rectum was performed as well. Pathology report of the rectum revealed tubular adenoma with low grade dysplasia.

Main condition: Tubular adenoma rectum

Expected Code assignment

Main Condition Code(s) Description	**Codes**

Case Scenario 8:

Patient with known type 2 diabetes mellitus was admitted due to his diabetes mellitus being out of control. He was referred by a diabetic nurse because of ongoing concerns with poor glucose control and noncompliance with medication and food regime. He was admitted in a stable condition. Glucose was 15.9 on glucometer. The patient was tried on insulin with good results but he refused to learn how to use the injections. RBC, platelets, WBCs were not within normal limits on serial blood panels. After a few days, haematology was consulted. They felt this was aplastic anaemia although there is no history of exposure to chemicals, drugs, radiation, infection, immune disease. Haematology recommended blood transfusions x 2 at this time to treat the suspected aplastic anaemia. His glucose levels were normalizing on insulin and he was switched back to his usual Metformin doses. The patient was discharged in stable condition.

Main condition: Unstable diabetes mellitus
Other conditions: Diabetes Mellitus Type 2
Aplastic anaemia
Personal history of noncompliance with medical treatment or regimen

Expected Code assignment

Main Condition Code(s) Description	**Codes**
Other Conditions Code(s) Description	

Case Scenario 9:

The patient was referred to our service because of leg cramps and weakness in the legs bilaterally, which were diagnosed to be secondary to her diabetic polyneuropathy. Type 2 diabetes was previously diagnosed; however, she presented to us with poorly controlled diabetes. The patient was discharged three days later in a stable condition with follow-up with the ambulatory general medicine clinic for her diabetes management.

Main condition: Diabetic polyneuropathy
Other conditions: Type 2 Diabetes Mellitus
Poorly controlled Diabetes Mellitus

Expected Code assignment

Main Condition Code(s) Description	**Codes**
Other Condition Code(s) Description	

Case Scenario 10:

This 8-year-old girl was admitted through the emergency room with one month history of polydipsia and polyuria associated with a possible weight loss of as much as 5 kgs and was diagnosed with new onset of type 1 diabetes mellitus. Upon investigation she was found to also have diabetic ketoacidosis. Her Diabetic ketoacidosis was treated in the usual fashion with an initial 10-cc-per-kilogram bolus of normal saline followed by normal saline at 5 cc per hour and an insulin infusion. The acidosis corrected over the ensuing few hours and her hydration status as well as other metabolic parameters gradually normalized. She did spend the first night in the ICU but was transferred out to the ward the following morning. She was then converted to subcutaneous insulin.

Main condition: Diabetic ketoacidosis
Other conditions: Diabetes mellitus Type 1

Expected Code assignment

Main Condition Code(s) Description	**Codes**
Other Conditions	

Case Scenario 11:

The patient is admitted under neurology with a stroke. During the admission he develops urinary retention and is assessed by an urologist, who diagnoses benign prostatic hyperplasia and recommends a resection of the prostate. While remaining on the neurology service, the patient continues to receive physiotherapy and occupational therapy for hemiplegia. He is also taken to the OR for a transurethral resection of the prostate, which is carried out without incident.

Main condition: Stroke
Other conditions: Hemiplegia
BPH

Expected Code assignment

Main Condition Code(s) Description	**Codes**
Other Conditions Code(s) Description	

Case Scenario 12:

A patient is admitted with a cerebral infarction. He has a history of severe chronic obstructive pulmonary disease (COPD). The neurologist deems the patient ready for discharge on day 3 of his admission. However, he begins exhibiting signs of a cold, and a chest X-ray reveals that he has pneumonia which requires IV antibiotics. His respiratory status rapidly worsens and he becomes hypoxic with respiratory failure which extends his length of stay. The patient is discharged on day 6 of admission after being treated for the respiratory failure and pneumonia.

Main condition: Cerebral infarction
Other conditions: Pneumonia
Type 1 Respiratory Failure
COPD

Expected Code assignment

Main Condition Code(s) Description	**Codes**
Other Conditions Code(s) Description	

Case Scenario 13:

Patient admitted for gastroscopy with biopsy, performed after pharmacotherapy treatment for chronic gastritis with *H.pylori* did not relieve his heartburn and loss of appetite. Histopathology report showed chronic superficial gastritis and no evidence of *H.pylori*. Patient was discharged home with Nexium the same day after discussing a dietary plan with the dietician

Main condition: Chronic superficial gastritis

Expected Code assignment

Main Condition Code(s) Description	**Codes**

Case Scenario 14:

The patient presented with shortness of breath and a respiratory rate of 28 with low oxygen saturations. Her chest x-ray showed congestive heart failure. She improved with diuresis. The patient was simultaneously diagnosed and treated for acute exacerbation of her COPD. She was treated with prednisone and doxycycline. Cognitive impairment was raised in the emergency room as she was unable to answer safety questions when asked. She was seen by psychiatry to asses her mild cognitive impairment which was diagnosed as mild dementia due to Alzheimer disease.

Main condition: Congestive heart failure
Other conditions: COPD with acute exacerbation
Mild dementia syndrome due to Alzheimer disease

Expected Code assignment

Main Condition Code(s) Description	**Codes**
Other Conditions Code(s) Description	

Case Scenario 15:

The patient was admitted with diaphoresis and shortness of breath secondary to congestive heart failure. The heart failure was exacerbated by rapid atrial fibrillation. The patient remained in the hospital for 5 days. His heart rate was irregular and elevated, ranging from 150-160 beats per minute. He received IV metoprolol and was cardioverted a number of times during the episode of care and was given Lasix. The patient was discharged with an irregular heart rate; however his rate was adequately controlled between 80 and 90 beats per minute.

Main condition: Congestive Heart Failure (CHF)
Other conditions: Atrial fibrillation (AF)

Expected Code assignment

Main Condition Code(s) Description	**Codes**
Other Conditions Code(s) Description	

Case Scenario 16:

Patient is admitted for a bronchoscopy and biopsy of lower respiratory tract, performed in the endoscopy suite, for ongoing respiratory problems including dyspnoea and pleurodynia. During admission the patient developed cardiac arrhythmia requiring observation and treatment by cardiology service. There were some abnormal microbiological findings from the biopsy but nothing conclusive showed up on chest X. Ray. It was felt that the respiratory symptoms could be due to the cardiac arrhythmia. However, the patient still complained of his respiratory symptoms after the cardiac arrhythmia subsided. There was no definitive respiratory diagnosis made. The patient was treated with bronchodilators and referred to Respiratory clinic for follow up in two weeks.

Main condition: Dyspnoea
Other conditions: Pleurodynia
Cardiac arrhythmia
Abnormal microbiology results of lower respiratory tract

Expected Code assignment

Main Conditions Code(s) Description	**Codes**
Other Conditions Code(s) Description	

Case Scenario 17:

The patient presents to the emergency department with crushing chest pain and associated jaw pain. ECG initially shows depression in anterior and inferior leads. Subsequent ECGs show that the patient developed slight bundle branch block and ST depression. Diagnosed as Acute non-ST elevation myocardial infarction (NSTEMI) and admitted to CCU on ASA, Plavix, B-blocker and ACE-I. He has a coronary angiography which shows severe three-vessel CAD, amenable to bypass. The patient has Coronary artery bypass grafting (CABG) and is discharged 8 days later.

Main condition: non-ST elevation myocardial infarction (NSTEMI)
Other conditions: Coronary atherosclerosis (CAD)

Expected Code assignment

Main Condition Code(s) Description	**Codes**
Other Conditions Code(s) Description	

Case Scenario 18:

A patient is admitted for an elective hip replacement for osteoarthritis (coxarthrosis) of the right hip but develops acute chest pain prior to surgery. A cardiologist is called to see the patient, and STEMI is documented. The patient is transferred to the cardiac care unit on thrombolytic therapy. The elective surgery is cancelled and the patient remains in hospital for treatment of MI. The final diagnosis is recorded as acute anterior wall MI.

Main condition: STEMI anterior wall
Other conditions: Procedure not carried out due to contraindication
Osteoarthritis of right hip

Expected Code assignment

Main Condition Code(s) Description	**Codes**
Other Conditions Code(s) Description	

Case Scenario 19:

This 56-year-old female, known for osteoarthritis, was an elective admission to hospital for a surgical procedure in the form of a left total knee arthroplasty. Operative procedure was unremarkable. Postoperatively she was placed in a compression dressing for 24 hours, and when this was removed she started continuous passive motion and rehabilitation. She was initially managed with self-administered morphine through the PCA program. She was then switched over to oral pain medication. She was mobilizing adequately. Postoperative haemoglobin was satisfactory. X-ray showed good position of her components, and she was felt to be fit for discharge home.

Main condition: Osteoarthritis of left knee

Expected Code assignment

Main Condition Code(s) Description	**Codes**

Case Scenario 20: Acute Renal Failure

The patient is admitted via the emergency department because she is feeling unwell. She is known to have Chronic Kidney Disease. She has a sudden spike in her creatinine level and she is started on dialysis. Her creatinine returns to baseline. The dialysis is discontinued. She is discharged with a final diagnosis of acute on chronic renal failure.

Main condition: Acute kidney failure stage 3
Other conditions: Chronic Kidney disease

Expected Code assignment

Main Condition Code(s) Description	**Codes**
Other Conditions Code(s) Dscription	

Case Scenario 21:

The patient, with known type 2 diabetes mellitus often presenting with poor control, presents to the hospital feeling generally unwell. She notes right flank pain and difficulty urinating. Laboratory work shows slightly elevated white count and her urinalysis showed significant leukocytes, protein and bacteria. She is diagnosed with pyelonephritis. Her condition appears to be exacerbated by her poorly controlled type 2 diabetes mellitus compounded by the fact that she did not take her Metformin that day. She was started on IV fluid and admitted to the ICU where she is given a dose of insulin and her blood sugar were monitored. She was provided with dietetic education prior to discharge in relation to a diabetic diet and to alleviate any future medication noncompliance.

Main diagnosis: Pyelonephritis
Other conditions: Unstable diabetes
Diabetes Mellitus Type 2
Noncompliance with medication

Expected Code assignment

Main Condition Code(s) Description	**Codes**
Other Conditions Code(s) Description	

Case Scenario 22:

This patient is admitted with a fracture of her right patella after a slip and fall on a step at home. The X-ray shows a transverse mid-patellar fracture.

Main condition: Traverses Fractured right patella
Other conditions: Fall at home

Expected Code assignment

Main Condition Code(s) Description	**Codes**

Case Scenario 23:

Patient with a family history of colon cancer was admitted for colonoscopy with biopsy, performed for recent rectal bleeding and recent bout of severe abdominal pain. It was thought that perhaps these symptoms could be due to either haemorrhoids or colonic polyps. Histopathology report showed no abnormalities and he was discharged home the same day.

Main condition: Rectal bleed
Other conditions: Abdominal pain
Family history of colon cancer

Expected Code assignment

Main Condition Code(s) Description	**Codes**
Other Conditions Code(s) Description	

Case scenario 24:

Patient was admitted for upper GI endoscopy for complaints of epigastric pain and bloating. The upper GI endoscopy was accomplished without difficulty. The patient tolerated the procedure well. No abnormalities noted in oesophagus, stomach or duodenum. No biopsies were taken.

Main diagnosis: Epigastric pain
Other diagnoses: Bloating

Expected Code assignment

Main Condition Code(s) Description	**Codes**
Other Conditions Code(s) Description	