

vars_for_logreg_model_CDrisk

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1 Background

1.1 Project

MINDSCAPE: Modeling of infectious network dynamics for surveillance, control and prevention enhancement

1.2 Description

This file reads in necessary data and identifies variables of interest for building a multivariate logistic regression model to evaluate C diff risk among hospitalized patients.

2 Load packages

```
# Load required packages
#library(here)
library(readr)
library(tidyverse)
library(psych)
library(lubridate)
library(tableone)
library(kableExtra)
```

3 Import data (only first 5000 lines)

```
dm <- read_delim("/Users/sreynolds2/Downloads/ucsf_data_pull_11.08.21/demographics and event table 11.08.21.csv", delim = ";", as.is = TRUE)
lab <- read_delim("/Users/sreynolds2/Downloads/ucsf_data_pull_11.08.21/lab results 11.08.21.csv", delim = ";", as.is = TRUE)
dx <- read_delim("/Users/sreynolds2/Downloads/ucsf_data_pull_11.08.21/covid diagnoses 11.08.21.csv", delim = ";", as.is = TRUE)
med_admin <- read_delim("/Users/sreynolds2/Downloads/ucsf_data_pull_11.08.21/med admin table 11.08.21.csv", delim = ";", as.is = TRUE)
```

4 Demographics and events table

```
# Clean `dm` data
dm <- dm %>%
  select(deid_enc_id, age, sex, pat_race, ethnicity, smoking, BMI, covid_pos, readmit, HAI_pathogen, HAI_date) %>%
  rename(ID = deid_enc_id,
         race = pat_race) %>%
  mutate_at(c("sex", "race", "ethnicity", "smoking", "covid_pos", "readmit", "ED_dispo", "present_source"), as.factor) %>%
  mutate_at(c("admit_time", "HAI_first_date"), ymd_hms) %>%
  mutate_at("BMI", as.numeric)

# Create frequency table for `dm`
CreateCatTable(data = dm, vars = c("sex", "race", "ethnicity", "smoking", "covid_pos", "readmit", "ED_dispo"))
```

```
##
##                               Overall
##  n                               5000
##  sex (%)
##    Female                2737 (54.7)
##    Male                  2261 (45.2)
##    Unknown                   2 ( 0.0)
##  race (%)
##    American Indian or Alaska Native    55 ( 1.1)
##    Asian                             849 (17.0)
##    Black or African American          461 ( 9.2)
```

##	Declined	43 (0.9)
##	Native Hawaiian	2 (0.0)
##	Native Hawaiian or Other Pacific Islander	40 (0.8)
##	Other	815 (16.3)
##	Other Pacific Islander	25 (0.5)
##	Unknown	37 (0.7)
##	Unknown/Declined	3 (0.1)
##	White or Caucasian	2670 (53.4)
##	ethnicity (%)	
##	Declined	61 (1.2)
##	Hispanic or Latino	795 (15.9)
##	Not Hispanic or Latino	4106 (82.1)
##	Unknown	37 (0.7)
##	Unknown/Declined	1 (0.0)
##	smoking (%)	
##	Current Every Day Smoker	201 (4.0)
##	Current Some Day Smoker	69 (1.4)
##	Former Smoker	1580 (31.6)
##	Heavy Tobacco Smoker	2 (0.0)
##	Light Tobacco Smoker	25 (0.5)
##	Never Smoker	2961 (59.2)
##	NULL	85 (1.7)
##	Passive Smoke Exposure - Never Smoker	31 (0.6)
##	Smoker, Current Status Unknown	3 (0.1)
##	Unknown If Ever Smoked	43 (0.9)
##	covid_pos = Yes (%)	58 (1.2)
##	readmit = Yes (%)	548 (11.0)
##	ED_dispo (%)	
##	Admit	1432 (28.6)
##	AMA	12 (0.2)
##	Discharge	267 (5.3)
##	Eloped	1 (0.0)
##	Expired	1 (0.0)
##	NULL	3265 (65.3)
##	OR Admit	16 (0.3)
##	Send to L&D	1 (0.0)
##	Transfer to Another Facility	5 (0.1)
##	present_source (%)	
##	Ambulatory Surgery Center	1 (0.0)
##	Clinic Referral	270 (5.4)
##	Court/Law Enforcement	2 (0.0)
##	Emergency Room	10 (0.2)
##	Physician Referral	2258 (45.2)
##	Self Referred (Home)	1929 (38.6)
##	Skilled Nursing Facility	55 (1.1)
##	Transfer - Acute Hospital	252 (5.0)
##	Transfer - Assisted Living Facility	7 (0.1)
##	Transfer - Critical Access Hospital	1 (0.0)
##	Transfer - Other Facility	3 (0.1)
##	Transfer - Outside Emer Dept	210 (4.2)
##	Transfer - Rehab Hosp	1 (0.0)
##	Transfer - Res Care/Group Home	1 (0.0)
##	HAI_type (%)	
##	CAUTI	8 (0.2)

```
##          CDIF                      9 ( 0.2)
##          CLABSI                   6 ( 0.1)
##          IRVAC                    6 ( 0.1)
##          NULL                    4939 (98.8)
##          pVAP                     2 ( 0.0)
##          SSI                      18 ( 0.4)
##          VAC                      12 ( 0.2)
```

5 Diagnoses table

```
# Clean `dx` data
dx <- dx %>%
  select(deid_enc_id, dx_group, DX_NAME, present_on_admit, severity_of_dx, co_morbidity) %>%
  mutate_at(c("dx_group", "DX_NAME", "present_on_admit", "severity_of_dx", "co_morbidity"), factor)

# Create frequency table for `dx`
CreateCatTable(data = dx, vars = c("dx_group", "DX_NAME", "present_on_admit", "severity_of_dx", "co_morbidity"))

##
##
##      n
##      dx_group (%)
##      ABNORMAL FINDINGS ON DIAGNOSTIC IMAGING AND IN FUNCTION STUDIES, WITHOUT DIAGNOSIS
##      ABNORMAL FINDINGS ON EXAMINATION OF BLOOD, WITHOUT DIAGNOSIS
##      ABNORMAL FINDINGS ON EXAMINATION OF URINE, WITHOUT DIAGNOSIS
##      ACUTE KIDNEY FAILURE AND CHRONIC KIDNEY DISEASE
##      ACUTE UPPER RESPIRATORY INFECTIONS
##      ANXIETY, DISSOCIATIVE, STRESS-RELATED, SOMATOFORM AND OTHER NONPSYCHOTIC MENTAL DISORDERS
##      APLASTIC AND OTHER ANEMIAS AND OTHER BONE MARROW FAILURE SYNDROMES
##      BACTERIAL AND VIRAL INFECTIOUS AGENTS
##      BEHAVIORAL AND EMOTIONAL DISORDERS WITH ONSET USUALLY OCCURRING IN CHILDHOOD AND ADOLESCENCE
##      BENIGN NEOPLASMS, EXCEPT BENIGN NEUROENDOCRINE TUMORS
##      BODY MASS INDEX (BMI)
##      CEREBRAL PALSY AND OTHER PARALYTIC SYNDROMES
##      CEREBROVASCULAR DISEASES
##      CERTAIN DISORDERS INVOLVING THE IMMUNE MECHANISM
##      CHRONIC LOWER RESPIRATORY DISEASES
##      CHRONIC RHEUMATIC HEART DISEASES
##      COAGULATION DEFECTS, PURPURA AND OTHER HEMORRHAGIC CONDITIONS
##      COMPLICATIONS OF LABOR AND DELIVERY
##      COMPLICATIONS OF SURGICAL AND MEDICAL CARE, NOT ELSEWHERE CLASSIFIED
##      CONGENITAL MALFORMATIONS AND DEFORMATIONS OF THE MUSCULOSKELETAL SYSTEM
##      CONGENITAL MALFORMATIONS OF THE CIRCULATORY SYSTEM
##      CONGENITAL MALFORMATIONS OF THE NERVOUS SYSTEM
##      CONGENITAL MALFORMATIONS OF THE URINARY SYSTEM
##      DEFORMING DORSOPATHIES
##      DEMYELINATING DISEASES OF THE CENTRAL NERVOUS SYSTEM
##      DENTOFACIAL ANOMALIES [INCLUDING MALOCCLUSION] AND OTHER DISORDERS OF JAW
##      DERMATITIS AND ECZEMA
##      DIABETES MELLITUS
##      DISEASES OF APPENDIX
```

DISEASES OF ARTERIES, ARTERIOLES AND CAPILLARIES
 ## DISEASES OF ESOPHAGUS, STOMACH AND DUODENUM
 ## DISEASES OF EXTERNAL EAR
 ## DISEASES OF INNER EAR
 ## DISEASES OF LIVER
 ## DISEASES OF MALE GENITAL ORGANS
 ## DISEASES OF MYONEURAL JUNCTION AND MUSCLE
 ## DISEASES OF ORAL CAVITY AND SALIVARY GLANDS
 ## DISEASES OF PERITONEUM AND RETROPERITONEUM
 ## DISEASES OF VEINS, LYMPHATIC VESSELS AND LYMPH NODES, NOT ELSEWHERE CLASSIFIED
 ## DISORDERS OF BONE DENSITY AND STRUCTURE
 ## DISORDERS OF BREAST
 ## DISORDERS OF EYELID, LACRIMAL SYSTEM AND ORBIT
 ## DISORDERS OF GALLBLADDER, BILIARY TRACT AND PANCREAS
 ## DISORDERS OF LENS
 ## DISORDERS OF MUSCLES
 ## DISORDERS OF OCULAR MUSCLES, BINOCULAR MOVEMENT, ACCOMMODATION AND REFRACTION
 ## DISORDERS OF OPTIC NERVE AND VISUAL PATHWAYS
 ## DISORDERS OF OTHER ENDOCRINE GLANDS
 ## DISORDERS OF SKIN APPENDAGES
 ## DISORDERS OF SYNOVIUM AND TENDON
 ## DISORDERS OF THYROID GLAND
 ## DO NOT RESUSCITATE STATUS
 ## EDEMA, PROTEINURIA AND HYPERTENSIVE DISORDERS IN PREGNANCY, CHILDBIRTH AND THE PUERPERIUM
 ## EFFECTS OF FOREIGN BODY ENTERING THROUGH NATURAL ORIFICE
 ## ENCOUNTERS FOR OTHER SPECIFIC HEALTH CARE
 ## EPISODIC AND PAROXYSMAL DISORDERS
 ## EXTRAPYRAMIDAL AND MOVEMENT DISORDERS
 ## GENERAL SYMPTOMS AND SIGNS
 ## GLAUCOMA
 ## GLOMERULAR DISEASES
 ## HERNIA
 ## HUMAN IMMUNODEFICIENCY VIRUS [HIV] DISEASE
 ## HYPERTENSIVE DISEASES
 ## IN SITU NEOPLASMS
 ## INFECTIONS OF THE SKIN AND SUBCUTANEOUS TISSUE
 ## INFECTIONS WITH A PREDOMINANTLY SEXUAL MODE OF TRANSMISSION
 ## INFECTIOUS ARTHROPATHIES
 ## INFLAMMATORY DISEASES OF FEMALE PELVIC ORGANS
 ## INFLAMMATORY DISEASES OF THE CENTRAL NERVOUS SYSTEM
 ## INFLAMMATORY POLYARTHROPATHIES
 ## INFLUENZA AND PNEUMONIA
 ## INJURIES TO THE ABDOMEN, LOWER BACK, LUMBAR SPINE, PELVIS AND EXTERNAL GENITALS
 ## INJURIES TO THE HEAD
 ## INJURIES TO THE SHOULDER AND UPPER ARM
 ## INJURIES TO THE THORAX
 ## INJURIES TO THE WRIST, HAND AND FINGERS
 ## INTESTINAL INFECTIOUS DISEASES
 ## INTRAOPERATIVE AND POSTPROCEDURAL COMPLICATIONS AND DISORDERS OF GENITOURINARY SYSTEM, NOT ELSEWHERE
 ## INTRAOPERATIVE AND POSTPROCEDURAL COMPLICATIONS AND DISORDERS OF MUSCULOSKELETAL SYSTEM, NOT ELSEWHERE
 ## INTRAOPERATIVE AND POSTPROCEDURAL COMPLICATIONS AND DISORDERS OF RESPIRATORY SYSTEM, NOT ELSEWHERE
 ## ISCHEMIC HEART DISEASES
 ## LUNG DISEASES DUE TO EXTERNAL AGENTS
 ## MALIGNANT NEOPLASMS OF BONE AND ARTICULAR CARTILAGE

MALIGNANT NEOPLASMS OF BREAST
 ## MALIGNANT NEOPLASMS OF DIGESTIVE ORGANS
 ## MALIGNANT NEOPLASMS OF EYE, BRAIN AND OTHER PARTS OF CENTRAL NERVOUS SYSTEM
 ## MALIGNANT NEOPLASMS OF FEMALE GENITAL ORGANS
 ## MALIGNANT NEOPLASMS OF ILL-DEFINED, OTHER SECONDARY AND UNSPECIFIED SITES
 ## MALIGNANT NEOPLASMS OF LIP, ORAL CAVITY AND PHARYNX
 ## MALIGNANT NEOPLASMS OF LYMPHOID, HEMATOPOIETIC AND RELATED TISSUE
 ## MALIGNANT NEOPLASMS OF MALE GENITAL ORGANS
 ## MALIGNANT NEOPLASMS OF MESOTHELIAL AND SOFT TISSUE
 ## MALIGNANT NEOPLASMS OF RESPIRATORY AND INTRATHORACIC ORGANS
 ## MALIGNANT NEOPLASMS OF THYROID AND OTHER ENDOCRINE GLANDS
 ## MALIGNANT NEOPLASMS OF URINARY TRACT
 ## MALNUTRITION
 ## MATERNAL CARE RELATED TO THE FETUS AND AMNIOTIC CAVITY AND POSSIBLE DELIVERY PROBLEMS
 ## MENTAL AND BEHAVIORAL DISORDERS DUE TO PSYCHOACTIVE SUBSTANCE USE
 ## MENTAL DISORDERS DUE TO KNOWN PHYSIOLOGICAL CONDITIONS
 ## METABOLIC DISORDERS
 ## MOOD [AFFECTIVE] DISORDERS
 ## MYCOSES
 ## NEOPLASMS OF UNCERTAIN BEHAVIOR, POLYCYTHEMIA VERA AND MYELODYSPLASTIC SYNDROMES
 ## NERVE, NERVE ROOT AND PLEXUS DISORDERS
 ## NONINFECTIVE ENTERITIS AND COLITIS
 ## NONINFLAMMATORY DISORDERS OF FEMALE GENITAL TRACT
 ## NULL
 ## NUTRITIONAL ANEMIAS
 ## OSTEOARTHRITIS
 ## OTHER AND UNSPECIFIED DISORDERS OF THE CIRCULATORY SYSTEM
 ## OTHER AND UNSPECIFIED EFFECTS OF EXTERNAL CAUSES
 ## OTHER BACTERIAL DISEASES
 ## OTHER CONGENITAL MALFORMATIONS
 ## OTHER DEGENERATIVE DISEASES OF THE NERVOUS SYSTEM
 ## OTHER DISEASES OF INTESTINES
 ## OTHER DISEASES OF THE DIGESTIVE SYSTEM
 ## OTHER DISEASES OF THE PLEURA
 ## OTHER DISEASES OF THE RESPIRATORY SYSTEM
 ## OTHER DISEASES OF THE URINARY SYSTEM
 ## OTHER DISEASES OF UPPER RESPIRATORY TRACT
 ## OTHER DISORDERS OF BLOOD AND BLOOD-FORMING ORGANS
 ## OTHER DISORDERS OF EAR
 ## OTHER DISORDERS OF EYE AND ADNEXA
 ## OTHER DISORDERS OF GLUCOSE REGULATION AND PANCREATIC INTERNAL SECRETION
 ## OTHER DISORDERS OF KIDNEY AND URETER
 ## OTHER DISORDERS OF THE NERVOUS SYSTEM
 ## OTHER DISORDERS OF THE SKIN AND SUBCUTANEOUS TISSUE
 ## OTHER DORSOPATHIES
 ## OTHER FORMS OF HEART DISEASE
 ## OTHER JOINT DISORDERS
 ## OTHER MATERNAL DISORDERS PREDOMINANTLY RELATED TO PREGNANCY
 ## OTHER NUTRITIONAL DEFICIENCIES
 ## OTHER OBSTETRIC CONDITIONS, NOT ELSEWHERE CLASSIFIED
 ## OTHER OSTEOPATHIES
 ## OTHER RESPIRATORY DISEASES PRINCIPALLY AFFECTING THE INTERSTITIUM
 ## OTHER SOFT TISSUE DISORDERS
 ## OTHER VIRAL DISEASES

```

## OVERWEIGHT, OBESITY AND OTHER HYPERALIMENTATION
## PEDICULOSIS, ACARIASIS AND OTHER INFESTATIONS
## PERSONS ENCOUNTERING HEALTH SERVICES FOR EXAMINATIONS
## PERSONS ENCOUNTERING HEALTH SERVICES IN CIRCUMSTANCES RELATED TO REPRODUCTION
## PERSONS ENCOUNTERING HEALTH SERVICES IN OTHER CIRCUMSTANCES
## PERSONS WITH POTENTIAL HEALTH HAZARDS RELATED TO COMMUNICABLE DISEASES
## PERSONS WITH POTENTIAL HEALTH HAZARDS RELATED TO FAMILY AND PERSONAL HISTORY AND CERTAIN CONDIT
## PERSONS WITH POTENTIAL HEALTH HAZARDS RELATED TO SOCIOECONOMIC AND PSYCHOSOCIAL CIRCUMSTANCES
## PERVASIVE AND SPECIFIC DEVELOPMENTAL DISORDERS
## POISONING BY, ADVERSE EFFECT OF AND UNDERDOSING OF DRUGS, MEDICAMENTS AND BIOLOGICAL SUBSTANCES
## POLYNEUROPATHIES AND OTHER DISORDERS OF THE PERIPHERAL NERVOUS SYSTEM
## POSTPROCEDURAL ENDOCRINE AND METABOLIC COMPLICATIONS AND DISORDERS, NOT ELSEWHERE CLASSIFIED
## PROTOZOAL DISEASES
## PULMONARY HEART DISEASE AND DISEASES OF PULMONARY CIRCULATION
## RENAL TUBULO-INTERSTITIAL DISEASES
## RESISTANCE TO ANTIMICROBIAL DRUGS
## SCHIZOPHRENIA, SCHIZOTYPAL, DELUSIONAL, AND OTHER NON-MOOD PSYCHOTIC DISORDERS
## SEQUELAE OF INFECTIOUS AND PARASITIC DISEASES
## SPONDYLOPATHIES
## SUPERVISION OF HIGH RISK PREGNANCY
## SUPPURATIVE AND NECROTIC CONDITIONS OF THE LOWER RESPIRATORY TRACT
## SYMPTOMS AND SIGNS INVOLVING COGNITION, PERCEPTION, EMOTIONAL STATE AND BEHAVIOR
## SYMPTOMS AND SIGNS INVOLVING SPEECH AND VOICE
## SYMPTOMS AND SIGNS INVOLVING THE CIRCULATORY AND RESPIRATORY SYSTEMS
## SYMPTOMS AND SIGNS INVOLVING THE DIGESTIVE SYSTEM AND ABDOMEN
## SYMPTOMS AND SIGNS INVOLVING THE GENITOURINARY SYSTEM
## SYMPTOMS AND SIGNS INVOLVING THE NERVOUS AND MUSCULOSKELETAL SYSTEMS
## SYMPTOMS AND SIGNS INVOLVING THE SKIN AND SUBCUTANEOUS TISSUE
## SYSTEMIC CONNECTIVE TISSUE DISORDERS
## TOXIC EFFECTS OF SUBSTANCES CHIEFLY NONMEDICINAL AS TO SOURCE
## UROLITHIASIS
## URTICARIA AND ERYTHEMA
## VIRAL HEPATITIS
## VIRAL INFECTIONS CHARACTERIZED BY SKIN AND MUCOUS MEMBRANE LESIONS
## VISUAL DISTURBANCES AND BLINDNESS
## DX_NAME (%)
## (Idiopathic) normal pressure hydrocephalus (CMS code)
## 14 weeks gestation of pregnancy
## 17 weeks gestation of pregnancy
## 20 weeks gestation of pregnancy
## 22 weeks gestation of pregnancy
## 24 weeks gestation of pregnancy
## 27 weeks gestation of pregnancy
## 31 weeks gestation of pregnancy
## 36 weeks gestation of pregnancy
## 38 weeks gestation of pregnancy
## 39 weeks gestation of pregnancy
## Abnormal coagulation profile
## Abnormal electrocardiogram (ECG) (EKG)
## Abnormal levels of other serum enzymes
## Abnormal results of kidney function studies
## Abnormal results of liver function studies
## Abnormal weight loss
## Abnormality in fetal heart rate and rhythm complicating labor and delivery

```

```

## Abrasion of right upper arm, initial encounter
## Abscess of lung with pneumonia (CMS code)
## Abscess of lung without pneumonia (CMS code)
## Abscess of mediastinum (CMS code)
## Abscess of vulva
## Acidosis
## Acquired absence of bilateral breasts and nipples
## Acquired absence of both cervix and uterus
## Acquired absence of kidney
## Acquired absence of lung (part of)
## Acquired absence of other specified parts of digestive tract
## Acquired absence of other toe(s), unspecified side (CMS code)
## Acquired absence of right leg below knee (CMS code)
## Acquired absence of spleen
## Acquired absence of stomach (part of)
## Acquired absence of unspecified breast and nipple
## Acquired absence of uterus with remaining cervical stump
## Acute and chronic respiratory failure with hypercapnia (CMS code)
## Acute and chronic respiratory failure with hypoxia (CMS code)
## Acute and subacute hepatic failure without coma
## Acute and subacute infective endocarditis
## Acute cholecystitis
## Acute embolism and thrombosis of deep veins of left upper extremity (CMS code)
## Acute embolism and thrombosis of deep veins of right upper extremity (CMS code)
## Acute embolism and thrombosis of deep veins of upper extremity, bilateral (CMS code)
## Acute embolism and thrombosis of left iliac vein (CMS code)
## Acute embolism and thrombosis of left internal jugular vein (CMS code)
## Acute embolism and thrombosis of left popliteal vein (CMS code)
## Acute embolism and thrombosis of other specified veins
## Acute embolism and thrombosis of other thoracic veins (CMS code)
## Acute embolism and thrombosis of right axillary vein (CMS code)
## Acute embolism and thrombosis of right internal jugular vein (CMS code)
## Acute embolism and thrombosis of right peroneal vein (CMS code)
## Acute embolism and thrombosis of right popliteal vein (CMS code)
## Acute embolism and thrombosis of right subclavian vein (CMS code)
## Acute embolism and thrombosis of superficial veins of right upper extremity
## Acute embolism and thrombosis of superficial veins of unspecified upper extremity
## Acute embolism and thrombosis of unspecified deep veins of left distal lower extremity (CMS code)
## Acute embolism and thrombosis of unspecified deep veins of left lower extremity (CMS code)
## Acute embolism and thrombosis of unspecified deep veins of lower extremity, bilateral (CMS code)
## Acute epiglottitis without obstruction
## Acute kidney failure with tubular necrosis (CMS code)
## Acute kidney failure, unspecified (CMS code)
## Acute lymphoblastic leukemia not having achieved remission (CMS code)
## Acute lymphoblastic leukemia, in relapse (CMS code)
## Acute myeloblastic leukemia, in relapse (CMS code)
## Acute myeloblastic leukemia, not having achieved remission (CMS code)
## Acute on chronic combined systolic (congestive) and diastolic (congestive) heart failure (CMS code)
## Acute on chronic diastolic (congestive) heart failure (CMS code)
## Acute on chronic systolic (congestive) heart failure (CMS code)
## Acute pancreatitis with infected necrosis, unspecified
## Acute pancreatitis without necrosis or infection, unspecified
## Acute post-thoracotomy pain
## Acute posthemorrhagic anemia

```



```

##      Acute pulmonary edema (CMS code)
##      Acute pulmonary insufficiency following nonthoracic surgery (CMS code)
##      Acute pulmonary insufficiency following thoracic surgery (CMS code)
##      Acute pyelonephritis
##      Acute respiratory distress syndrome (CMS code)
##      Acute respiratory failure with hypercapnia (CMS code)
##      Acute respiratory failure with hypoxia (CMS code)
##      Acute respiratory failure, unspecified whether with hypoxia or hypercapnia (CMS code)
##      Adjustment disorder with anxiety
##      Adjustment disorder with depressed mood
##      Adjustment disorder with mixed anxiety and depressed mood
##      Adjustment disorder, unspecified
##      Adult failure to thrive
##      Adverse effect of anticoagulants, initial encounter
##      Adverse effect of antineoplastic and immunosuppressive drugs, initial encounter
##      Adverse effect of antiviral drugs, initial encounter
##      Adverse effect of diagnostic agents, initial encounter
##      Adverse effect of glucocorticoids and synthetic analogues, initial encounter
##      Adverse effect of other hormones and synthetic substitutes, initial encounter
##      Adverse effect of other opioids, initial encounter
##      Adverse effect of other specified systemic anti-infectives and antiparasitics, initial encounter
##      Adverse effect of unspecified antiepileptic and sedative-hypnotic drugs, initial encounter
##      Adverse effect of unspecified narcotics, initial encounter
##      Age-related osteoporosis without current pathological fracture
##      Age-related physical debility
##      Alcohol abuse with intoxication, unspecified (CMS code)
##      Alcohol abuse, in remission
##      Alcohol abuse, uncomplicated
##      Alcohol dependence with intoxication, unspecified (CMS code)
##      Alcohol dependence with withdrawal delirium (CMS code)
##      Alcohol dependence with withdrawal, uncomplicated (CMS code)
##      Alcohol dependence with withdrawal, unspecified (CMS code)
##      Alcohol dependence, in remission (CMS code)
##      Alcoholic cirrhosis of liver with ascites (CMS code)
##      Alcoholic cirrhosis of liver without ascites (CMS code)
##      Alcoholic hepatic failure without coma (CMS code)
##      Alkalosis
##      Allergic rhinitis, unspecified
##      Allergy status to analgesic agent
##      Allergy status to narcotic agent
##      Allergy status to other anti-infective agents
##      Allergy status to other antibiotic agents
##      Allergy status to other drugs, medicaments and biological substances
##      Allergy status to penicillin
##      Allergy status to sulfonamides
##      Allergy to eggs
##      Allergy to other foods
##      Allergy to peanuts
##      Alzheimer's disease, unspecified (CMS code)
##      Anemia complicating childbirth
##      Anemia complicating pregnancy, second trimester
##      Anemia in chronic kidney disease
##      Anemia in neoplastic disease
##      Anemia in other chronic diseases classified elsewhere

```

Anemia, unspecified
 ## Aneurysm of unspecified site (CMS code)
 ## Angiodysplasia of stomach and duodenum without bleeding
 ## Angioneurotic edema, initial encounter
 ## Anisocoria
 ## Ankylosing spondylitis of unspecified sites in spine (CMS code)
 ## Anorexia
 ## Antineoplastic chemotherapy induced pancytopenia (CMS code)
 ## Antiphospholipid syndrome (CMS code)
 ## Anxiety disorder, unspecified
 ## Aphasia
 ## Aphasia following cerebral infarction
 ## Aphasia following nontraumatic intracerebral hemorrhage
 ## Arthralgia of temporomandibular joint, unspecified side
 ## Arthrodesis status
 ## Aspergillosis, unspecified (CMS code)
 ## Asplenia (congenital)
 ## Atelectasis
 ## Atherosclerosis of aorta (CMS code)
 ## Atherosclerosis of renal artery (CMS code)
 ## Atherosclerotic heart disease of native coronary artery with other forms of angina pectoris (CMS code)
 ## Atherosclerotic heart disease of native coronary artery without angina pectoris
 ## Atrial septal defect
 ## Atrioventricular block, second degree
 ## Attention-deficit hyperactivity disorder, unspecified type
 ## Atypical atrial flutter (CMS code)
 ## Autoimmune hepatitis (CMS code)
 ## Autoimmune thyroiditis
 ## Awaiting organ transplant status
 ## Bacteremia
 ## Bacteriuria
 ## Bariatric surgery status
 ## Bariatric surgery status complicating childbirth
 ## Bed confinement status
 ## Bell's palsy
 ## Benign neoplasm of cranial nerves (CMS code)
 ## Benign prostatic hyperplasia with lower urinary tract symptoms
 ## Benign prostatic hyperplasia without lower urinary tract symptoms
 ## Bilateral primary osteoarthritis of hip
 ## Bilateral primary osteoarthritis of knee
 ## Bipolar disorder, unspecified (CMS code)
 ## Bladder-neck obstruction
 ## Bloodstream infection due to central venous catheter, initial encounter
 ## Body mass index (BMI) 19.9 or less, adult
 ## Body mass index (BMI) 20.0-20.9, adult
 ## Body mass index (BMI) 21.0-21.9, adult
 ## Body mass index (BMI) 23.0-23.9, adult
 ## Body mass index (BMI) 24.0-24.9, adult
 ## Body mass index (BMI) 26.0-26.9, adult
 ## Body mass index (BMI) 27.0-27.9, adult
 ## Body mass index (BMI) 28.0-28.9, adult
 ## Body mass index (BMI) 29.0-29.9, adult
 ## Body mass index (BMI) 30.0-30.9, adult
 ## Body mass index (BMI) 31.0-31.9, adult

Body mass index (BMI) 32.0-32.9, adult
 ## Body mass index (BMI) 33.0-33.9, adult
 ## Body mass index (BMI) 35.0-35.9, adult
 ## Body mass index (BMI) 36.0-36.9, adult
 ## Body mass index (BMI) 37.0-37.9, adult
 ## Body mass index (BMI) 38.0-38.9, adult
 ## Body mass index (BMI) 39.0-39.9, adult
 ## Body mass index (BMI) 40.0-44.9, adult (CMS code)
 ## Body mass index (BMI) 45.0-49.9, adult (CMS code)
 ## Body mass index (BMI) 50.0-59.9, adult (CMS code)
 ## Body mass index (BMI) 60.0-69.9, adult (CMS code)
 ## Body mass index (BMI) 70 or greater, adult (CMS code)
 ## Bone graft infection
 ## Bradycardia, unspecified
 ## Brain death
 ## Brief psychotic disorder (CMS code)
 ## Bronchiectasis with (acute) exacerbation (CMS code)
 ## Bronchiectasis with acute lower respiratory infection (CMS code)
 ## Bronchiectasis, uncomplicated (CMS code)
 ## Cachexia (CMS code)
 ## Calculus of gallbladder without cholecystitis without obstruction
 ## Calculus of kidney
 ## Candidal cystitis and urethritis
 ## Candidal stomatitis
 ## Cannabis use, unspecified, uncomplicated
 ## Carcinoma in situ of skin of left upper limb, including shoulder
 ## Cardiac arrest, cause unspecified (CMS code)
 ## Cardiogenic shock (CMS code)
 ## Cardiomegaly
 ## Cardiomyopathy, unspecified (CMS code)
 ## Carrier of other specified bacterial diseases
 ## Cataract extraction status, right eye
 ## Cataract extraction status, unspecified eye
 ## Catatonic disorder due to known physiological condition
 ## Celiac disease
 ## Cellulitis of abdominal wall
 ## Cellulitis of buttock
 ## Cellulitis of groin
 ## Cellulitis of left lower limb
 ## Cellulitis of right lower limb
 ## Cerebral arteritis, not elsewhere classified
 ## Cerebral edema (CMS code)
 ## Cerebral infarction due to embolism of left cerebellar artery (CMS code)
 ## Cerebral infarction due to embolism of left middle cerebral artery (CMS code)
 ## Cerebral infarction due to embolism of left posterior cerebral artery (CMS code)
 ## Cerebral infarction due to embolism of unspecified cerebral artery (CMS code)
 ## Cerebral infarction due to unspecified occlusion or stenosis of left posterior cerebral artery
 ## Cerebral infarction, unspecified (CMS code)
 ## Cervical disc disorder at C4-C5 level with myelopathy
 ## Cervical shortening, second trimester
 ## Cervicalgia
 ## Chest pain, unspecified
 ## Cholesterolosis of gallbladder
 ## Chronic angle-closure glaucoma, unspecified eye, stage unspecified

Chronic atrial fibrillation, unspecified (CMS code)
 ## Chronic diastolic (congestive) heart failure (CMS code)
 ## Chronic embolism and thrombosis of left internal jugular vein (CMS code)
 ## Chronic ethmoidal sinusitis
 ## Chronic hepatic failure without coma (CMS code)
 ## Chronic kidney disease, stage 1
 ## Chronic kidney disease, stage 2 (mild)
 ## Chronic kidney disease, stage 3 (moderate) (CMS code)
 ## Chronic kidney disease, stage 3 unspecified (CMS code)
 ## Chronic kidney disease, stage 3a (CMS code)
 ## Chronic kidney disease, stage 3b (CMS code)
 ## Chronic kidney disease, stage 4 (severe) (CMS code)
 ## Chronic kidney disease, unspecified
 ## Chronic lymphocytic leukemia of B-cell type in remission (CMS code)
 ## Chronic lymphocytic leukemia of B-cell type not having achieved remission (CMS code)
 ## Chronic myeloid leukemia, BCR/ABL-positive, not having achieved remission (CMS code)
 ## Chronic obstructive pulmonary disease with (acute) exacerbation (CMS code)
 ## Chronic obstructive pulmonary disease with (acute) lower respiratory infection (CMS code)
 ## Chronic obstructive pulmonary disease, unspecified (CMS code)
 ## Chronic pain syndrome
 ## Chronic passive congestion of liver
 ## Chronic pulmonary edema
 ## Chronic respiratory failure, unspecified whether with hypoxia or hypercapnia (CMS code)
 ## Chronic sinusitis, unspecified
 ## Chronic systolic (congestive) heart failure (CMS code)
 ## Chronic venous hypertension (idiopathic) with ulcer of bilateral lower extremity (CMS code)
 ## Chronic viral hepatitis B without delta-agent (CMS code)
 ## Chronic viral hepatitis C (CMS code)
 ## Coagulation defect, unspecified (CMS code)
 ## Cocaine abuse, uncomplicated (CMS code)
 ## Cocaine use, unspecified, uncomplicated
 ## Collapsed vertebra, not elsewhere classified, cervical region, initial encounter for fracture (CMS code)
 ## Collapsed vertebra, not elsewhere classified, lumbar region, initial encounter for fracture (CMS code)
 ## Collapsed vertebra, not elsewhere classified, site unspecified, initial encounter for fracture (CMS code)
 ## Colostomy status (CMS code)
 ## Combined immunodeficiency, unspecified (CMS code)
 ## Compression of brain (CMS code)
 ## Compression of vein
 ## Constipation, unspecified
 ## Contact with and (suspected) exposure to covid-19
 ## Contact with and (suspected) exposure to other viral communicable diseases
 ## Contact with and (suspected) exposure to viral hepatitis
 ## Continuing pregnancy after elective fetal reduction of one fetus or more, second trimester, fetal death (CMS code)
 ## Continuing pregnancy after elective fetal reduction of one fetus or more, second trimester, fetal death (CMS code)
 ## Contusion of abdominal wall, initial encounter
 ## Contusion of left upper arm, initial encounter
 ## Contusion of scalp, initial encounter
 ## Coronary angioplasty status
 ## Coronary artery dissection
 ## Cough
 ## COVID-19
 ## Cramp and spasm
 ## Critical illness myopathy
 ## Crossing vessel and stricture of ureter without hydronephrosis

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##      Cushing's syndrome, unspecified (CMS code)
##      Cutaneous abscess of abdominal wall
##      Cutaneous abscess of buttock
##      Cutaneous abscess of left lower limb
##      Cutaneous abscess of right lower limb
##      Cyst of kidney, acquired
##      Cyst of pancreas
##      Cytomegaloviral disease, unspecified (CMS code)
##      Decreased white blood cell count, unspecified
##      Deficiency of other specified B group vitamins
##      Dehydration
##      Delirium due to known physiological condition
##      Dementia in other diseases classified elsewhere without behavioral disturbance (CMS code)
##      Dementia with Lewy bodies (CMS code)
##      Dependence on other enabling machines and devices
##      Dependence on renal dialysis (CMS code)
##      Dependence on respirator (ventilator) status (CMS code)
##      Dependence on supplemental oxygen
##      Dependence on wheelchair
##      Dermatitis, unspecified
##      Diabetes insipidus (CMS code)
##      Diaphragmatic hernia without obstruction or gangrene
##      Diarrhea, unspecified
##      Difficulty in walking, not elsewhere classified
##      Diffuse large b-cell lymphoma, extranodal and solid organ sites (CMS code)
##      Diffuse large B-cell lymphoma, unspecified site (CMS code)
##      Dilated cardiomyopathy (CMS code)
##      Diplopia
##      Discitis, unspecified, lumbar region
##      Discitis, unspecified, thoracic region
##      Disease of pericardium, unspecified
##      Disease of stomach and duodenum, unspecified
##      Diseases of the circulatory system complicating childbirth
##      Diseases of the digestive system complicating childbirth
##      Diseases of the digestive system complicating pregnancy, second trimester
##      Diseases of the nervous system complicating childbirth
##      Diseases of the respiratory system complicating childbirth
##      Diseases of the respiratory system complicating pregnancy, second trimester
##      Diseases of the respiratory system complicating pregnancy, third trimester
##      Diseases of the skin and subcutaneous tissue complicating childbirth
##      Disorder involving the immune mechanism, unspecified (CMS code)
##      Disorder of thyroid, unspecified
##      Disorder of urea cycle metabolism, unspecified (CMS code)
##      Disorders of diaphragm
##      Disorientation, unspecified
##      Displacement of umbrella device, initial encounter (CMS code)
##      Disruption of external operation (surgical) wound, not elsewhere classified, initial encounter
##      Disruption of internal operation (surgical) wound, not elsewhere classified, initial encounter
##      Dissection of iliac artery (CMS code)
##      Dissection of thoracic aorta (CMS code)
##      Dissection of thoracoabdominal aorta (CMS code)
##      Disseminated intravascular coagulation (defibrination syndrome) (CMS code)
##      Diverticulosis of intestine, part unspecified, without perforation or abscess with bleeding
##      Do not resuscitate

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Dorsalgia, unspecified
 ## Drug induced constipation
 ## Drug induced fever
 ## Drug or chemical induced diabetes mellitus with hyperglycemia (CMS code)
 ## Drug use complicating pregnancy, second trimester
 ## Drug-induced hypoglycemia without coma
 ## Drug-induced interstitial lung disorders, unspecified (CMS code)
 ## Duodenitis without bleeding
 ## Dysarthria and anarthria
 ## Dysarthria following unspecified cerebrovascular disease
 ## Dyskinesia of esophagus
 ## Dysphagia following cerebral infarction
 ## Dysphagia, oral phase
 ## Dysphagia, oropharyngeal phase
 ## Dysphagia, unspecified
 ## Dysphasia
 ## Edema of larynx
 ## Edema, unspecified
 ## Ehlers-Danlos syndrome, unspecified
 ## Elevated white blood cell count, unspecified
 ## Elevation of levels of liver transaminase levels
 ## Embolism and thrombosis of iliac artery (CMS code)
 ## Embolism and thrombosis of unspecified parts of aorta (CMS code)
 ## Emphysema, unspecified (CMS code)
 ## Encephalitis and encephalomyelitis in diseases classified elsewhere
 ## Encephalitis and encephalomyelitis, unspecified
 ## Encephalopathy, unspecified
 ## Encounter for aftercare following kidney transplant
 ## Encounter for antineoplastic chemotherapy
 ## Encounter for attention to gastrostomy (CMS code)
 ## Encounter for attention to tracheostomy (CMS code)
 ## Encounter for elective termination of pregnancy
 ## Encounter for examination for normal comparison and control in clinical research program
 ## Encounter for immunization
 ## Encounter for observation for other suspected diseases and conditions ruled out
 ## Encounter for observation for suspected exposure to other biological agents ruled out
 ## Encounter for palliative care
 ## Encounter for screening for other viral diseases
 ## End stage heart failure (CMS code)
 ## End stage renal disease (CMS code)
 ## Endocrine, nutritional and metabolic diseases complicating childbirth
 ## Endocrine, nutritional and metabolic diseases complicating pregnancy, third trimester
 ## Enlarged lymph nodes, unspecified
 ## Enterococcus as the cause of diseases classified elsewhere
 ## Enterocolitis due to Clostridium difficile, not specified as recurrent
 ## Enterocolitis due to Clostridium difficile, recurrent
 ## Eosinophilia
 ## Eosinophilia, unspecified
 ## Epigastric pain
 ## Epilepsy, unspecified, not intractable, with status epilepticus (CMS code)
 ## Epilepsy, unspecified, not intractable, without status epilepticus (CMS code)
 ## Epistaxis
 ## Erythema intertrigo
 ## Erythema nodosum

Essential (hemorrhagic) thrombocythemia (CMS code)
 ## Essential (primary) hypertension
 ## Essential tremor
 ## Excessive and frequent menstruation with regular cycle
 ## Extended spectrum beta lactamase (ESBL) resistance
 ## Facial weakness
 ## Facial weakness following cerebral infarction
 ## Family history of alcohol abuse and dependence
 ## Family history of arthritis
 ## Family history of asthma and other chronic lower respiratory diseases
 ## Family history of blindness and visual loss
 ## Family history of colonic polyps
 ## Family history of diabetes mellitus
 ## Family history of diseases of the blood and blood-forming organs and certain disorders involving
 ## Family history of disorders of kidney and ureter
 ## Family history of epilepsy and other diseases of the nervous system
 ## Family history of glaucoma
 ## Family history of ischemic heart disease and other diseases of the circulatory system
 ## Family history of leukemia
 ## Family history of malignant neoplasm of bladder
 ## Family history of malignant neoplasm of breast
 ## Family history of malignant neoplasm of digestive organs
 ## Family history of malignant neoplasm of kidney
 ## Family history of malignant neoplasm of other genital organs
 ## Family history of malignant neoplasm of other organs or systems
 ## Family history of malignant neoplasm of prostate
 ## Family history of malignant neoplasm of trachea, bronchus and lung
 ## Family history of malignant neoplasm, unspecified
 ## Family history of other diseases of the digestive system
 ## Family history of other disorder of lipoprotein metabolism and other lipidemia
 ## Family history of other endocrine, nutritional and metabolic diseases
 ## Family history of other mental and behavioral disorders
 ## Family history of other specified eye disorder
 ## Family history of stroke
 ## Fatty (change of) liver, not elsewhere classified
 ## Fecal impaction (CMS code)
 ## Fetus-to-fetus placental transfusion syndrome, second trimester
 ## Fever presenting with conditions classified elsewhere
 ## Fever, unspecified
 ## Fibromyalgia
 ## First degree perineal laceration during delivery
 ## Fistula of intestine
 ## Fluid overload, unspecified
 ## Fracture of ramus of mandible, unspecified side, initial encounter for closed fracture (CMS code)
 ## Frequency of micturition
 ## Full incontinence of feces
 ## Functional dyspepsia
 ## Functional quadriplegia (CMS code)
 ## Gangrene and necrosis of lung (CMS code)
 ## Gangrene, not elsewhere classified (CMS code)
 ## Gastritis, unspecified, without bleeding
 ## Gastro-esophageal reflux disease with esophagitis, without bleeding
 ## Gastro-esophageal reflux disease without esophagitis
 ## Gastrointestinal hemorrhage, unspecified

Gastroparesis
 ## Gastrostomy malfunction (CMS code)
 ## Gastrostomy status (CMS code)
 ## Generalized abdominal pain
 ## Gestational (pregnancy-induced) hypertension without significant proteinuria, complicating child
 ## Gestational (pregnancy-induced) hypertension without significant proteinuria, second trimester
 ## Gestational diabetes mellitus in childbirth, diet controlled
 ## Gestational diabetes mellitus in pregnancy, diet controlled
 ## Glasgow coma scale score 13-15, at arrival to emergency department
 ## Glasgow coma scale score 3-8, at arrival to emergency department (CMS code)
 ## Glasgow coma scale score 9-12, at arrival to emergency department
 ## Glomerular disease in systemic lupus erythematosus (CMS code)
 ## Glomerular disorders in diseases classified elsewhere
 ## Gout, unspecified
 ## Gross hematuria
 ## Headache
 ## Headache, unspecified
 ## Heart transplant status (CMS code)
 ## Helicobacter pylori (H. pylori) as the cause of diseases classified elsewhere
 ## Hematuria, unspecified
 ## Hemiplegia and hemiparesis following cerebral infarction affecting left non-dominant side (CMS code)
 ## Hemiplegia and hemiparesis following cerebral infarction affecting right dominant side (CMS code)
 ## Hemiplegia and hemiparesis following nontraumatic intracerebral hemorrhage affecting right dominant side
 ## Hemiplegia and hemiparesis following unspecified cerebrovascular disease affecting left non-dominant side
 ## Hemiplegia, unspecified affecting left nondominant side (CMS code)
 ## Hemiplegia, unspecified affecting right dominant side (CMS code)
 ## Hemiplegia, unspecified affecting unspecified side (CMS code)
 ## Hemoperitoneum
 ## Hemoptysis
 ## Hemorrhage from other sites in respiratory passages
 ## Hemorrhagic disorder due to extrinsic circulating anticoagulants (CMS code)
 ## Hemothorax
 ## Hepatic failure, unspecified without coma (CMS code)
 ## Hepatic fibrosis
 ## Hepatorenal syndrome (CMS code)
 ## Herpesviral infection of penis
 ## Herpesviral infection, unspecified
 ## Herpesviral vesicular dermatitis
 ## History of falling
 ## History of uterine scar from previous surgery
 ## Homelessness
 ## Homonymous bilateral field defects, right side
 ## Hordeolum externum left upper eyelid
 ## Hormone replacement therapy
 ## Human immunodeficiency virus (HIV) disease (CMS code)
 ## Hydrocephalus, unspecified (CMS code)
 ## Hydronephrosis with renal and ureteral calculous obstruction
 ## Hydronephrosis with ureteral stricture, not elsewhere classified
 ## Hypercalcemia
 ## Hypergammaglobulinemia, unspecified
 ## Hyperglycemia, unspecified
 ## Hyperkalemia
 ## Hyperlipidemia, unspecified
 ## Hyperosmolality and hypernatremia

Hyperprolactinemia (CMS code)
 ## Hypersplenism
 ## Hypertensive chronic kidney disease with stage 1 through stage 4 chronic kidney disease, or unspecified
 ## Hypertensive chronic kidney disease with stage 5 chronic kidney disease or end stage renal disease
 ## Hypertensive heart and chronic kidney disease with heart failure and stage 1 through stage 4 chronic kidney
 ## Hypertensive heart and chronic kidney disease with heart failure and with stage 5 chronic kidney disease
 ## Hypertensive heart disease with heart failure (CMS code)
 ## Hypo-osmolality and hyponatremia
 ## Hypocalcemia
 ## Hypoglycemia, unspecified
 ## Hypokalemia
 ## Hypomagnesemia
 ## Hypoparathyroidism, unspecified (CMS code)
 ## Hypoplastic left heart syndrome
 ## Hypotension due to drugs
 ## Hypotension of hemodialysis
 ## Hypotension, unspecified
 ## Hypothermia, initial encounter
 ## Hypothermia, not associated with low environmental temperature
 ## Hypothyroidism, unspecified
 ## Hypovolemia
 ## Hypovolemic shock (CMS code)
 ## Hypoxemia
 ## Idiopathic pulmonary fibrosis (CMS code)
 ## Ileus, unspecified (CMS code)
 ## Immunodeficiency due to drugs (CMS code)
 ## Immunodeficiency, unspecified (CMS code)
 ## Impacted cerumen, unspecified ear
 ## Infarction of spleen
 ## Infection and inflammatory reaction due to cardiac valve prosthesis, initial encounter (CMS code)
 ## Infection and inflammatory reaction due to internal fixation device of spine, initial encounter
 ## Infection and inflammatory reaction due to other internal prosthetic devices, implants and grafts
 ## Infection and inflammatory reaction due to other urinary catheter, initial encounter (CMS code)
 ## Infection and inflammatory reaction due to ventricular intracranial (communicating) shunt, initial encounter
 ## Infection following a procedure, superficial incisional surgical site, initial encounter
 ## Infection following a procedure, unspecified, initial encounter
 ## Infection of intervertebral disc (pyogenic), lumbosacral region (CMS code)
 ## Inflammatory disorders of scrotum
 ## Inflammatory polyarthropathy (CMS code)
 ## Injury, poisoning and certain other consequences of external causes complicating childbirth
 ## Injury, poisoning and certain other consequences of external causes complicating pregnancy, second trimester
 ## Insomnia, unspecified
 ## Instability of internal right knee prosthesis, initial encounter (CMS code)
 ## Interstitial emphysema (CMS code)
 ## Interstitial pulmonary disease, unspecified (CMS code)
 ## Intervertebral disc disorders with radiculopathy, lumbar region
 ## Intestinal adhesions (bands), unspecified as to partial versus complete obstruction (CMS code)
 ## Intestinal adhesions (bands), with partial obstruction (CMS code)
 ## Intracardiac thrombosis, not elsewhere classified
 ## Intracranial abscess and granuloma
 ## Intracranial hypotension, spontaneous
 ## Intrahepatic bile duct carcinoma (CMS code)
 ## Intraspinous abscess and granuloma
 ## Invasive pulmonary aspergillosis (CMS code)

Iron deficiency
 ## Iron deficiency anemia secondary to blood loss (chronic)
 ## Iron deficiency anemia, unspecified
 ## Irritable bowel syndrome with constipation
 ## Ischemic cardiomyopathy
 ## Kidney transplant failure
 ## Kidney transplant infection
 ## Kidney transplant rejection
 ## Kidney transplant status
 ## Klebsiella pneumoniae (k. pneumoniae) as the cause of diseases classified elsewhere
 ## Labor and delivery complicated by cord around neck, without compression, not applicable or unspecified
 ## Labor and delivery complicated by meconium in amniotic fluid
 ## Labor and delivery complicated by other cord entanglement, without compression, not applicable or unspecified
 ## Laceration without foreign body of right ring finger without damage to nail, initial encounter
 ## Latent tuberculosis
 ## Left bundle-branch block, unspecified
 ## Left ventricular failure, unspecified (CMS code)
 ## Legal blindness, as defined in USA
 ## Leiomyoma of uterus, unspecified
 ## Liver and biliary tract disorders in childbirth
 ## Liver and biliary tract disorders in pregnancy, third trimester
 ## Liver disease, unspecified
 ## Liver transplant status (CMS code)
 ## Lobulated, fused and horseshoe kidney
 ## Local infection of the skin and subcutaneous tissue, unspecified
 ## Localization-related (focal) (partial) symptomatic epilepsy and epileptic syndromes with complex partial seizures
 ## Localization-related (focal) (partial) symptomatic epilepsy and epileptic syndromes with simple partial seizures
 ## Localized edema
 ## Localized enlarged lymph nodes
 ## Long term (current) use of antibiotics
 ## Long term (current) use of anticoagulants
 ## Long term (current) use of antithrombotics/antiplatelets
 ## Long term (current) use of aspirin
 ## Long term (current) use of bisphosphonates
 ## Long term (current) use of inhaled steroids
 ## Long term (current) use of insulin (CMS code)
 ## Long term (current) use of opiate analgesic
 ## Long term (current) use of oral hypoglycemic drugs
 ## Long term (current) use of systemic steroids
 ## Longstanding persistent atrial fibrillation (CMS code)
 ## Low back pain
 ## Lung transplant infection (CMS code)
 ## Lung transplant status (CMS code)
 ## Lymphangitis
 ## Lymphocytopenia
 ## Major depressive disorder, single episode, moderate (CMS code)
 ## Major depressive disorder, single episode, unspecified
 ## Malignant ascites
 ## Malignant neoplasm of border of tongue (CMS code)
 ## Malignant neoplasm of brain, unspecified (CMS code)
 ## Malignant neoplasm of cervix uteri, unspecified (CMS code)
 ## Malignant neoplasm of cortex of right adrenal gland (CMS code)
 ## Malignant neoplasm of frontal lobe (CMS code)
 ## Malignant neoplasm of lower lobe, left bronchus or lung (CMS code)

Malignant neoplasm of mandible (CMS code)
 ## Malignant neoplasm of mouth, unspecified (CMS code)
 ## Malignant neoplasm of pancreas, unspecified (CMS code)
 ## Malignant neoplasm of parietal lobe (CMS code)
 ## Malignant neoplasm of prostate (CMS code)
 ## Malignant neoplasm of rectum (CMS code)
 ## Malignant neoplasm of right kidney, except renal pelvis (CMS code)
 ## Malignant neoplasm of stomach, unspecified (CMS code)
 ## Malignant neoplasm of temporal lobe (CMS code)
 ## Malignant neoplasm of thyroid gland (CMS code)
 ## Malignant neoplasm of unspecified part of unspecified bronchus or lung (CMS code)
 ## Malignant neoplasm of upper lobe, right bronchus or lung (CMS code)
 ## Malignant neoplasm of upper-inner quadrant of left female breast (CMS code)
 ## Malignant pleural effusion
 ## Mastitis without abscess
 ## Mastodynia
 ## Maternal care for abnormalities of the fetal heart rate or rhythm, third trimester, not applicable
 ## Maternal care for benign tumor of corpus uteri, third trimester
 ## Maternal care for low transverse scar from previous cesarean delivery
 ## Maternal care for other abnormalities of pelvic organs, third trimester
 ## Maternal care for other known or suspected poor fetal growth, third trimester, not applicable
 ## Maternal hypotension syndrome, third trimester
 ## Mediastinitis
 ## Medullary cystic kidney
 ## Melena
 ## Meniere's disease, left ear
 ## Meningitis, unspecified
 ## Mesothelioma of pleura (CMS code)
 ## Metabolic encephalopathy
 ## Metabolic syndrome
 ## Methicillin resistant Staphylococcus aureus infection as the cause of diseases classified elsewhere
 ## Methicillin susceptible Staphylococcus aureus infection as the cause of diseases classified elsewhere
 ## Migraine with aura, intractable, with status migrainosus
 ## Migraine, unspecified, not intractable, without status migrainosus
 ## Mild intermittent asthma, uncomplicated
 ## Mild persistent asthma, uncomplicated
 ## Mild protein-calorie malnutrition (CMS code)
 ## Mixed conductive and sensorineural hearing loss, bilateral
 ## Mixed disorder of acid-base balance
 ## Mixed hyperlipidemia
 ## Moderate protein-calorie malnutrition (CMS code)
 ## Morbid (severe) obesity due to excess calories (CMS code)
 ## Morbid (severe) obesity with alveolar hypoventilation (CMS code)
 ## Moyamoya disease
 ## Mucormycosis, unspecified (CMS code)
 ## Multiple fractures of ribs, right side, initial encounter for closed fracture
 ## Multiple myeloma not having achieved remission (CMS code)
 ## Multiple subsegmental pulmonary emboli without acute cor pulmonale (CMS code)
 ## Myalgia, unspecified site
 ## Myocardial infarction type 2 (CMS code)
 ## Myocarditis, unspecified (CMS code)
 ## Myoclonus
 ## Narcolepsy without cataplexy
 ## Nausea with vomiting, unspecified

Neoplasm of uncertain behavior of bone and articular cartilage
 ## Neoplasm related pain (acute) (chronic)
 ## Nephropathy induced by other drugs, medicaments and biological substances
 ## Nephrotic syndrome with other morphologic changes
 ## Nephrotic syndrome with unspecified morphologic changes
 ## Neurofibromatosis, type 1 (CMS code)
 ## Neurogenic bowel, not elsewhere classified
 ## Neuromuscular dysfunction of bladder, unspecified
 ## Neuromuscular scoliosis, site unspecified
 ## Neuromyelitis optica (devic) (CMS code)
 ## Neutropenia due to infection (CMS code)
 ## Neutropenia, unspecified (CMS code)
 ## Nicotine dependence, cigarettes, uncomplicated
 ## Nicotine dependence, other tobacco product, uncomplicated
 ## Nicotine dependence, unspecified, uncomplicated
 ## Nihss score 19
 ## Nihss score 30
 ## Nihss score 6
 ## Nocturia
 ## Non-pressure chronic ulcer of left calf with unspecified severity (CMS code)
 ## Non-pressure chronic ulcer of unspecified part of left lower leg with unspecified severity (CMS
 ## Non-pressure chronic ulcer of unspecified part of right lower leg with unspecified severity (CMS
 ## Non-ST elevation (NSTEMI) myocardial infarction (CMS code)
 ## Nonalcoholic steatohepatitis (NASH)
 ## Nonfamilial hypogammaglobulinemia (CMS code)
 ## Noninfective gastroenteritis and colitis, unspecified
 ## Nonpyogenic thrombosis of intracranial venous system
 ## Nonrheumatic aortic (valve) insufficiency
 ## Nonrheumatic aortic (valve) stenosis
 ## Nonrheumatic aortic (valve) stenosis with insufficiency
 ## Nonspecific elevation of levels of transaminase and lactic acid dehydrogenase (ldh)
 ## Nontoxic multinodular goiter
 ## Nontoxic single thyroid nodule
 ## Nontraumatic chronic subdural hemorrhage (CMS code)
 ## Nontraumatic compartment syndrome of abdomen
 ## Nontraumatic hematoma of soft tissue
 ## Nontraumatic intracerebral hemorrhage, unspecified (CMS code)
 ## Nontraumatic subacute subdural hemorrhage (CMS code)
 ## Nontraumatic subarachnoid hemorrhage, unspecified (CMS code)
 ## Nutritional anemia, unspecified
 ## Nutritional deficiency, unspecified
 ## Obesity complicating childbirth
 ## Obesity, unspecified
 ## Obstruction of bile duct
 ## Obstructive hydrocephalus (CMS code)
 ## Obstructive sleep apnea (adult) (pediatric)
 ## Occlusion and stenosis of bilateral carotid arteries
 ## Occlusion and stenosis of right carotid artery
 ## Occlusion and stenosis of unspecified carotid artery
 ## Old myocardial infarction
 ## Opioid abuse, uncomplicated (CMS code)
 ## Opioid dependence, uncomplicated (CMS code)
 ## Organ-limited amyloidosis (CMS code)
 ## Orthostatic hypotension

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## Osteomyelitis of vertebra, lumbar region (CMS code)
## Osteomyelitis of vertebra, lumbosacral region (CMS code)
## Osteomyelitis of vertebra, thoracic region (CMS code)
## Osteomyelitis, unspecified (CMS code)
## Osteonecrosis, unspecified (CMS code)
## Other abnormalities of gait and mobility
## Other acute postprocedural pain
## Other adrenocortical insufficiency (CMS code)
## Other air leak
## Other artificial openings of urinary tract status (CMS code)
## Other ascites
## Other benign mammary dysplasias of left breast
## Other benign mammary dysplasias of right breast
## Other cardiomyopathies (CMS code)
## Other chest pain
## Other cholangitis
## Other chronic pain
## Other chronic sinusitis
## Other cirrhosis of liver (CMS code)
## Other complication of kidney transplant
## Other complications following infusion, transfusion and therapeutic injection, initial encounter
## Other complications of lung transplant (CMS code)
## Other complications of other transplanted tissue
## Other constipation
## Other coronavirus as the cause of diseases classified elsewhere
## Other diseases of stomach and duodenum
## Other diseases of the blood and blood-forming organs and certain disorders involving the immune
## Other diseases of vocal cords
## Other disorders of electrolyte and fluid balance, not elsewhere classified
## Other disorders of glycoprotein metabolism (CMS code)
## Other disorders of mineral metabolism
## Other disorders of phosphorus metabolism
## Other disorders of pituitary gland (CMS code)
## Other disorders of plasma-protein metabolism, not elsewhere classified
## Other disorders of psychological development
## Other drug induced secondary parkinsonism (CMS code)
## Other dysphagia
## Other elevated white blood cell count
## Other encephalopathy
## Other eosinophilia
## Other fatigue
## Other foreign object in other parts of respiratory tract causing asphyxiation, initial encounter
## Other forms of acute ischemic heart disease (CMS code)
## Other forms of dyspnea
## Other forms of stomatitis
## Other fracture of base of skull, initial encounter for closed fracture (CMS code)
## Other gram-negative sepsis (CMS code)
## Other hemorrhagic disorder due to intrinsic circulating anticoagulants, antibodies, or inhibitors
## Other herpesviral infection
## Other hydronephrosis
## Other hypotension
## Other immediate postpartum hemorrhage
## Other insect allergy status
## Other instability, left shoulder

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Other intervertebral disc degeneration, lumbar region
 ## Other intraoperative complications of the circulatory system, not elsewhere classified
 ## Other long term (current) drug therapy
 ## Other malaise
 ## Other mechanical complication of breast prosthesis and implant, initial encounter
 ## Other mechanical complication of internal right knee prosthesis, initial encounter (CMS code)
 ## Other mechanical complication of other specified internal prosthetic devices, implants and grafts
 ## Other mechanical complication of other urinary catheter, initial encounter (CMS code)
 ## Other megacolon
 ## Other mental disorders complicating childbirth
 ## Other microscopic hematuria
 ## Other neutropenia (CMS code)
 ## Other noninflammatory disorders of ovary, fallopian tube and broad ligament
 ## Other nonmedicinal substance allergy status
 ## Other nonthrombocytopenic purpura (CMS code)
 ## Other obstructive and reflux uropathy
 ## Other osteoporosis with current pathological fracture, vertebra(e), initial encounter for fracture
 ## Other pancytopenia (CMS code)
 ## Other peritonitis (CMS code)
 ## Other persistent atrial fibrillation (CMS code)
 ## Other pneumothorax
 ## Other postprocedural complications and disorders of digestive system
 ## Other primary thrombophilia (CMS code)
 ## Other problems related to lifestyle
 ## Other pulmonary aspergillosis (CMS code)
 ## Other pulmonary collapse
 ## Other pulmonary embolism without acute cor pulmonale (CMS code)
 ## Other retention of urine
 ## Other seasonal allergic rhinitis
 ## Other secondary pulmonary hypertension (CMS code)
 ## Other secondary thrombocytopenia
 ## Other sequelae of cerebral infarction
 ## Other sequelae of nontraumatic intracerebral hemorrhage
 ## Other shock (CMS code)
 ## Other sites of candidiasis
 ## Other specified abnormal findings of blood chemistry
 ## Other specified bacterial agents as the cause of diseases classified elsewhere
 ## Other specified dermatitis
 ## Other specified diseases and conditions complicating childbirth
 ## Other specified diseases and conditions complicating pregnancy
 ## Other specified diseases and conditions complicating pregnancy, childbirth and the puerperium
 ## Other specified diseases of liver
 ## Other specified diseases of pancreas
 ## Other specified diseases of upper respiratory tract
 ## Other specified disorders of adrenal gland (CMS code)
 ## Other specified disorders of bladder
 ## Other specified disorders of bone density and structure, unspecified site
 ## Other specified disorders of bone, unspecified site
 ## Other specified disorders of brain
 ## Other specified disorders of teeth and supporting structures
 ## Other specified disorders of the male genital organs
 ## Other specified disorders of veins
 ## Other specified follicular disorders
 ## Other specified health status

Other specified interstitial pulmonary diseases (CMS code)
 ## Other specified metabolic disorders (CMS code)
 ## Other specified muscular dystrophies (CMS code)
 ## Other specified noninfective disorders of lymphatic vessels and lymph nodes
 ## Other specified paralytic syndromes (CMS code)
 ## Other specified pleural conditions
 ## Other specified pregnancy related conditions, second trimester
 ## Other specified pregnancy related conditions, third trimester
 ## Other specified respiratory disorders
 ## Other specified sepsis (CMS code)
 ## Other specified soft tissue disorders
 ## Other specified trauma to perineum and vulva
 ## Other specified urinary incontinence
 ## Other spondylosis with myelopathy, cervical region
 ## Other staphylococcus as the cause of diseases classified elsewhere
 ## Other stimulant abuse, uncomplicated (CMS code)
 ## Other stimulant use, unspecified, uncomplicated
 ## Other streptococcal sepsis (CMS code)
 ## Other symptoms and signs involving cognitive functions and awareness
 ## Other thrombophilia (CMS code)
 ## Other tracheostomy complication (CMS code)
 ## Other transplanted tissue failure
 ## Other urogenital candidiasis
 ## Other uterine inertia
 ## Other viral agents as the cause of diseases classified elsewhere
 ## Other viral diseases complicating childbirth
 ## Other viral diseases complicating pregnancy, second trimester
 ## Other viral diseases complicating pregnancy, third trimester
 ## Other viral pneumonia
 ## Pain in left leg
 ## Pain in left lower leg
 ## Pain in leg, unspecified
 ## Pain in right arm
 ## Pancreas transplant status (CMS code)
 ## Panic disorder (episodic paroxysmal anxiety)
 ## Panniculitis, unspecified
 ## Paranoid schizophrenia (CMS code)
 ## Paraplegia, unspecified (CMS code)
 ## Paresthesia of skin
 ## Parkinson's disease (CMS code)
 ## Paroxysmal atrial fibrillation (CMS code)
 ## Partial intestinal obstruction, unspecified as to cause (CMS code)
 ## Patient's noncompliance with other medical treatment and regimen
 ## Patient's other noncompliance with medication regimen
 ## Pediculosis, unspecified
 ## Peptic ulcer, site unspecified, unspecified as acute or chronic, without hemorrhage or perforation
 ## Perforation of esophagus
 ## Pericardial effusion (noninflammatory)
 ## Periodontal disease, unspecified
 ## Periorbital cellulitis
 ## Peripheral vascular disease, unspecified (CMS code)
 ## Peritoneal abscess (CMS code)
 ## Persistent postprocedural fistula, initial encounter
 ## Person awaiting admission to adequate facility elsewhere

Personal history of (corrected) congenital malformations of heart and circulatory system
 ## Personal history of (corrected) congenital malformations of integument, limbs and musculoskeletal system
 ## Personal history of adult physical and sexual abuse
 ## Personal history of anaphylaxis
 ## Personal history of antineoplastic chemotherapy
 ## Personal history of benign neoplasm of the brain
 ## Personal history of colonic polyps
 ## Personal history of COVID-19
 ## Personal history of extracorporeal membrane oxygenation (ECMO)
 ## Personal history of irradiation
 ## Personal history of latent tuberculosis infection
 ## Personal history of malignant melanoma of skin
 ## Personal history of malignant neoplasm of bladder
 ## Personal history of malignant neoplasm of bone
 ## Personal history of malignant neoplasm of brain
 ## Personal history of malignant neoplasm of breast
 ## Personal history of malignant neoplasm of cervix uteri
 ## Personal history of malignant neoplasm of larynx
 ## Personal history of malignant neoplasm of liver
 ## Personal history of malignant neoplasm of other parts of uterus
 ## Personal history of malignant neoplasm of thyroid
 ## Personal history of Methicillin resistant Staphylococcus aureus infection
 ## Personal history of nicotine dependence
 ## Personal history of other diseases of the circulatory system
 ## Personal history of other diseases of the digestive system
 ## Personal history of other diseases of the respiratory system
 ## Personal history of other infectious and parasitic diseases
 ## Personal history of other malignant neoplasm of bronchus and lung
 ## Personal history of other malignant neoplasm of kidney
 ## Personal history of other malignant neoplasm of large intestine
 ## Personal history of other malignant neoplasm of rectum, rectosigmoid junction, and anus
 ## Personal history of other malignant neoplasm of skin
 ## Personal history of other malignant neoplasm of stomach
 ## Personal history of other venous thrombosis and embolism
 ## Personal history of peptic ulcer disease
 ## Personal history of pneumonia (recurrent)
 ## Personal history of pulmonary embolism
 ## Personal history of self-harm
 ## Personal history of transient ischemic attack (TIA), and cerebral infarction without residual deficits
 ## Personal history of traumatic brain injury
 ## Personal history of tuberculosis
 ## Personal history of urinary (tract) infections
 ## Personal history of urinary calculi
 ## Physical restraint status
 ## Pleural effusion in other conditions classified elsewhere
 ## Pleural effusion, not elsewhere classified
 ## Pneumonia due to coronavirus disease 2019
 ## Pneumonia due to Klebsiella pneumoniae (CMS code)
 ## Pneumonia due to methicillin resistant Staphylococcus aureus (CMS code)
 ## Pneumonia due to methicillin susceptible Staphylococcus aureus (CMS code)
 ## Pneumonia due to other gram-negative bacteria (CMS code)
 ## Pneumonia due to other specified bacteria (CMS code)
 ## Pneumonia due to other specified infectious organisms
 ## Pneumonia due to Pseudomonas (CMS code)


```

##      Pneumonia due to SARS-associated coronavirus
##      Pneumonia, unspecified organism
##      Pneumonitis due to inhalation of food and vomit (CMS code)
##      Pneumothorax, unspecified
##      Poisoning by unspecified narcotics, intentional self-harm, initial encounter (CMS code)
##      Polyarteritis nodosa (CMS code)
##      Polyclonal hypergammaglobulinemia
##      Polycystic kidney, adult type
##      Polycystic ovarian syndrome
##      Polyhydramnios, second trimester, fetus 1
##      Polyneuropathy, unspecified
##      Polyp of colon
##      Portal hypertension (CMS code)
##      Portal vein thrombosis
##      Post-transplant lymphoproliferative disorder (PTLD) (CMS code)
##      Post-traumatic stress disorder, unspecified
##      Postnasal drip
##      Postprocedural (acute) (chronic) kidney failure
##      Postprocedural hypothyroidism
##      Postprocedural pneumothorax
##      Postsurgical malabsorption, not elsewhere classified
##      Pre-existing essential hypertension complicating childbirth
##      Pre-existing hypertension with pre-eclampsia, complicating childbirth
##      Prediabetes
##      Pregnancy care for patient with recurrent pregnancy loss, second trimester
##      Presence of aortocoronary bypass graft
##      Presence of artificial hip joint, bilateral
##      Presence of automatic (implantable) cardiac defibrillator
##      Presence of cardiac pacemaker
##      Presence of cerebrospinal fluid drainage device
##      Presence of coronary angioplasty implant and graft
##      Presence of heart assist device (CMS code)
##      Presence of insulin pump (external) (internal)
##      Presence of intraocular lens
##      Presence of left artificial hip joint
##      Presence of left artificial knee joint
##      Presence of left artificial shoulder joint
##      Presence of other vascular implants and grafts
##      Presence of prosthetic heart valve
##      Presence of right artificial hip joint
##      Presence of right artificial knee joint
##      Presence of right artificial shoulder joint
##      Presence of unspecified artificial hip joint
##      Pressure ulcer of head, unspecified stage
##      Pressure ulcer of left buttock, stage 1
##      Pressure ulcer of left heel, stage 1
##      Pressure ulcer of other site, stage 1
##      Pressure ulcer of other site, stage 2 (CMS code)
##      Pressure ulcer of other site, stage 3 (CMS code)
##      Pressure ulcer of other site, unstageable (CMS code)
##      Pressure ulcer of right buttock, stage 1
##      Pressure ulcer of right heel, stage 1
##      Pressure ulcer of sacral region, stage 1
##      Pressure ulcer of sacral region, stage 3 (CMS code)

```

Pressure ulcer of sacral region, stage 4 (CMS code)
 ## Pressure ulcer of sacral region, unspecified stage
 ## Pressure ulcer of sacral region, unstageable (CMS code)
 ## Pressure ulcer of unspecified buttock, stage 3 (CMS code)
 ## Pressure ulcer of unspecified buttock, unspecified stage
 ## Pressure ulcer of unspecified heel, unspecified stage
 ## Pressure ulcer of unspecified site, unspecified stage
 ## Pressure-induced deep tissue damage of left heel
 ## Preterm premature rupture of membranes, unspecified as to length of time between rupture and onset
 ## Problems related to living alone
 ## Procedure and treatment not carried out because of other contraindication
 ## Procedure and treatment not carried out because of patient's decision for reasons of belief and culture
 ## Procedure and treatment not carried out because of patient's decision for unspecified reasons
 ## Prolonged second stage (of labor)
 ## Proteinuria, unspecified
 ## Proteus (mirabilis) (morganii) as the cause of diseases classified elsewhere
 ## Pruritus, unspecified
 ## Pseudarthrosis after fusion or arthrodesis
 ## Pseudomonas (aeruginosa) (mallei) (pseudomallei) as the cause of diseases classified elsewhere
 ## Psoas muscle abscess (CMS code)
 ## Pulmonary cryptococcosis (CMS code)
 ## Pulmonary fibrosis, unspecified (CMS code)
 ## Pulmonary hypertension due to left heart disease (CMS code)
 ## Pulmonary hypertension due to lung diseases and hypoxia (CMS code)
 ## Pulmonary hypertension, unspecified (CMS code)
 ## Pure hypercholesterolemia, unspecified
 ## Pure hyperglyceridemia
 ## Pyogenic arthritis, unspecified (CMS code)
 ## Pyothorax without fistula (CMS code)
 ## Quadriplegia, unspecified (CMS code)
 ## Radiculopathy, cervical region
 ## Radiographic dye allergy status
 ## Rash and other nonspecific skin eruption
 ## Raynaud's syndrome without gangrene
 ## Rectal abscess
 ## Recurrent and persistent hematuria with other morphologic changes
 ## Recurrent pregnancy loss
 ## Renal agenesis, unilateral
 ## Renal dysplasia
 ## Renal sclerosis, unspecified
 ## Repeated falls
 ## Residual hemorrhoidal skin tags
 ## Resistance to penicillins
 ## Resistance to vancomycin
 ## Respiratory failure, unspecified with hypercapnia (CMS code)
 ## Respiratory failure, unspecified with hypoxia (CMS code)
 ## Respiratory failure, unspecified, unspecified whether with hypoxia or hypercapnia (CMS code)
 ## Retention of urine, unspecified
 ## Rhabdomyolysis
 ## Rheumatic disorders of both mitral and tricuspid valves
 ## Rheumatic tricuspid insufficiency
 ## Rheumatoid arthritis, unspecified (CMS code)
 ## Rheumatoid lung disease with rheumatoid arthritis of unspecified site (CMS code)
 ## Sarcoidosis of lung (CMS code)

Schizoaffective disorder, unspecified (CMS code)
 ## Schizophrenia, unspecified (CMS code)
 ## Sciatica, unspecified side
 ## Scoliosis, unspecified
 ## Scrotal pain
 ## Seborrheic dermatitis, unspecified
 ## Second degree perineal laceration during delivery
 ## Secondary and unspecified malignant neoplasm of lymph node, unspecified (CMS code)
 ## Secondary and unspecified malignant neoplasm of lymph nodes of head, face and neck (CMS code)
 ## Secondary hyperparathyroidism of renal origin (CMS code)
 ## Secondary malignant neoplasm of bone (CMS code)
 ## Secondary malignant neoplasm of brain (CMS code)
 ## Secondary malignant neoplasm of left adrenal gland (CMS code)
 ## Secondary malignant neoplasm of liver and intrahepatic bile duct (CMS code)
 ## Secondary malignant neoplasm of mediastinum (CMS code)
 ## Secondary malignant neoplasm of other digestive organs (CMS code)
 ## Secondary malignant neoplasm of other specified sites (CMS code)
 ## Secondary malignant neoplasm of retroperitoneum and peritoneum (CMS code)
 ## Secondary malignant neoplasm of right adrenal gland (CMS code)
 ## Secondary malignant neoplasm of skin (CMS code)
 ## Secondary malignant neoplasm of unspecified lung (CMS code)
 ## Secondary polycythemia
 ## Secondary pulmonary arterial hypertension (CMS code)
 ## Sedative, hypnotic or anxiolytic dependence with withdrawal, unspecified (CMS code)
 ## Sensorineural hearing loss, unilateral, left ear, with unrestricted hearing on the contralateral
 ## Sepsis due to Escherichia coli (e. coli) (CMS code)
 ## Sepsis due to methicillin susceptible Staphylococcus aureus (CMS code)
 ## Sepsis due to Pseudomonas (CMS code)
 ## Sepsis due to unspecified Staphylococcus (CMS code)
 ## Sepsis, unspecified organism (CMS code)
 ## Sequelae of other specified infectious and parasitic diseases
 ## Severe sepsis with septic shock (CMS code)
 ## Severe sepsis without septic shock (CMS code)
 ## Shock, unspecified (CMS code)
 ## Shortness of breath
 ## Single live birth
 ## Single subsegmental pulmonary embolism without acute cor pulmonale (CMS code)
 ## Sleep apnea, unspecified
 ## Sleep related bruxism
 ## Solitary cyst of left breast
 ## Solitary cyst of right breast
 ## Solitary pulmonary nodule
 ## Somnolence
 ## Spina bifida, unspecified (CMS code)
 ## Spinal stenosis, cervical region
 ## Spinal stenosis, lumbar region without neurogenic claudication
 ## Splenomegaly, not elsewhere classified
 ## Spondylolisthesis, cervical region
 ## Spontaneous ecchymoses
 ## Stable burst fracture of first lumbar vertebra, initial encounter for closed fracture (CMS code)
 ## Stem cells transplant status (CMS code)
 ## Stenosis of coronary artery stent, initial encounter
 ## Stenosis of pulmonary artery
 ## Strain of muscle and tendon of back wall of thorax, initial encounter

Streptococcus B carrier state complicating childbirth
 ## Streptococcus, group b, as the cause of diseases classified elsewhere
 ## Stress incontinence (female) (male)
 ## Stridor
 ## Sudden idiopathic hearing loss, unspecified ear
 ## Suicidal ideations
 ## Supervision of elderly multigravida, second trimester
 ## Supraventricular tachycardia (CMS code)
 ## Syncope and collapse
 ## Syndrome of inappropriate secretion of antidiuretic hormone (CMS code)
 ## Synovitis and tenosynovitis, unspecified
 ## Systemic inflammatory response syndrome (sirs) of non-infectious origin without acute organ dys
 ## Systemic lupus erythematosus, unspecified (CMS code)
 ## Tachycardia, unspecified
 ## Tachypnea, not elsewhere classified
 ## Takotsubo syndrome
 ## Tension-type headache, unspecified, not intractable
 ## Testicular hypofunction
 ## Thiamine deficiency, unspecified
 ## Third (oculomotor) nerve palsy, left eye
 ## Thrombocytopenia, unspecified (CMS code)
 ## Thrombosis due to vascular prosthetic devices, implants and grafts, initial encounter (CMS code)
 ## Tinea pedis
 ## Tobacco use
 ## Toxic effect of ethanol, accidental (unintentional), initial encounter (CMS code)
 ## Toxic encephalopathy
 ## Toxic gastroenteritis and colitis
 ## Toxoplasmosis, unspecified
 ## Transient global amnesia
 ## Traumatic subarachnoid hemorrhage with loss of consciousness of unspecified duration, initial en
 ## Traumatic subdural hemorrhage with loss of consciousness of unspecified duration, initial encoun
 ## Traumatic subdural hemorrhage without loss of consciousness, initial encounter (CMS code)
 ## Traumatic subdural hemorrhage without loss of consciousness, subsequent encounter
 ## Tremor, unspecified
 ## Triplet pregnancy, trichorionic/triamniotic, second trimester
 ## Tubal ligation status
 ## Tubulo-interstitial nephritis, not specified as acute or chronic
 ## Type 1 diabetes mellitus with diabetic autonomic (poly)neuropathy (CMS code)
 ## Type 1 diabetes mellitus with diabetic cataract (CMS code)
 ## Type 1 diabetes mellitus with diabetic chronic kidney disease (CMS code)
 ## Type 1 diabetes mellitus with diabetic neuropathy, unspecified (CMS code)
 ## Type 1 diabetes mellitus with diabetic polyneuropathy (CMS code)
 ## Type 1 diabetes mellitus with hyperglycemia (CMS code)
 ## Type 1 diabetes mellitus with other specified complication (CMS code)
 ## Type 1 diabetes mellitus with proliferative diabetic retinopathy without macular edema, unspeci
 ## Type 1 diabetes mellitus with unspecified diabetic retinopathy without macular edema (CMS code)
 ## Type 2 diabetes mellitus with diabetic chronic kidney disease (CMS code)
 ## Type 2 diabetes mellitus with diabetic nephropathy (CMS code)
 ## Type 2 diabetes mellitus with diabetic neuropathy, unspecified (CMS code)
 ## Type 2 diabetes mellitus with diabetic peripheral angiopathy without gangrene (CMS code)
 ## Type 2 diabetes mellitus with diabetic polyneuropathy (CMS code)
 ## Type 2 diabetes mellitus with hyperglycemia (CMS code)
 ## Type 2 diabetes mellitus with hypoglycemia without coma (CMS code)
 ## Type 2 diabetes mellitus with ketoacidosis without coma (CMS code)

Type 2 diabetes mellitus with proliferative diabetic retinopathy without macular edema, unspecified
 ## Type 2 diabetes mellitus with unspecified diabetic retinopathy without macular edema (CMS code)
 ## Type 2 diabetes mellitus without complications (CMS code)
 ## Typical atrial flutter (CMS code)
 ## Ulcer of anus and rectum
 ## Ulcerative colitis, unspecified, without complications (CMS code)
 ## Unilateral primary osteoarthritis, unspecified hip
 ## Unqualified visual loss, one eye, unspecified
 ## Unspecified abdominal pain
 ## Unspecified acute appendicitis
 ## Unspecified adrenocortical insufficiency (CMS code)
 ## Unspecified asthma with (acute) exacerbation
 ## Unspecified asthma, uncomplicated
 ## Unspecified atrial fibrillation (CMS code)
 ## Unspecified atrial flutter (CMS code)
 ## Unspecified b-cell lymphoma, extranodal and solid organ sites (CMS code)
 ## Unspecified bacterial pneumonia
 ## Unspecified cataract
 ## Unspecified chronic gastritis without bleeding
 ## Unspecified cirrhosis of liver (CMS code)
 ## Unspecified coma (CMS code)
 ## Unspecified complication of internal prosthetic device, implant and graft, initial encounter
 ## Unspecified contact dermatitis due to other agents
 ## Unspecified convulsions (CMS code)
 ## Unspecified dementia with behavioral disturbance (CMS code)
 ## Unspecified dementia without behavioral disturbance (CMS code)
 ## Unspecified diastolic (congestive) heart failure (CMS code)
 ## Unspecified Escherichia coli (E. coli) as the cause of diseases classified elsewhere
 ## Unspecified fracture of t11-T12 vertebra, initial encounter for closed fracture (CMS code)
 ## Unspecified glaucoma
 ## Unspecified hearing loss, right ear
 ## Unspecified hearing loss, unspecified ear
 ## Unspecified hydronephrosis
 ## Unspecified infection of urinary tract in pregnancy, second trimester
 ## Unspecified intestinal obstruction, unspecified as to partial versus complete obstruction (CMS code)
 ## Unspecified kyphosis, thoracic region
 ## Unspecified mononeuropathy of bilateral lower limbs
 ## Unspecified mood (affective) disorder (CMS code)
 ## Unspecified mycosis
 ## Unspecified nystagmus
 ## Unspecified osteoarthritis, unspecified site
 ## Unspecified otitis externa, left ear
 ## Unspecified papilledema
 ## Unspecified pre-existing hypertension complicating childbirth
 ## Unspecified protein-calorie malnutrition (CMS code)
 ## Unspecified sensorineural hearing loss
 ## Unspecified severe protein-calorie malnutrition (CMS code)
 ## Unspecified systolic (congestive) heart failure (CMS code)
 ## Unspecified urinary incontinence
 ## Unspecified viral hepatitis B without hepatic coma
 ## Unspecified viral hepatitis C without hepatic coma
 ## Unspecified visual field defects
 ## Urge incontinence
 ## Urinary tract infection, site not specified

```

##      Varicose veins of left lower extremity with ulcer of calf (CMS code)
##      Varicose veins of unspecified lower extremity with both ulcer of other part of lower extremity
##      Vascular dementia with behavioral disturbance (CMS code)
##      Vascular dementia without behavioral disturbance (CMS code)
##      Venous insufficiency (chronic) (peripheral)
##      Ventilator associated pneumonia (CMS code)
##      Ventral hernia without obstruction or gangrene
##      Ventricular premature depolarization
##      Ventricular septal defect
##      Ventricular tachycardia (CMS code)
##      Viral pneumonia, unspecified
##      Vitamin D deficiency, unspecified
##      Vitiligo
##      Volume depletion, unspecified
##      Vomiting, unspecified
##      Weakness
##      Wedge compression fracture of fourth lumbar vertebra, initial encounter for closed fracture (CMS
##      Wernicke's encephalopathy
##      Xerosis cutis
##      Zygomatic fracture, unspecified side, initial encounter for closed fracture (CMS code)
## present_on_admit (%)
##      Exempt from POA reporting
##      No
##      NULL
##      Unknown
##      Yes
## severity_of_dx (%)
##      Duplicate Diagnosis
##      Excluded
##      Excluded Complication of Care
##      Extreme
##      Major
##      Minor
##      Moderate
##      NULL
##      Principal Dx Used for SOI/ROM Calc
##      Refinement not possible
## co_morbidity (%)
##      N
##      NULL
##      Y

```

6 Lab results table

```

# Clean `lab` data
lab <- lab %>%
  select(deid_enc_id, COMMON_NAME, ORD_VALUE, Abnormal, order_time, RESULT_TIME, lab_concept) %>%
  mutate_at(c("COMMON_NAME", "Abnormal", "lab_concept"), factor) %>%
  mutate_at("ORD_VALUE", as.numeric)

# Create frequency table for `lab`
CreateCatTable(data = lab, vars = c("COMMON_NAME", "Abnormal", "lab_concept"))

```

##		Overall
##		5000
##	n	
##	COMMON_NAME (%)	
##	% SATURATION	4 (0.1)
##	ABO/RH(D)	16 (0.3)
##	ABO/RHCOMMENT	10 (0.2)
##	ACTIVATEDPARTIALTHROMBOPLASTINTIME	24 (0.5)
##	ADENOVIRUS DNA	2 (0.0)
##	ALBUMIN, SERUM/PLASMA	8 (0.2)
##	ALK PHOS	15 (0.3)
##	ALT	15 (0.3)
##	AMMONIA	1 (0.0)
##	AMORPHOUS MATRIX CRYSTALS	1 (0.0)
##	ANIONGAP	88 (1.8)
##	ANTIBODYIDENT	1 (0.0)
##	ANTIBODYSCREEN	10 (0.2)
##	AST	15 (0.3)
##	ATRIALRATE	28 (0.6)
##	B-TYPENATRIURETICPEPTIDE	1 (0.0)
##	BACTERIALCULTURE, STERILESITES	1 (0.0)
##	BASEEXCESS/DEFICIT	83 (1.7)
##	BASOPHILABSCOUNT	15 (0.3)
##	BICARBONATE	83 (1.7)
##	BILIRUBIN, DIRECT	3 (0.1)
##	BILIRUBIN, TOTAL	15 (0.3)
##	BILIRUBIN, URINE	6 (0.1)
##	BLOOD PRODUCT EXPIRATION DATE	81 (1.6)
##	BLOOD PRODUCT ISSUE DATE AND TIME	66 (1.3)
##	BLOOD SMEAR PREPARATION	1 (0.0)
##	BLOODBANKCOMMENT	20 (0.4)
##	BLOODCOMPONENTTYPE	81 (1.6)
##	BLOODGASINSTRUMENT	85 (1.7)
##	BUN	86 (1.7)
##	CALCIUM	86 (1.7)
##	CALCIUM, IONIZED, SERUM/PLASMA	15 (0.3)
##	CALCIUM, IONIZEDBLOOD	71 (1.4)
##	CALCQTCL&EKG	28 (0.6)
##	CALCULATEDPAXIS	23 (0.5)
##	CALCULATEDRAXIS	28 (0.6)
##	CALCULATEDTAXIS	28 (0.6)
##	CALLED, READBACKBY	22 (0.4)
##	CALLEDBY	22 (0.4)
##	CASTS	1 (0.0)
##	CBCINTERPRETATION	2 (0.0)
##	CBCINTERPRETEDBY	2 (0.0)
##	CENTRALBLOODCULTURE	1 (0.0)
##	CHECKSPECIMENREQ'D	16 (0.3)
##	CHLORIDE	88 (1.8)
##	CHLORIDE, BLOOD	71 (1.4)
##	CHOLESTEROL TOTAL	1 (0.0)
##	CHOLHDLRATIO	1 (0.0)

##	CK TOTAL	1 (0.0)
##	CLOSTRIDIUMDIFFICILE	4 (0.1)
##	CO2	88 (1.8)
##	COMMENT1	20 (0.4)
##	COMMENT2	37 (0.7)
##	COMMENTS(1)	37 (0.7)
##	COMMENTS(COV19)	10 (0.2)
##	COMMENTS(UMIXC)	1 (0.0)
##	COMMENTSONURINALYSIS	1 (0.0)
##	CORTISOL PLASMA	2 (0.0)
##	COVID-19RNA	1 (0.0)
##	COVID-19RNAIMMUNO	10 (0.2)
##	CREATININE	87 (1.7)
##	CREATININE, UR	1 (0.0)
##	CROSSMATCHEXPIRATION	10 (0.2)
##	CRP HIGH SENSITIVITY	2 (0.0)
##	CRYOPRECIPITATE READY	1 (0.0)
##	CULTURECOMMENT	4 (0.1)
##	CYSTATINC	1 (0.0)
##	DATECALLED	22 (0.4)
##	EGFRBYCYSTATINC	1 (0.0)
##	EGFRIFAFRICANAMER	87 (1.7)
##	EGFRIFCAUCASIAN	87 (1.7)
##	EOSINOPHILABSCT	15 (0.3)
##	FERRITIN	3 (0.1)
##	FIBRINOGEN	18 (0.4)
##	FIO2	83 (1.7)
##	GGT	1 (0.0)
##	GLUCOSE	86 (1.7)
##	GLUCOSE, (UA)	6 (0.1)
##	GLUCOSE, METERDOWNLOAD	144 (2.9)
##	GLUCOSE, WHOLEBLOOD	71 (1.4)
##	GRAMSTAIN	10 (0.2)
##	GRANULAR CAST	1 (0.0)
##	HAPTOGLOBIN	1 (0.0)
##	HCV QUAL	1 (0.0)
##	HDLCHOLESTEROL	1 (0.0)
##	HEMATOCRIT	83 (1.7)
##	HEMATOCRIT FROM HB	71 (1.4)
##	HEMOGLOBIN	82 (1.6)
##	HEMOGLOBIN(UA)	6 (0.1)
##	HEMOGLOBINA1C	1 (0.0)
##	HEMOGLOBINPOC	5 (0.1)
##	HEP A IGM	1 (0.0)
##	HEP B S AB	1 (0.0)
##	HEP B S AG	1 (0.0)
##	HEPARINLEVEL(LOWMOLECULARWEIGHTHEPARIN)	3 (0.1)
##	HEPATITISBCOREANTIBODY, TOTAL	1 (0.0)
##	HGB(CALCULATED)	71 (1.4)
##	HOMOCYSTEINE	1 (0.0)
##	HYALINE CAST	1 (0.0)
##	IMMGRAN, LEFTSHIFT	15 (0.3)
##	INFLUENZA A (H1) RNA	2 (0.0)
##	INFLUENZA A (H3) RNA	2 (0.0)

##	INFLUENZA A RNA	2 (0.0)
##	INFLUENZA B RNA	2 (0.0)
##	INT'LNORMALIZRATIO	29 (0.6)
##	IRON	4 (0.1)
##	KETONES, UA	6 (0.1)
##	LACTATE, BLOOD	72 (1.4)
##	LD	2 (0.0)
##	LDLCHOLESTEROL	1 (0.0)
##	LIPASE	1 (0.0)
##	LVEDVI	2 (0.0)
##	LVEF (MOD BI)	2 (0.0)
##	LVESVI	2 (0.0)
##	LVM INDEX	2 (0.0)
##	LYMPHOCYTEABSCNT	15 (0.3)
##	MAGNESIUM	63 (1.3)
##	MB-ACANTHOCYTES	3 (0.1)
##	MB-BASOSTIPPLING	1 (0.0)
##	MB-BURRCELLS	2 (0.0)
##	MB-DIFFCOMMENT	4 (0.1)
##	MB-DOHLEBODIES	1 (0.0)
##	MB-ELLIPTOCYTES	3 (0.1)
##	MB-GIANTPLATELETS	1 (0.0)
##	MB-HYPERSEGMENTATION	1 (0.0)
##	MB-POLYCHROMASIA	1 (0.0)
##	MB-SCHISTOCYTES	3 (0.1)
##	MCH	81 (1.6)
##	MCHC	81 (1.6)
##	MCV	81 (1.6)
##	METAPNEUMOVIRUS RNA	2 (0.0)
##	METHICILLINRESISTANTSTAPHAUREUSSCREEN	4 (0.1)
##	METHYLMALONICACIDSERUM	1 (0.0)
##	MICROSCOPIC	1 (0.0)
##	MONOCYTEABSCOUNT	15 (0.3)
##	MUCUS THREADS	3 (0.1)
##	NEUTROPHILABSOLUTECOUNT	15 (0.3)
##	NITRITE	6 (0.1)
##	NONHDLCHOLESTEROL	1 (0.0)
##	OSMOLALITY UR	1 (0.0)
##	OXYGENSATURATION	83 (1.7)
##	P-RINTERVAL	24 (0.5)
##	PARAINFLUENZA 1 RNA	2 (0.0)
##	PARAINFLUENZA 2 RNA	2 (0.0)
##	PARAINFLUENZA 3 RNA	2 (0.0)
##	PCO2	83 (1.7)
##	PERIPH. SMEARFORMDREVIEW	2 (0.0)
##	PERIPHERALBLOODCULTURE	8 (0.2)
##	PH, BLOOD	83 (1.7)
##	PH, UA	6 (0.1)
##	PHOSPHORUS	26 (0.5)
##	PLASMA READY	9 (0.2)
##	PLATELETSCOUNT	82 (1.6)
##	PLATELETS READY	4 (0.1)
##	P02	83 (1.7)
##	POCT ACT LR	4 (0.1)

##	POCT ACT PLUS	15 (0.3)
##	POCT, OXYHEMOGLOBINSATURATION	1 (0.0)
##	POCT, TOTAL HEMOGLOBIN	1 (0.0)
##	POCTCOVID19RNAQUALITATIVERAPID	1 (0.0)
##	POTASSIUM	89 (1.8)
##	POTASSIUM UR	1 (0.0)
##	POTASSIUMBLOOD	71 (1.4)
##	PREALBUMIN	1 (0.0)
##	PROCALCITONIN	5 (0.1)
##	PRODUCT CODE	66 (1.3)
##	PROTEIN TOTAL	3 (0.1)
##	PROTEIN, UA	6 (0.1)
##	PT	29 (0.6)
##	Q-TINTERVAL	28 (0.6)
##	QRSDURATION	28 (0.6)
##	RBC - NUMBER OF UNITS READY	20 (0.4)
##	RBCANTIGEN-1	1 (0.0)
##	RBCCOUNT	81 (1.6)
##	RBCS, URINE	5 (0.1)
##	RETICCOUNT, FLOWCYTOMETRY	2 (0.0)
##	RHINOVIRUS RNA	2 (0.0)
##	RSV A RNA	2 (0.0)
##	RSV B RNA	2 (0.0)
##	RSVP	2 (0.0)
##	SAMPLETYPE	84 (1.7)
##	SODIUM	88 (1.8)
##	SODIUM, RANDOMURINE	2 (0.0)
##	SODIUMWB	71 (1.4)
##	SPECIFICGRAVITY	6 (0.1)
##	SPECIMENID(CHEM4)	1 (0.0)
##	SQUAMEPITHCELLS	2 (0.0)
##	STATUSOFUNIT	81 (1.6)
##	TACROLIMUS LVL	8 (0.2)
##	THYROIDSTIMULATINGHORMONE	1 (0.0)
##	TIMECALLED	22 (0.4)
##	TRANSFERRIN	4 (0.1)
##	TRANSFUSIONSTATUS	81 (1.6)
##	TRIGLYCERIDES	3 (0.1)
##	TROPONINI	10 (0.2)
##	UDIV	81 (1.6)
##	UNFRACTHEPLEVEL	3 (0.1)
##	UNIT NUMBER	81 (1.6)
##	UNIT TYPE AND RH	81 (1.6)
##	UREANITROGEN, RANDOMURINE	2 (0.0)
##	URINECULTUREIFPYURIAPRESENT	1 (0.0)
##	URINECULTW/SMEARUPDATE	2 (0.0)
##	UROBILINOGEN	6 (0.1)
##	VANCOMYCIN	1 (0.0)
##	VENTRICULARRATE	28 (0.6)
##	VITAMIN B 12	1 (0.0)
##	VITAMIND, 25-HYDROXY	2 (0.0)
##	WBCCOUNT	81 (1.6)
##	WBCESTERASE	6 (0.1)
##	WBCS, UR	4 (0.1)

```
## Abnormal (%)
## Abnormal 24 ( 0.5)
## High 518 (10.4)
## High Panic 39 ( 0.8)
## Low 845 (16.9)
## Low Panic 68 ( 1.4)
## NULL 3506 (70.1)
## lab_concept (%)
## ABG 350 ( 7.0)
## BMP_and_electrolytes 892 (17.8)
## cardiac 12 ( 0.2)
## CBC 503 (10.1)
## Coags_and_inflammation 107 ( 2.1)
## cultures 31 ( 0.6)
## diabetes 231 ( 4.6)
## iron_studies 11 ( 0.2)
## liver_pancrease 79 ( 1.6)
## metabolic_and_endocrine 3 ( 0.1)
## NULL 2494 (49.9)
## stool_studies 4 ( 0.1)
## UA_studies 76 ( 1.5)
## VBG 158 ( 3.2)
## viral_studies 49 ( 1.0)
```

7 Med admin table

```
# Clean `med_admin` table
med_admin <- med_admin %>%
  select(deid_enc_id, name, thera_class, pharm_class, pharm_subclass, taken_time) %>%
  rename(ID = deid_enc_id,
         med_name = name) %>%
  mutate_at(c("med_name", "thera_class", "pharm_class", "pharm_subclass"), factor)

# Create frequency table for `med_admin`
CreateCatTable(data = med_admin, vars = c("med_name", "thera_class", "pharm_class", "pharm_subclass"))
```

```
##
##
## n Overall
## med_name (%) 5000
## ACETAMINOPHEN 1,000 MG/100 ML (10 MG/ML) INTRAVENOUS SOLUTION 12 ( 0.2)
## ACETAMINOPHEN 1,000 MG/100 ML (10 MG/ML) INTRAVENOUS SOLUTION (ONCE) 1 ( 0.0)
## ACETAMINOPHEN 300 MG-CODEINE 30 MG TABLET 9 ( 0.2)
## ACETAMINOPHEN 32 MG/ML ORAL LIQUID (WRAPPER) 1 ( 0.0)
## ACETAMINOPHEN 325 MG TABLET 30 ( 0.6)
## ACETAMINOPHEN 500 MG GELCAP 2 ( 0.0)
## ACETAMINOPHEN 500 MG TABLET 116 ( 2.3)
## ACETAMINOPHEN 650 MG RECTAL SUPPOSITORY 1 ( 0.0)
## ACETAMINOPHEN 650 MG/20.3 ML ORAL SOLUTION 25 ( 0.5)
## ALBUMIN, HUMAN 5 % INTRAVENOUS SOLUTION 7 ( 0.1)
## ALBUTEROL SULFATE 2.5 MG/3 ML (0.083 %) SOLUTION FOR NEBULIZATION 3 ( 0.1)
```

##	ALBUTEROL SULFATE CONCENTRATE 2.5 MG/0.5 ML SOLUTION FOR NEBULIZATION	3 (0.1)
##	ALBUTEROL SULFATE HFA 90 MCG/ACTUATION AEROSOL INHALER	2 (0.0)
##	ALTEPLASE 2 MG INTRA-CATHETER SOLUTION	2 (0.0)
##	AMIODARONE 150 MG/100 ML (1.5 MG/ML) IN DEXTROSE, ISO-OSMOTIC IV	11 (0.2)
##	AMIODARONE 200 MG TABLET	44 (0.9)
##	AMIODARONE 360 MG/200 ML (1.8 MG/ML) IN DEXTROSE, ISO-OSMOTIC IV	75 (1.5)
##	AMITRIPTYLINE 100 MG TABLET	1 (0.0)
##	AMLODIPINE 10 MG TABLET	1 (0.0)
##	AMLODIPINE 2.5 MG TABLET	1 (0.0)
##	AMLODIPINE 5 MG TABLET	5 (0.1)
##	AMPICILLIN-SULBACTAM 1.5 G IVPB 50 ML (MINI-BAG PLUS)	18 (0.4)
##	APIXABAN 5 MG TABLET	3 (0.1)
##	APREPITANT 40 MG CAPSULE	2 (0.0)
##	ASPIRIN 81 MG CHEWABLE TABLET	30 (0.6)
##	ASPIRIN 81 MG TABLET,DELAYED RELEASE	27 (0.5)
##	ATORVASTATIN 20 MG TABLET	2 (0.0)
##	ATORVASTATIN 40 MG TABLET	45 (0.9)
##	AZITHROMYCIN 500 MG IVPB	4 (0.1)
##	BACLOFEN 10 MG TABLET	30 (0.6)
##	BISACODYL 10 MG RECTAL SUPPOSITORY	10 (0.2)
##	BISACODYL 5 MG TABLET,DELAYED RELEASE	3 (0.1)
##	BUMETANIDE 0.25 MG/ML INJECTION SOLUTION	3 (0.1)
##	BUMETANIDE 0.5 MG TABLET	1 (0.0)
##	BUMETANIDE 1 MG TABLET	5 (0.1)
##	BUMETANIDE 2 MG TABLET	3 (0.1)
##	BUMETANIDE IVPB	46 (0.9)
##	BUPIVACAINE-EPINEPHRINE (PF) 0.25 %-1:200,000 INJECTION SOLUTION	1 (0.0)
##	BUPRENORPHINE HCL 2 MG SUBLINGUAL TABLET	2 (0.0)
##	BUPROPION HCL XL 150 MG 24 HR TABLET, EXTENDED RELEASE	1 (0.0)
##	BUPROPION HCL XL 300 MG 24 HR TABLET, EXTENDED RELEASE	7 (0.1)
##	CALCITRIOL 1 MCG/ML INTRAVENOUS SOLUTION	1 (0.0)
##	CALCIUM ACETATE(PHOSPHATE BINDERS) 667 MG CAPSULE	9 (0.2)
##	CALCIUM CARBONATE 200 MG CALCIUM (500 MG) CHEWABLE TABLET	2 (0.0)
##	CALCIUM CARBONATE 500 MG (1,250 MG)-VITAMIN D3 200 UNIT TABLET	2 (0.0)
##	CALCIUM CHLORIDE 100 MG/ML (10 %) INTRAVENOUS SYRINGE	4 (0.1)
##	CALCIUM CITRATE 200 MG (950 MG) TABLET	11 (0.2)
##	CALCIUM GLUCONATE 100 MG/ML (10 %) INTRAVENOUS SOLUTION	1 (0.0)
##	CALCIUM GLUCONATE IVPB 1 GRAM (MINI-BAG PLUS)	81 (1.6)
##	CANGRELOR 200 MCG/ML INFUSION	17 (0.3)
##	CARVEDILOL 12.5 MG TABLET	2 (0.0)
##	CARVEDILOL 25 MG TABLET	25 (0.5)
##	CASPOFUNGIN 70 MG IVPB	1 (0.0)
##	CEFAZOLIN 1 G IVPB 50 ML (MINI-BAG PLUS)	25 (0.5)
##	CEFAZOLIN 2G/20 ML NS INTRAVENOUS SYRINGE	16 (0.3)
##	CEFTRIAXONE 2 G IV 100 ML (MINI-BAG PLUS)	2 (0.0)
##	CEFUROXIME 1.5 G IVPB 50 ML (MINI-BAG PLUS)	41 (0.8)
##	CELECOXIB 200 MG CAPSULE	4 (0.1)
##	CETIRIZINE 10 MG TABLET	2 (0.0)
##	CHLOROTHIAZIDE IV SYRINGE	6 (0.1)
##	CHLOROTHIAZIDE SODIUM 500 MG INTRAVENOUS SOLUTION	4 (0.1)
##	CHOLECALCIFEROL (VITAMIN D3) 25 MCG (1,000 UNIT) TABLET	50 (1.0)
##	CIPROFLOXACIN 500 MG TABLET	1 (0.0)
##	CLONIDINE (PF) 1,000 MCG/10 ML (100 MCG/ML) EPIDURAL SOLUTION	1 (0.0)
##	CLONIDINE 0.2 MG/24 HR WEEKLY TRANSDERMAL PATCH	12 (0.2)

##	CLOPIDOGREL 300 MG TABLET	2 (0.0)
##	CLOPIDOGREL 75 MG TABLET	16 (0.3)
##	CLOTIMAZOLE 1 % TOPICAL CREAM	1 (0.0)
##	COSYNTROPIN 0.25 MG SOLUTION FOR INJECTION	1 (0.0)
##	DARBEPOETIN ALFA 40 MCG/ML IN POLYSORBATE INJECTION	1 (0.0)
##	DESMOPRESSIN IVPB (ADULT)	1 (0.0)
##	DEXAMETHASONE 4 MG TABLET	8 (0.2)
##	DEXAMETHASONE SODIUM PHOSPHATE 4 MG/ML INJECTION SOLUTION	1 (0.0)
##	DEXMEDETOMIDINE 400 MCG/100 ML (4 MCG/ML) IN 0.9 % SODIUM CHLORIDE IV	32 (0.6)
##	DEXTROSE 10 % AND 0.45 % SODIUM CHLORIDE INTRAVENOUS SOLUTION	10 (0.2)
##	DEXTROSE 10 % IN WATER (D10W) INTRAVENOUS SOLUTION	28 (0.6)
##	DEXTROSE 10 % IV BOLUS	1 (0.0)
##	DEXTROSE 5 % AND 0.2 % SODIUM CHLORIDE INTRAVENOUS SOLUTION	190 (3.8)
##	DEXTROSE 5 % AND 0.45 % NACL IV BOLUS	1 (0.0)
##	DEXTROSE 5 % AND 0.45 % SODIUM CHLORIDE INTRAVENOUS SOLUTION	86 (1.7)
##	DEXTROSE 5 % AND 0.9 % SODIUM CHLORIDE INTRAVENOUS SOLUTION	3 (0.1)
##	DEXTROSE 5 % AND LACTATED RINGERS INTRAVENOUS SOLUTION	3 (0.1)
##	DEXTROSE 50 % IN WATER (D50W) INTRAVENOUS SYRINGE	17 (0.3)
##	DIAZEPAM 2 MG TABLET	1 (0.0)
##	DICYCLOMINE 20 MG TABLET	21 (0.4)
##	DILTIAZEM 90 MG TABLET	26 (0.5)
##	DILTIAZEM CD 180 MG CAPSULE,EXTENDED RELEASE 24 HR	1 (0.0)
##	DIPHENHYDRAMINE 25 MG CAPSULE	2 (0.0)
##	DOCUSATE SODIUM 250 MG CAPSULE	15 (0.3)
##	DOCUSATE SODIUM 50 MG/5 ML ORAL LIQUID	5 (0.1)
##	DOXAZOSIN 8 MG TABLET	12 (0.2)
##	DOXEPIN 10 MG CAPSULE	1 (0.0)
##	DOXEPIN 10 MG/ML ORAL CONCENTRATE	3 (0.1)
##	DOXYCYCLINE HYCLATE 100 MG CAPSULE	7 (0.1)
##	DRONABINOL 2.5 MG CAPSULE	4 (0.1)
##	DRONABINOL 5 MG CAPSULE	9 (0.2)
##	ELECTROLYTE-A INTRAVENOUS SOLUTION	45 (0.9)
##	ELECTROLYTE-A IV BOLUS	19 (0.4)
##	ENOXAPARIN 30 MG/0.3 ML SUBCUTANEOUS SYRINGE	4 (0.1)
##	ENOXAPARIN 40 MG/0.4 ML SUBCUTANEOUS SYRINGE	25 (0.5)
##	EPINEPHRINE 0.1 MG/ML INJECTION SYRINGE	1 (0.0)
##	EPINEPHRINE HCL 4 MG/250 ML (16 MCG/ML) IN 5 % DEXTROSE INTRAVENOUS	117 (2.3)
##	ERGOCALCIFEROL (VITAMIN D2) 1,250 MCG (50,000 UNIT) CAPSULE	4 (0.1)
##	ESCITALOPRAM 10 MG TABLET	1 (0.0)
##	FENTANYL (PF) 10 MCG/ML IN 0.9 % SODIUM CHLORIDE INTRAVENOUS	5 (0.1)
##	FENTANYL (PF) 50 MCG/ML INJECTION SOLUTION	26 (0.5)
##	FERROUS SULFATE 325 MG (65 MG IRON) TABLET	11 (0.2)
##	FINASTERIDE 5 MG TABLET	13 (0.3)
##	FLU VACCINE QS 2019-20(6MOS UP)(PF) 60 MCG(15 MCGX4)/0.5 ML IM SYRINGE	2 (0.0)
##	FLU VACCINE QS 2020-21(6MOS UP)(PF) 60 MCG(15 MCGX4)/0.5 ML IM SYRINGE	2 (0.0)
##	FLU VACCINE QS2020-21(65YR UP)(PF)240 MCG/0.7 ML INTRAMUSCULAR SYRINGE	1 (0.0)
##	FLU VACCINE TS2019-20(65YR UP)(PF)180 MCG/0.5 ML INTRAMUSCULAR SYRINGE	1 (0.0)
##	FUROSEMIDE 10 MG/ML INJECTION SOLUTION	21 (0.4)
##	FUROSEMIDE 20 MG TABLET	2 (0.0)
##	FUROSEMIDE 40 MG TABLET	8 (0.2)
##	FUROSEMIDE IVPB (81-120 MG)	4 (0.1)
##	GABAPENTIN 100 MG CAPSULE	4 (0.1)
##	GABAPENTIN 300 MG CAPSULE	16 (0.3)
##	GABAPENTIN 300 MG/6 ML (6 ML) ORAL SOLUTION	56 (1.1)

##	GABAPENTIN 400 MG CAPSULE	8 (0.2)
##	GLUCOSE 4 GRAM CHEWABLE TABLET	4 (0.1)
##	GLYCOPYRROLATE 0.2 MG/ML INJECTION SOLUTION	7 (0.1)
##	GUAIFENESIN 100 MG/5 ML ORAL LIQUID	1 (0.0)
##	HALOPERIDOL LACTATE 5 MG/ML INJECTION SOLUTION	4 (0.1)
##	HEPARIN (PORCINE) 25,000 UNIT/500 ML (50 UNIT/ML) IN DEXTROSE 5 % IV	14 (0.3)
##	HEPARIN IN 0.9% NACL INFUSION FOR OR (CELL SAVER)	3 (0.1)
##	HEPARIN INFUSION BOLUS INJECTION 1000 UNIT/ML (ADULT)	3 (0.1)
##	HEPARIN, PORCINE (PF) 100 UNIT/ML INTRAVENOUS SYRINGE	12 (0.2)
##	HEPARIN, PORCINE (PF) 5,000 UNIT/0.5 ML INJECTION SOLUTION	62 (1.2)
##	HYALURONIDASE, HUMAN RECOMBINANT 150 UNIT/ML INJECTION SOLUTION	1 (0.0)
##	HYDRALAZINE 20 MG/ML INJECTION SOLUTION	2 (0.0)
##	HYDROCHLOROTHIAZIDE 25 MG TABLET	2 (0.0)
##	HYDROMORPHONE (PF) 0.5 MG/0.5 ML INJECTION SYRINGE	110 (2.2)
##	HYDROMORPHONE (PF) 50 MG/50 ML (1 MG/ML) IN 0.9 % NACL IV PCA SYRINGE	8 (0.2)
##	HYDROMORPHONE 2 MG TABLET	1 (0.0)
##	HYDROMORPHONE 2 MG/ML INJECTION SOLUTION	21 (0.4)
##	HYDROMORPHONE 4 MG TABLET	19 (0.4)
##	HYDROMORPHONE INFUSION	15 (0.3)
##	IBUPROFEN 600 MG TABLET	1 (0.0)
##	INSULIN ASPART (U-100) 100 UNIT/ML (3 ML) SUBCUTANEOUS PEN	152 (3.0)
##	INSULIN GLARGINE (U-100) 100 UNIT/ML (3 ML) SUBCUTANEOUS PEN	9 (0.2)
##	INSULIN REGULAR INFUSION	97 (1.9)
##	INSULIN U-100 REGULAR HUMAN 100 UNIT/ML INJECTION SOLUTION	3 (0.1)
##	IOHEXOL 350 MG IODINE/ML INTRAVENOUS SOLUTION	5 (0.1)
##	IPRATROPIUM BROMIDE 0.02 % SOLUTION FOR INHALATION	2 (0.0)
##	IRON SUCROSE IVPB	10 (0.2)
##	ISOSORBIDE MONONITRATE ER 60 MG TABLET,EXTENDED RELEASE 24 HR	10 (0.2)
##	KETOROLAC 15 MG/ML INJECTION SOLUTION	4 (0.1)
##	KETOROLAC 30 MG/ML (1 ML) INJECTION SOLUTION	1 (0.0)
##	LACTATED RINGERS INTRAVENOUS SOLUTION	19 (0.4)
##	LANSOPRAZOLE 15 MG CAPSULE,DELAYED RELEASE	13 (0.3)
##	LANSOPRAZOLE 30 MG CAPSULE,DELAYED RELEASE	20 (0.4)
##	LANSOPRAZOLE 30 MG DELAYED RELEASE,DISINTEGRATING TABLET	35 (0.7)
##	LEVETIRACETAM 250 MG TABLET	2 (0.0)
##	LEVETIRACETAM 500 MG TABLET	24 (0.5)
##	LEVETIRACETAM 500 MG/100 ML IN SODIUM CHLORIDE (ISO-OSM) IV PIGGYBACK	15 (0.3)
##	LEVOTHYROXINE 100 MCG TABLET	7 (0.1)
##	LEVOTHYROXINE 50 MCG TABLET	3 (0.1)
##	LIDOCAINE (PF) 10 MG/ML (1 %) INJECTION SOLUTION	5 (0.1)
##	LIDOCAINE 1 %-EPINEPHRINE 1:100,000 INJECTION SOLUTION	1 (0.0)
##	LIDOCAINE 20 MG/ML (2 %-EPINEPHRINE 1:100,000 INJECTION SOLUTION	1 (0.0)
##	LIDOCAINE 4 % TOPICAL CREAM	5 (0.1)
##	LIDOCAINE 5 % TOPICAL PATCH	66 (1.3)
##	LOPERAMIDE 2 MG TABLET	9 (0.2)
##	LORATADINE 10 MG TABLET	13 (0.3)
##	LORAZEPAM 0.5 MG TABLET	7 (0.1)
##	LORAZEPAM 2 MG/ML INJECTION SOLUTION	10 (0.2)
##	LOSARTAN 50 MG TABLET	4 (0.1)
##	MAGNESIUM OXIDE 400 MG (241.3 MG MAGNESIUM) TABLET	8 (0.2)
##	MAGNESIUM SULFATE 1 GRAM/100 ML IN DEXTROSE 5 % INTRAVENOUS PIGGYBACK	48 (1.0)
##	MAGNESIUM SULFATE 2 GRAM/50 ML (4 %) IN WATER INTRAVENOUS PIGGYBACK	1 (0.0)
##	MELATONIN 1 MG/ML ORAL SUSP	4 (0.1)
##	MELATONIN 5 MG TABLET	16 (0.3)

##	MENTHOL 5.8 MG LOZENGES	1 (0.0)
##	MEPERIDINE (PF) 25 MG/ML INJECTION SOLUTION	2 (0.0)
##	MEROPENEM 1 G 50 ML IVPB (MINI-BAG PLUS)	4 (0.1)
##	MEROPENEM 500 MG IVPB 50 ML (MINI-BAG PLUS)	2 (0.0)
##	METFORMIN 500 MG TABLET	1 (0.0)
##	METHADONE 5 MG/5 ML ORAL SOLUTION	14 (0.3)
##	METHYLPREDNISOLONE SOD SUCC (PF) 40 MG/ML SOLUTION FOR INJECTION	2 (0.0)
##	METOPROLOL SUCCINATE ER 25 MG TABLET,EXTENDED RELEASE 24 HR	2 (0.0)
##	METOPROLOL TARTRATE 100 MG TABLET	30 (0.6)
##	METOPROLOL TARTRATE 25 MG TABLET	30 (0.6)
##	METOPROLOL TARTRATE 5 MG/5 ML INTRAVENOUS SOLUTION	6 (0.1)
##	METOPROLOL TARTRATE 50 MG TABLET	9 (0.2)
##	METRONIDAZOLE 500 MG/100 ML-SODIUM CHLORIDE(ISO) INTRAVENOUS PIGGYBACK	41 (0.8)
##	MIDAZOLAM (PF) 1 MG/ML INJECTION SOLUTION	1 (0.0)
##	MIDAZOLAM 1 MG/ML INJECTION SOLUTION	2 (0.0)
##	MIDAZOLAM 125 MG/250 ML (0.5 MG/ML) INFUSION MIXTURE	1 (0.0)
##	MIDODRINE 5 MG TABLET	28 (0.6)
##	MILRINONE 20 MG/100 ML(200 MCG/ML) IN 5 % DEXTROSE INTRAVENOUS PIGGYBK	71 (1.4)
##	MIRTAZAPINE 15 MG TABLET	1 (0.0)
##	MIRTAZAPINE 30 MG TABLET	3 (0.1)
##	MORPHINE 2 MG/ML INJECTION SYRINGE (UCSF WRAPPER)	2 (0.0)
##	MORPHINE 4 MG/ML INTRAVENOUS SOLUTION	6 (0.1)
##	MORPHINE CONCENTRATE 100 MG/5 ML (20 MG/ML) ORAL SOLUTION	8 (0.2)
##	MORPHINE ER 15 MG TABLET,EXTENDED RELEASE	1 (0.0)
##	MORPHINE ER 30 MG TABLET,EXTENDED RELEASE	19 (0.4)
##	MULTIVITAMIN WITH FOLIC ACID 400 MCG TABLET	18 (0.4)
##	MYCOPHENOLATE IVPB (ADULT)	4 (0.1)
##	MYCOPHENOLATE MOFETIL 250 MG CAPSULE	24 (0.5)
##	NALOXONE 0.4 MG/ML INJECTION SOLUTION	20 (0.4)
##	NALOXONE 1 MG/ML INJECTION SYRINGE	1 (0.0)
##	NALOXONE 1 MG/ML ORAL SOLN	22 (0.4)
##	NICARDIPINE 40 MG/200 ML(0.2 MG/ML) IN SOD CHLOR(ISO) INTRAVENOUS SOLN	20 (0.4)
##	NITROGLYCERIN 2 % TRANSDERMAL OINTMENT	2 (0.0)
##	NOREPINEPHRINE BITARTRATE 4 MG/250 ML (16 MCG/ML) IN 0.9 % NACL IV	120 (2.4)
##	NOREPINEPHRINE INFUSION (8 MG/250 ML)	13 (0.3)
##	ONDANSETRON 4 MG DISINTEGRATING TABLET	1 (0.0)
##	ONDANSETRON HCL (PF) 4 MG/2 ML INJECTION SOLUTION	71 (1.4)
##	ONDANSETRON HCL 4 MG TABLET	19 (0.4)
##	OXYCODONE 5 MG TABLET	135 (2.7)
##	OXYCODONE 5 MG/5 ML ORAL SOLUTION	4 (0.1)
##	PANTOPRAZOLE 40 MG INTRAVENOUS SOLUTION	15 (0.3)
##	PAROXETINE 20 MG TABLET	5 (0.1)
##	PEDIATRIC MULTIVITAMIN WITH IRON AND OTHER MINERALS CHEWABLE TABLET	13 (0.3)
##	PHENOXYBENZAMINE 10 MG CAPSULE	4 (0.1)
##	PIPERACILLIN-TAZOBACTAM 4.5 G IVPB (MINI-BAG PLUS)	4 (0.1)
##	PIPERACILLIN-TAZOBACTAM 4.5 G IVPB (MINI-BAG PLUS) EXTENDED INFUSION	109 (2.2)
##	PIPERACILLIN-TAZOBACTAM 4.5 G IVPB (MINI-BAG PLUS) LOADING DOSE	6 (0.1)
##	POLYETHYLENE GLYCOL 3350 17 GRAM ORAL POWDER PACKET	43 (0.9)
##	POTASSIUM CHLORIDE 10 MEQ/100ML IN STERILE WATER INTRAVENOUS PIGGYBACK	10 (0.2)
##	POTASSIUM CHLORIDE 20 MEQ/15 ML ORAL LIQUID	10 (0.2)
##	POTASSIUM CHLORIDE 20 MEQ/50 ML IN STERILE WATER INTRAVENOUS PIGGYBACK	3 (0.1)
##	POTASSIUM CHLORIDE ER 10 MEQ TABLET,EXTENDED RELEASE	16 (0.3)
##	POTASSIUM CHLORIDE ER 10 MEQ TABLET,EXTENDED RELEASE (UCSF WRAPPER)	1 (0.0)
##	POTASSIUM CHLORIDE ER 20 MEQ TABLET,EXTENDED RELEASE(PART/CRYST)	1 (0.0)

##	POTASSIUM PHOSPHATE IVPB (< 18 MMOL)	2 (0.0)
##	POVIDONE-IODINE 10 % TOPICAL SWAB	22 (0.4)
##	PREDNISOLONE ACETATE 1 % EYE DROPS,SUSPENSION	2 (0.0)
##	PREDNISONE 5 MG TABLET	13 (0.3)
##	PROCHLORPERAZINE EDISYLATE 10 MG/2 ML (5 MG/ML) INJECTION SOLUTION	7 (0.1)
##	PROCHLORPERAZINE MALEATE 10 MG TABLET	1 (0.0)
##	PROCHLORPERAZINE MALEATE 5 MG TABLET	2 (0.0)
##	PROGRAF 0.5 MG CAPSULE	9 (0.2)
##	PROGRAF 1 MG CAPSULE	19 (0.4)
##	PROPOFOL 10 MG/ML INTRAVENOUS EMULSION	55 (1.1)
##	PUREFLOW RFP-400 DIALYSIS SOLUTION	7 (0.1)
##	PUREFLOW RFP-404 DIALYSIS SOLUTION	81 (1.6)
##	QUETIAPINE 25 MG TABLET	1 (0.0)
##	ROCURIUM 10 MG/ML INTRAVENOUS SOLUTION	5 (0.1)
##	ROPIV 2.46-EPI 0.005-CLONID 0.0008-KETOROL 0.3 MG/ML PERIARTICULR SYRG	1 (0.0)
##	SENNOSIDES 8.6 MG TABLET	45 (0.9)
##	SERTRALINE 100 MG TABLET	12 (0.2)
##	SERTRALINE 20 MG/ML ORAL CONCENTRATE	24 (0.5)
##	SEVELAMER CARBONATE 800 MG TABLET	15 (0.3)
##	SIMETHICONE 80 MG CHEWABLE TABLET	6 (0.1)
##	SODIUM BICARBONATE 1 MEQ/ML (8.4 %) INTRAVENOUS SOLUTION	4 (0.1)
##	SODIUM BICARBONATE 1MEQ/ML ORAL SOLN	1 (0.0)
##	SODIUM BICARBONATE 650 MG TABLET	14 (0.3)
##	SODIUM BICARBONATE 8.4 % (1 MEQ/ML) INTRAVENOUS SYRINGE	1 (0.0)
##	SODIUM BICARBONATE IN D5W 150 MEQ/L IV SOLN	2 (0.0)
##	SODIUM BICARBONATE INFUSION (8.4%) 250 ML FOR CRRT	12 (0.2)
##	SODIUM CHLORIDE 0.9 % (FLUSH) INJECTION SYRINGE	422 (8.4)
##	SODIUM CHLORIDE 0.9 % INTRAVENOUS SOLUTION	34 (0.7)
##	SODIUM CHLORIDE 0.9 % IV BOLUS	45 (0.9)
##	SODIUM CHLORIDE 1 GRAM TABLET	4 (0.1)
##	SODIUM CITRATE 4 % (3 ML) INTRA-CATHETER INJECTION SYRINGE	19 (0.4)
##	SODIUM DI- AND MONOPHOSPHATE-POTASSIUM PHOS MONOBASIC 250 MG TABLET	37 (0.7)
##	SODIUM PHOSPHATE IVPB (< 18 MMOL) (ADULT)	4 (0.1)
##	SODIUM PHOSPHATE IVPB (> 18 MMOL) (ADULT)	16 (0.3)
##	SODIUM PHOSPHATES 19 GRAM-7 GRAM/118 ML ENEMA	3 (0.1)
##	SODIUM POLYSTYRENE SULFONATE 15 GRAM-SORBITOL 20 GRAM/60 ML ORAL SUSP	1 (0.0)
##	SODIUM ZIRCONIUM CYCLOSILICATE 10 GRAM ORAL POWDER PACKET	8 (0.2)
##	SOTALOL 120 MG TABLET	2 (0.0)
##	THIAMINE MONONITRATE (VITAMIN B1) 100 MG TABLET	17 (0.3)
##	THROMBIN (RECOMBINANT) 20,000 UNIT TOPICAL SOLUTION	1 (0.0)
##	TICAGRELOR 90 MG TABLET	9 (0.2)
##	TIZANIDINE 4 MG TABLET	4 (0.1)
##	TUBERCULIN PPD 5 TUB. UNIT/0.1 ML INTRADERMAL INJECTION SOLUTION	1 (0.0)
##	VALACYCLOVIR 500 MG TABLET	2 (0.0)
##	VANCOMYCIN 1 GRAM/200 ML IN WATER FOR INJECTION(PEG,NADA) IV PIGGYBACK	6 (0.1)
##	VANCOMYCIN 1250 MG IVPB (VIAL-MATE)	12 (0.2)
##	VANCOMYCIN 1750 MG IVPB	2 (0.0)
##	VANCOMYCIN 750 MG IVPB (VIAL-MATE)	18 (0.4)
##	VASOPRESSIN 20 UNIT/100 ML (0.2 UNIT/ML) IN 0.9 % SODIUM CHLORIDE IV	162 (3.2)
##	VITAMIN B COMPLEX-VITAMIN C-FOLIC ACID 0.8 MG TABLET	26 (0.5)
##	ZINC SULFATE 50 MG ZINC (220 MG) CAPSULE	6 (0.1)
##	ZZ IMS TEMPLATE	36 (0.7)
##	thera_class (%)	
##	ANALGESICS	584 (11.7)

##	ANESTHETICS	138 (2.8)
##	ANTIARTHRITICS	5 (0.1)
##	ANTIASTHMATICS	10 (0.2)
##	ANTIBIOTICS	71 (1.4)
##	ANTICOAGULANTS	142 (2.8)
##	ANTIDOTES	43 (0.9)
##	ANTIFUNGALS	1 (0.0)
##	ANTI HISTAMINES	17 (0.3)
##	ANTIHYPERGLYCEMICS	165 (3.3)
##	ANTIPLATELET DRUGS	84 (1.7)
##	ANTIVIRALS	2 (0.0)
##	AUTONOMIC DRUGS	275 (5.5)
##	BIOLOGICALS	7 (0.1)
##	BLOOD	10 (0.2)
##	CARDIAC DRUGS	267 (5.3)
##	CARDIOVASCULAR	183 (3.7)
##	CNS DRUGS	125 (2.5)
##	COLONY STIMULATING FACTORS	1 (0.0)
##	COUGH/COLD PREPARATIONS	2 (0.0)
##	DIAGNOSTIC	5 (0.1)
##	DIURETICS	49 (1.0)
##	EENT PREPS	2 (0.0)
##	ELECT/CALORIC/H2O	1086 (21.7)
##	GASTROINTESTINAL	382 (7.6)
##	HORMONES	207 (4.1)
##	IMMUNOSUPPRESSANTS	52 (1.0)
##	MUSCLE RELAXANTS	34 (0.7)
##	NULL	760 (15.2)
##	PSYCHOTHERAPEUTIC DRUGS	72 (1.4)
##	SEDATIVE/HYPNOTICS	42 (0.8)
##	SKIN PREPS	22 (0.4)
##	THYROID PREPS	10 (0.2)
##	UNCLASSIFIED DRUG PRODUCTS	16 (0.3)
##	VITAMINS	129 (2.6)
##	pharm_class (%)	
##	ADRENERGIC AGENTS,CATECHOLAMINES	238 (4.8)
##	ADRENERGIC VASOPRESSOR AGENTS	28 (0.6)
##	ADRENOCORTICOTROPHIC HORMONES	1 (0.0)
##	AGENTS TO TREAT HYPOGLYCEMIA (HYPERGLYCEMICS)	4 (0.1)
##	ALPHA-2 RECEPTOR ANTAGONIST ANTIDEPRESSANTS	4 (0.1)
##	ALPHA-ADRENERGIC BLOCKING AGENTS	16 (0.3)
##	ALPHA/BETA-ADRENERGIC BLOCKING AGENTS	27 (0.5)
##	ANAEROBIC ANTIPROTOZOAL-ANTIBACTERIAL AGENTS	41 (0.8)
##	ANALGESIC/ANTIPYRETICS, NON-SALICYLATE	188 (3.8)
##	ANALGESICS, NON-OPIOID	1 (0.0)
##	ANTACIDS	16 (0.3)
##	ANTI-ANXIETY - BENZODIAZEPINES	8 (0.2)
##	ANTIARRHYTHMICS	130 (2.6)
##	ANTICHOLINERGICS, ORALLY INHALED SHORT ACTING	2 (0.0)
##	ANTICHOLINERGICS, QUATERNARY AMMONIUM	7 (0.1)
##	ANTICHOLINERGICS/ANTISPASMODICS	21 (0.4)
##	ANTICONVULSANTS	125 (2.5)
##	ANTIDIARRHEALS	9 (0.2)
##	ANTIDIURETIC AND VASOPRESSOR HORMONES	162 (3.2)

##	ANTIEMETIC, CANNABINOID-TYPE	13 (0.3)
##	ANTIEMETIC/ANTIVERTIGO AGENTS	103 (2.1)
##	ANTIPLATULENTS	6 (0.1)
##	ANTIGENIC SKIN TESTS	1 (0.0)
##	ANTIHIISTAMINES - 1ST GENERATION	2 (0.0)
##	ANTIHIISTAMINES - 2ND GENERATION	15 (0.3)
##	ANTIHYPERGLYCEMIC, BIGUANIDE TYPE	1 (0.0)
##	ANTIHYPERLIPIDEMIC-HMGCOA REDUCTASE INHIB(STATINS)	47 (0.9)
##	ANTIHYPERTENSIVES, ANGIOTENSIN RECEPTOR ANTAGONIST	4 (0.1)
##	ANTIHYPERTENSIVES, SYMPATHOLYTIC	12 (0.2)
##	ANTIHYPERTENSIVES, VASODILATORS	2 (0.0)
##	ANTIPSYCHOTIC,ATYPICAL,DOPAMINE,SEROTONIN ANTAGNST	1 (0.0)
##	ANTIPSYCHOTICS,DOPAMINE ANTAGONISTS,BUTYROPHENONES	4 (0.1)
##	ANTIVIRALS, GENERAL	2 (0.0)
##	BENIGN PROSTATIC HYPERTROPHY/MICTURITION AGENTS	13 (0.3)
##	BETA-ADRENERGIC AGENTS, INHALED, SHORT ACTING	8 (0.2)
##	BETA-ADRENERGIC BLOCKING AGENTS	79 (1.6)
##	BICARBONATE PRODUCING/CONTAINING AGENTS	18 (0.4)
##	CALCIUM CHANNEL BLOCKING AGENTS	54 (1.1)
##	CALCIUM REPLACEMENT	18 (0.4)
##	CARDIOVASCULAR DIAGNOSTICS-RADIOPAQUE	5 (0.1)
##	CEPHALOSPORIN ANTIBIOTICS - 1ST GENERATION	16 (0.3)
##	CITRATES AS ANTICOAGULANTS	19 (0.4)
##	COUGH AND/OR COLD PREPARATIONS	1 (0.0)
##	DIRECT FACTOR XA INHIBITORS	3 (0.1)
##	ELECTROLYTE DEPLETERS	33 (0.7)
##	ELECTROLYTE MAINTENANCE	83 (1.7)
##	ERYTHROPOIESIS-STIMULATING AGENTS	1 (0.0)
##	EXPECTORANTS	1 (0.0)
##	EYE ANTI-INFLAMMATORY AGENTS	2 (0.0)
##	GENERAL ANESTHETICS,INJECTABLE	55 (1.1)
##	GENERAL ANESTHETICS,INJECTABLE-BENZODIAZEPINE TYPE	3 (0.1)
##	GLUCOCORTICIDS	24 (0.5)
##	HEPARIN AND RELATED PREPARATIONS	120 (2.4)
##	IMMUNOSUPPRESSIVES	52 (1.0)
##	INFLUENZA VIRUS VACCINES	6 (0.1)
##	INOTROPIC DRUGS	71 (1.4)
##	INSULINS	164 (3.3)
##	IRON REPLACEMENT	11 (0.2)
##	IV SOLUTIONS: DEXTROSE AND LACTATED RINGERS	3 (0.1)
##	IV SOLUTIONS: DEXTROSE-SALINE	290 (5.8)
##	IV SOLUTIONS: DEXTROSE-WATER	46 (0.9)
##	LAXATIVES AND CATHARTICS	111 (2.2)
##	LAXATIVES, LOCAL/RECTAL	13 (0.3)
##	LOCAL ANESTHETICS	9 (0.2)
##	LOOP DIURETICS	43 (0.9)
##	MAGNESIUM SALTS REPLACEMENT	57 (1.1)
##	MULTIVITAMIN PREPARATIONS	18 (0.4)
##	NEUROMUSCULAR BLOCKING AGENTS	5 (0.1)
##	NOREPINEPHRINE AND DOPAMINE REUPTAKE INHIB (NDRIS)	8 (0.2)
##	NSAIDS, CYCLOOXYGENASE INHIBITOR - TYPE ANALGESICS	6 (0.1)
##	NSAIDS,CYCLOOXYGENASE-2(COX-2) SELECTIVE INHIBITOR	4 (0.1)
##	NULL	694 (13.9)
##	OPIOID ANALGESIC AND NON-SALICYLATE ANALGESICS	9 (0.2)

##	OPIOID ANALGESIC, ANESTHETIC ADJUNCT AGENTS	26 (0.5)
##	OPIOID ANALGESICS	355 (7.1)
##	OPIOID ANTAGONISTS	43 (0.9)
##	OPIOID WITHDRAWAL THERAPY AGENTS, OPIOID-TYPE	2 (0.0)
##	PEDIATRIC VITAMIN PREPARATIONS	13 (0.3)
##	PINEAL HORMONE AGENTS	20 (0.4)
##	PLASMA PROTEINS	7 (0.1)
##	PLATELET AGGREGATION INHIBITORS	84 (1.7)
##	POTASSIUM REPLACEMENT	41 (0.8)
##	PROTON-PUMP INHIBITORS	83 (1.7)
##	QUINOLONE ANTIBIOTICS	1 (0.0)
##	SEDATIVE-HYPNOTICS - BENZODIAZEPINES	10 (0.2)
##	SEDATIVE-HYPNOTICS, NON-BARBITURATE	32 (0.6)
##	SELECTIVE SEROTONIN REUPTAKE INHIBITOR (SSRIS)	42 (0.8)
##	SKELETAL MUSCLE RELAXANTS	34 (0.7)
##	SODIUM/SALINE PREPARATIONS	505 (10.1)
##	TETRACYCLINE ANTIBIOTICS	7 (0.1)
##	THIAZIDE AND RELATED DIURETICS	6 (0.1)
##	THROMBOLYTIC ENZYMES	2 (0.0)
##	THYROID HORMONES	10 (0.2)
##	TOPICAL ANTIFUNGALS	1 (0.0)
##	TOPICAL HEMOSTATICS	1 (0.0)
##	TOPICAL LOCAL ANESTHETICS	71 (1.4)
##	TOPICAL PREPARATIONS, ANTIBACTERIALS	22 (0.4)
##	TOPICAL/MUCOUS MEMBR./SUBCUT. ENZYMES	1 (0.0)
##	TRICYCLIC ANTIDEPRESSANTS, REL. NON-SEL. REUPT-INHIB	5 (0.1)
##	URINARY PH MODIFIERS	37 (0.7)
##	VANCOMYCIN ANTIBIOTICS AND DERIVATIVES	6 (0.1)
##	VASODILATORS, CORONARY	12 (0.2)
##	VITAMIN B PREPARATIONS	26 (0.5)
##	VITAMIN B1 PREPARATIONS	17 (0.3)
##	VITAMIN D PREPARATIONS	55 (1.1)
##	ZINC REPLACEMENT	6 (0.1)
##	pharm_subclass (%)	
##	Agents for Opioid Withdrawal, Opioid-Type	2 (0.0)
##	Agents to treat Hypoglycemia (Hyperglycemics)	4 (0.1)
##	Alpha-Beta Blockers	27 (0.5)
##	Analgesic - Central Alpha-2 Receptor Agonists	1 (0.0)
##	Analgesic Opioid Agonists	355 (7.1)
##	Analgesic Opioid Codeine Combinations	9 (0.2)
##	Analgesic or Antipyretic Non-Opioid	188 (3.8)
##	Angiotensin II Receptor Blockers (ARBs)	4 (0.1)
##	Antacid - Bicarbonate	14 (0.3)
##	Antacid - Calcium	2 (0.0)
##	Antacid - Magnesium	8 (0.2)
##	Antianginal - Coronary Vasodilators (Nitrates)	12 (0.2)
##	Antianxiety Agent - Benzodiazepines	8 (0.2)
##	Antiarrhythmic - Class II	2 (0.0)
##	Antiarrhythmic - Class III	130 (2.6)
##	Anticoagulants - Citrate-based	19 (0.4)
##	Anticonvulsant - GABA Analogs	84 (1.7)
##	Anticonvulsant - Pyrrolidine Derivatives	41 (0.8)
##	Antidepressant - Alpha-2 Receptor Antagonists (NaSSA)	4 (0.1)
##	Antidepressant - Selective Serotonin Reuptake Inhibitors (SSRIs)	42 (0.8)

##	Antidepressant-Norepinephrine and Dopamine Reuptake Inhibitors (NDRIs)	8 (0.2)
##	Antidepressant-Tricyclics and Related (Non-Select Reuptake Inhibitors)	5 (0.1)
##	Antidiarrheal - Antiperistaltic Agents	9 (0.2)
##	Antidiuretic and Vasopressor Hormones	162 (3.2)
##	Antiemetic - Cannabinoid Type	13 (0.3)
##	Antiemetic - Phenothiazines	7 (0.1)
##	Antiemetic - Selective Serotonin 5-HT ₃ Antagonists	91 (1.8)
##	Antiemetic - Substance P-Neurokinin 1 (NK1) Receptor Antagonists	2 (0.0)
##	Antihistamine - 1st Generation - Ethanolamines	2 (0.0)
##	Antihistamines - 2nd Generation	15 (0.3)
##	Antihyperlipidemic - HMG CoA Reductase Inhibitors (statins)	47 (0.9)
##	Antiprotozoal-Antibacterial 1st Generation 2-methyl-5-nitroimidazole	41 (0.8)
##	Antipsychotic - Butyrophenone Derivatives	4 (0.1)
##	Antipsychotic - Phenothiazines, Piperazine	3 (0.1)
##	Antipsychotic -Atypical Dopamine-Serotonin Antag-Dibenzothiazepine Der	1 (0.0)
##	Asthma Therapy - Alpha/Beta Adrenergic Agents	1 (0.0)
##	Asthma/COPD - Anticholinergic Agents, Inhaled Short Acting	2 (0.0)
##	Asthma/COPD Therapy - Beta 2-Adrenergic Agents, Inhaled, Short Acting	8 (0.2)
##	B-Complex Vitamin Combinations	26 (0.5)
##	Beta Blockers Cardiac Selective	77 (1.5)
##	Calcium Channel Blockers - Benzothiazepines	27 (0.5)
##	Calcium Channel Blockers - Dihydropyridines	27 (0.5)
##	Cardiac Inotropes - Phosphodiesterase Inhibitors	71 (1.4)
##	Cardiovascular Sympathomimetics	265 (5.3)
##	Central Alpha-2 Receptor Agonists	12 (0.2)
##	Cephalosporin Antibiotics - 1st Generation	16 (0.3)
##	Contrast Media - Iodinated Nonionic	5 (0.1)
##	Dermatological - Antibacterial Povidone-Iodine Preparations	22 (0.4)
##	Dermatological - Antifungal Imidazole and Related Agents	1 (0.0)
##	Dermatological - Topical Local Anesthetic Amides	71 (1.4)
##	Dextrose and Lactated Ringer's Solutions	3 (0.1)
##	Dextrose and Sodium Chloride Solutions	289 (5.8)
##	Dextrose Solutions	46 (0.9)
##	Diagnostic Biologicals	1 (0.0)
##	Diagnostic Drugs - Pituitary Function	1 (0.0)
##	Direct Acting Vasodilators	2 (0.0)
##	Direct Factor Xa Inhibitors	3 (0.1)
##	Diuretic - Loop	43 (0.9)
##	Diuretic - Thiazides and Related	6 (0.1)
##	Electrolyte Depleters - Ion Exchange Resin	9 (0.2)
##	Enzymes	1 (0.0)
##	Erythropoietins	1 (0.0)
##	Expectorants - Single Agents, General	1 (0.0)
##	Fluoroquinolone Antibiotics	1 (0.0)
##	Gastric Acid Secretion Reducing Agents - Proton Pump Inhibitors (PPIs)	83 (1.7)
##	Gastrointestinal Antiflatulents	6 (0.1)
##	General Anesthetic - Parenteral, Benzodiazepines	3 (0.1)
##	General Anesthetic - Parenteral, Phenol Derivatives	55 (1.1)
##	General Anesthetic Adjuncts - Opioid	26 (0.5)
##	GI Antispasmodic - Quaternary Ammonium Compounds	7 (0.1)
##	GI Antispasmodic - Synthetic Tertiary Amines	21 (0.4)
##	Glucocorticoids	24 (0.5)
##	Glycopeptide Antibiotics	6 (0.1)
##	Hemostatic Topical Agents	1 (0.0)

##	Heparins	91 (1.8)
##	Herpes Antiviral Agent - Purine Analogs	2 (0.0)
##	Human Albumin	7 (0.1)
##	Human Insulins - Short Acting	3 (0.1)
##	Hypnotics - Melatonin - Single Agents	16 (0.3)
##	Immunosuppressive - Calcineurin Inhibitors	28 (0.6)
##	Immunosuppressive - Inosine Monophosphate Dehydrogenase Inhibitors	24 (0.5)
##	Insulin Analogs - Long Acting	9 (0.2)
##	Insulin Analogs - Rapid Acting	152 (3.0)
##	Insulin Response Enhancers - Biguanides	1 (0.0)
##	Laxative - Saline and Osmotic	43 (0.9)
##	Laxative - Saline/Osmotic Mixtures	3 (0.1)
##	Laxative - Stimulant	58 (1.2)
##	Laxative - Surfactant	20 (0.4)
##	Local Anesthetic - Amides	5 (0.1)
##	Local Anesthetic - Sympathomimetic Combinations	3 (0.1)
##	Local Anesthetic-Sympathomimetic-Alpha 2 Agonist-NSAID Combinations	1 (0.0)
##	Low Molecular Weight Heparins	29 (0.6)
##	Minerals and Electrolytes - Bicarbonate Producing or Containing Agents	17 (0.3)
##	Minerals and Electrolytes - Calcium Replacement	16 (0.3)
##	Minerals and Electrolytes - Calcium Replacement/Vitamin D Combinations	2 (0.0)
##	Minerals and Electrolytes - Iron	11 (0.2)
##	Minerals and Electrolytes - Magnesium	49 (1.0)
##	Minerals and Electrolytes - Parenteral Electrolyte Combinations	64 (1.3)
##	Minerals and Electrolytes - Potassium for Injection	13 (0.3)
##	Minerals and Electrolytes - Potassium, Oral	28 (0.6)
##	Minerals and Electrolytes - Sodium Chloride, Oral	4 (0.1)
##	Minerals and Electrolytes - Zinc	6 (0.1)
##	Mouth and Throat - Lozenges	1 (0.0)
##	Multivitamins	18 (0.4)
##	Neuromuscular Blocker - Nondepolarizing Agents	5 (0.1)
##	NSAID Analgesic, Cyclooxygenase-2 (COX-2) Selective Inhibitors	4 (0.1)
##	NSAID Analgesics (COX Non-Specific) - Other	5 (0.1)
##	NSAID Analgesics (COX Non-Specific) - Propionic Acid Derivatives	1 (0.0)
##	NULL	722 (14.4)
##	Ophthalmic - Anti-inflammatory, Glucocorticoids	2 (0.0)
##	Opioid Reversal Agents - Opioid Antagonists	21 (0.4)
##	Pediatric Vitamins and Mineral Combinations	13 (0.3)
##	Peripheral Alpha-1 Receptor Blockers	16 (0.3)
##	Phosphate Binders	24 (0.5)
##	Platelet Aggregation Inhib - Cyclopentyl-triazolo-pyrimidines (CPTPs)	9 (0.2)
##	Platelet Aggregation Inhibitors - Thienopyridine Agents	18 (0.4)
##	Prostatic Hypertrophy Agent - Type II 5-alpha Reductase Inhibitors	13 (0.3)
##	Ringer's and Lactated Ringer's Solutions	19 (0.4)
##	Salicylate Analgesics	57 (1.1)
##	Sedative-Hypnotic - Benzodiazepines	10 (0.2)
##	Sedative-Hypnotic - Selective Alpha2-Adrenoreceptor Agonists	32 (0.6)
##	Skeletal Muscle Relaxant - Central Muscle Relaxants	34 (0.7)
##	Sodium Chloride Flushes	422 (8.4)
##	Sodium Chloride, Parenteral	79 (1.6)
##	Tetracycline Antibiotics	7 (0.1)
##	Thrombolytic - Tissue Plasminogen Activators	2 (0.0)
##	Thyroid Hormones - Synthetic T4 (Thyroxine)	10 (0.2)
##	Urinary Acidifier - Phosphates	37 (0.7)

```
##      Vaccine Viral - Influenza A and B                      6 ( 0.1)
##      Vitamins - B-1, Thiamine and Derivatives              17 ( 0.3)
##      Vitamins - D Derivatives                             55 ( 1.1)
```

8 Save all data

```
write_csv(dm, file = "/Users/sreynolds2/Documents/GitHub/MS-CDI_Risk/MS-CDI_Risk/data/clean/dm.csv")
write_csv(dx, file = "/Users/sreynolds2/Documents/GitHub/MS-CDI_Risk/MS-CDI_Risk/data/clean/dx.csv")
write_csv(lab, file = "/Users/sreynolds2/Documents/GitHub/MS-CDI_Risk/MS-CDI_Risk/data/clean/lab.csv")
write_csv(med_admin, file = "/Users/sreynolds2/Documents/GitHub/MS-CDI_Risk/MS-CDI_Risk/data/clean/med_admin.csv")
```

9 Identify variables of interest in datasets to include in logistic regression model

The following are common parameters / risk factors to include in C diff risk assessment model, and where to find them in the datasets:

- Age $\geq 65 \rightarrow dm\$age$
- Prior hospital admission in 30 days $\rightarrow dm\$readmit == "Yes"$
- Admission from ED $\rightarrow dm\$ED_dispo == "Admit" OR dm\$present_source == ??$
- Diabetes $\rightarrow lab_lab_concept == "diabetes" OR dx_dx_group == "DIABETES MELLITUS"$
- Receipt of antibiotics in last 30 days $\rightarrow med_admin\$thera_class \%in\% c("ANTIBIOTICS", "ANTIFUNGALS", "ANTIINFECTIVES/MISCELLANEOUS", "ANTIPARASITICS", "ANTIVIRALS")$
 - NOTE: Doesn't include outpatient abx, only those during hospitalization
- Receipt of proton pump inhibitor (PPI) $\rightarrow med_admin\$pharm_class == "PROTON-PUMP INHIBITORS"$
- Receipt of gastric acid suppressants, laxatives, etc. $\rightarrow med_admin\$pharm_class \%in\% c("ANTACIDS", "LAXATIVES AND CATHARTICS", "LAXATIVES, LOCAL/RECTAL")$

```
#levels(as.factor(med_admin$thera_class))
```

```
#med_admin %>% filter(thera_class == "GASTROINTESTINAL") %>% select(pharm_class) %>%
unique()
```

10 Notes / Next Steps

- Create multivariate logistic regression model, divide data into 3 chunks/time periods (e.g. 2019, 2020, 2021)
 - 1 chunk used to train model, the other 2 used to evaluate model performance (e.g. 2019 chunk used to train model, while 2020-2021 used to test model performance)
- Evaluate “model creep” or how much the optimized model changes over time?
- Question: What proportion of C diff cases occurred 2+ days after admission vs. within 2 days of admission?

```

# Add column to `dm` to indicate whether CDIFF dx was within 2 days or > 2 days of admission
dm <- dm %>%
  mutate(HAI_first_date = as.POSIXct(HAI_first_date, format = "%Y-%m-%d %H:%M:%OS3"),
         admit_time = as.POSIXct(admit_time, format = "%Y-%m-%d %H:%M:%OS3")) %>%
  mutate(days_admit_to_dx = difftime(HAI_first_date, admit_time, units = "hours"))
# need to fix datetime format to include millisecs??? idk how to do this?

```