

Overview:

Disparities in diabetes incidence, prevalence, and outcomes in the United States are well-known. However, there has not been an investigation into the trend of disparities in health care use across age, race/ethnic, socioeconomic, and geographic groups. Using ICD-9/10 codes, we can identify which conditions are treated on an in-patient or out-patient basis and which admissions are potentially avoidable.

We want to estimate the number of inpatient visits and ED visits among people with diabetes aged 18+ in the United States. Our goal is to estimate the total number of ED visits per year among people with diabetes, and then stratify the results by age group, sex, race/ethnicity, rural/urban designation, geographic region, and health insurance coverage status. We will then elucidate the proportion of these that are potentially preventable, using the definition of ambulatory care sensitive conditions provided by the AHRQ. We will then stratify the results by age group, sex, race/ethnicity rural urban designation, geographic region, and health insurance coverage status.

Definitions:

Rural:

* Micropolitan: Counties with population 10,000-49,999.
* Noncore: Nonmetropolitan counties that did not qualify as micropolitan.

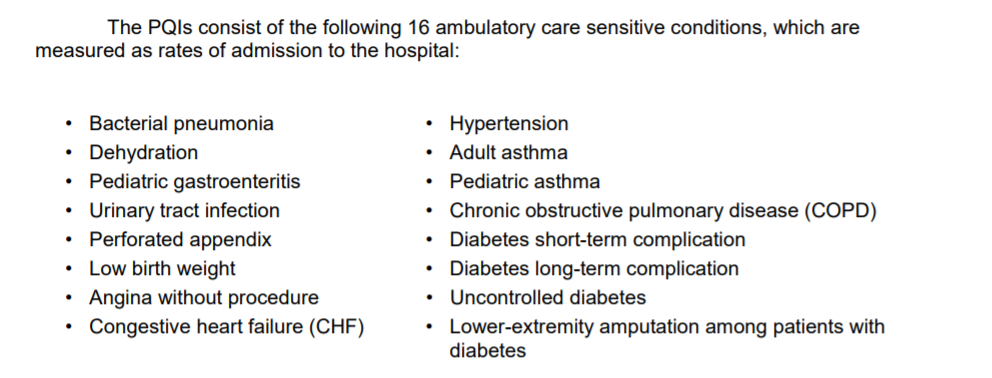
Urban:

* Large central metro counties in metropolitan statistical area (MSA) of 1 million population that: (1) contain the entire population of the largest principal city of the MSA, or (2) are completely contained within the largest principal city of the MSA, or (3) contain at least 250,000 residents of any principal city in the MSA.
* Large fringe metro counties in MSA of 1 million or more population that do not qualify as large central.
* Medium metro counties in MSA of 250,000-999,999 population.
* Small metro counties in MSAs of less than 250,000 population.

Ambulatory care sensitive conditions (ACSCs): Conditions for which hospital admission could be prevented by interventions in primary care. They are a set of conditions, including asthma, and diabetes, where the need for emergency admissions are thought to be avoidable.

ICD-9 and ICD-10 as provided by AHRQ’s Prevention Quality Indicators will define the ACSCs to be used. CCS codes relevant to the selected ACSCs will be used to filter relevant observations.

ACSCs:



All PQIs  
Freund et al:  
+Cellulitis  
+Gangrene  
+Dental conditions  
+Dysuria  
+Influenza  
Tseng et al.:  
+Lower Extremity Ulcers, Hypoglycemia  
-Pediatric asthma, gastro, low birth weight

Aims:

1. We will estimate the number and rate of diabetes-related hospital inpatient stays and ED admissions
2. We will estimate the rate of diabetes-related hospital inpatient stays by age group, sex, race/ethnicity, rural/urban designation, geographic region, presence of comorbidities, and health insurance coverage status on the number of preventable admissions.

\*We are estimating prevalence of diabetes among ED visits and hospital admissions, as not all cases of diabetes result in an ED visit/admission

\*Specifically, we are capturing *hospital-treated* prevalence with HCUP data. The BRFSS captures the prevalence of these conditions in the general population.

Study design:

Retrospective, serial cross-sectional design using years 2008, 2011, 2014, and 2016/2017.

*Study Population:*

U.S. non-institutionalized population aged 18+

OR

U.S. civilian noninstitutionalized population aged 18 years and older residing in households

*Null hypotheses:*

1. The total count of Inpatient Stays and ED admissions among people with diabetes has not significantly changed from 2006-2017.
2. Age group, sex, race/ethnicity, rural/urban designation, geographic region, presence of comorbidities, and health insurance coverage status has no effect on the number of Inpatient Stays and ED admissions
3. The total count of Inpatient Stays and ED admissions among people with diabetes has not significantly changed from 2006-2017.
4. Age group, sex, race/ethnicity, rural/urban designation, geographic region, presence of comorbidities, and health insurance coverage status has no effect on the number of Inpatient Stays or ED admissions

Data:

We will use the SID, SEDD, NIS, NEDS databases as provided by the HCUP to generate numerator estimates. We will use the BRFSS to generate national and state-level general population estimates to generate both demographic tables and denominators for estimating rates.

Variables in Appendix 1.

*Inclusion Criteria*

* Had an Inpatient Stay or ED visit during year studied
  + Ages 18+
    - Diabetes diagnosis, as defined by ICD-codes in Appendix 1

*Exclusion Criteria*

* Gestational Diabetes

*Outcomes*

1. Number of diabetes-related ED visits from 2008-2017
2. Rate of diabetes-related ED visits from 2008-2017
3. Number of diabetes-related inpatient stays from 2008-2017
4. Rate of diabetes-related inpatient stays from 2008-2017

*Stratifications*

Age group  
Sex  
Race/ethnicity  
Rural/urban designation   
Geographic region   
Presence of comorbidities  
Health insurance coverage status  
Type of Hospital

*Unit of interest*

Encounter with community-based hospitals

National and state-level health care utilization rates

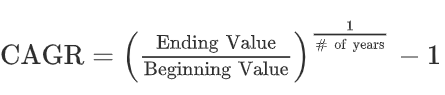
*Limitations*

*\**Hypertension may not be diagnosed or coded if it was not related to the reason for the visit

## Analysis Plan

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Sl No | Task | Responsibility | Deadline | Status |
| 1 | Clean data for analysis | Teg | 3/2 | Completed |
| 2 | Lit review for inpatient stays by people with diabetes | Megha | 3/7 |  |
| 3 | Generate counts of ED visits and Inpatient stays at national level | Teg | 3/6 | Completed |
| 4 | Generate estimates for descriptive tables | Teg | 3/11 | Completed |
| 5 | Generate rates for hospital and inpatient stays | Teg | 3/23 |  |
| 6 | Age adjust rates to Census 2010 | Teg | 3/24 |  |
| 7 | Generate Trend Lines for all estimates | Teg | 3/25 |  |
| 8 | Find per-patient use in 3 revisit states – consult Shivani | Teg | 3/26 |  |
| 9 |  | Teg |  |  |
| 10 |  | Teg |  |  |

1. Convert .asc files to .rds files
   1. Use HCUP provided SAS load programs to load .asc files as. sas7bdt, save separately
      1. Cross-check each file with published HCUP summary tables using PROC MEANS in SAS
      2. Begin with NIS, repeat with NEDS, SID, SEDD
   2. Convert. sas7bdt files to RDS objects and save compressed .RDS files to be used in R in separate folder
      1. Cross-check means and standard error of each RDS object against published HCUP estimates
      2. Begin with NIS, repeat with NEDS, SID, SEDD
   3. Convert Supplemental Hospital and Inpatient files to RDS objects as well.
2. Prepare data files from for analysis purposes
   1. Merge supplemental Hospital and Inpatient files to data frame using left join, matching all observations
   2. Subset for variables of interest
   3. \*\*\*\*Check to ensure variables are consistent, clean variables as necessary\*\*\*\*
      1. Use complete-case deletion to remove missing observations, check if imputation is a valid strategy
3. Apply design variables to data frame in order to account for complex survey design
4. Identify study population
   1. Create indicator variable for diabetes-related, using the first 5 ICD codes
   2. Create indicator variable in NEDS for inpatient admission
   3. Create indicator variable for adults, using age variable
   4. Subset for adults and diabetes-related events and save as separate .RDS files for data management purposes
5. Estimate counts of inpatient stays and ED visits by stratification, first at national level, then at state-level
   1. Generate counts and standard errors
6. Find the number of total ED visits ‣ # admitted ‣ # admitted w/ diabetes for study design flow figure
   1. Find #routine and sent home as well
7. Use BRFSS data to produce descriptive statistics among those with and without diabetes for variables as defined above
   1. For categorical variables, report count, and percent of sample represented
   2. Generate estimates by sex, income, race, education, marriage status, education, self-reported diabetes, rural/urban status, geographic region, age group, and health status
8. Estimate rates of ED visits and Hospital inpatient stays using HCUP estimates as numerator and BRFSS estimates as denominator for National and State level-estimates
9. Age-adjust rates where possible
10. Estimate per-patient rates using revisit variable
    1. ?
11. Estimate trend over time using the compound annual growth rate, stratify
12. CAGR2: To estimate the trend over time, we will calculate the compound annual growth rate (CAGR) of the number of ED visits per 1000 persons using the following formula:



1. Pop open some champagne

Variables - NIS

*Design variables*  
Unique Identifier KEY

Condition Number CONDN

Condition ID CONDIDX

Panel Number PANEL

Discharge Weight DISCWT

Event date – year. ERDATEYR

*Primary dependent variables*

Number of ED visits in year TO BE CONSTRUCTED

Number of Hospital Inpatient Stays in year TO BE CONSTRUCTED

*Independent Variables*

NIS/NEDS/SID/SEDD

Sex FEMALE

Age AGE

Race RACE

Health Insurance Coverage PAY1 + PAY2

Rural/Urban PL\_NCHS

Census Region HOSP\_REGION

Diabetes Diagnosis DX\_N

Variables - NEDS

*Design variables*  
Unique Identifier KEY

Condition Number CONDN

Condition ID CONDIDX

Panel Number PANEL

Discharge Weight DISCWT

Event date – year. ERDATEYR

*Primary dependent variables*

Number of ED visits in year TO BE CONSTRUCTED

Number of Hospital Inpatient Stays in year TO BE CONSTRUCTED

*Independent Variables*

NIS/NEDS/SID/SEDD

Sex FEMALE

Age AGE

Race RACE

Health Insurance Coverage PAY1 + PAY2

Rural/Urban PL\_NCHS

Census Region HOSP\_REGION

Diabetes Diagnosis DX\_N

Census Region as of 12/31/XX REGIONXX

Variables - SID

*Design variables*  
Unique Identifier KEY

Condition Number CONDN

Condition ID CONDIDX

Panel Number PANEL

Event ID EVNTIDX

Event date – year. ERDATEYR

*Primary dependent variables*

Number of ED visits in year TO BE CONSTRUCTED

Number of Hospital Inpatient Stays in year TO BE CONSTRUCTED

*Independent Variables*

Sex FEMALE

Age AGE

Race RACE

Health Insurance Coverage Ind. INSCOVXX

Private Insurance Coverage PRVEVXX

TRICARE/CHAMPVA TRIEVXX

Medicare during XXXX MCREVXX

MCAID/SCHIP MCDEVXX

Health Insurance Coverage Indicator INSCOVXX

Full YR Insurance Coverage Status INSURCXX

Census Region as of 12/31/XX REGIONXX

Diabetes Diagnosis DX\_N

Variables - SEDD

*Design variables*  
Unique Identifier KEY

Condition Number CONDN

Condition ID CONDIDX

Panel Number PANEL

Event ID EVNTIDX

Event date – year. ERDATEYR

*Primary dependent variables*

Number of ED visits in year TO BE CONSTRUCTED

Number of Hospital Inpatient Stays in year TO BE CONSTRUCTED

*Independent Variables*

Sex FEMALE

Age AGE

Race RACE

Health Insurance Coverage Ind. INSCOVXX

Private Insurance Coverage PRVEVXX

TRICARE/CHAMPVA TRIEVXX

Medicare during XXXX MCREVXX

MCAID/SCHIP MCDEVXX

Health Insurance Coverage Indicator INSCOVXX

Full YR Insurance Coverage Status INSURCXX

Census Region as of 12/31/XX REGIONXX

Diabetes Diagnosis DX\_N

References

1. Walters KA, Li Y, Tiwari RC, Zou Z. A Weighted-Least-Squares Estimation Approach to Comparing Trends in Age-Adjusted Cancer Rates Across Overlapping Regions. J Data Sci JDS. 2011 Oct 1;8(4):631–44.

2. Hooker EA, Mallow PJ, Oglesby MM. Characteristics and Trends of Emergency Department Visits in the United States (2010–2014). J Emerg Med. 2019 Mar 1;56(3):344–51.

Appendix 1. ICD-9-CM and ICD-10-CM Codes indicating Diabetes Disease State

|  |  |  |  |
| --- | --- | --- | --- |
| ICD-9-CM | | ICD-10-CM | |
| 25000 | Diabetes mellitus without mention of complication, type II or unspecified type, not stated as uncontrolled | E119 | Type 2 diabetes mellitus without complications |
| 25001 | Diabetes mellitus without mention of complication, type I [juvenile type], not stated as uncontrolled | E109 | Type 1 diabetes mellitus without complications |
| 25002 | Diabetes mellitus without mention of complication, type II or unspecified type, uncontrolled | E1165 | Type 2 diabetes mellitus with hyperglycemia |
| 25003 | Diabetes mellitus without mention of complication, type I [juvenile type], uncontrolled | E1065 | Type 1 diabetes mellitus with hyperglycemia |
| 25010 | Diabetes with ketoacidosis, type II or unspecified type, not states as uncontrolled | E1169 | Type 2 diabetes mellitus with other specified complication |
| E1310 | Other specified diabetes mellitus with ketoacidosis without coma |
| 25011 | Diabetes with ketoacidosis, type I [juvenile type], not stated as uncontrolled | E1010 | Type 1 diabetes mellitus with ketoacidosis without coma |
| 25012 | Diabetes with ketoacidosis, type II or unspecified type, uncontrolled | E1165 | Type 2 diabetes mellitus with hyperglycemia |
| E1169 | Type 2 diabetes mellitus with other specified complication |
| E1310 | Other specified diabetes mellitus with ketoacidosis without coma |
| 25013 | Diabetes with ketoacidosis, type I [juvenile type], uncontrolled | E1010 | Type 1 diabetes mellitus with ketoacidosis without coma |
| E1065 | Type 1 diabetes mellitus with hyperglycemia |
| 25020 | Diabetes with hyperosmolarity, type II or unspecified type, not stated as uncontrolled | E1100 | Type 2 diabetes mellitus with hyperosmolarity without nonketotic hyperglycemic-hyperosmolar coma (NKHHC) |
| E1101 | Type 2 diabetes mellitus with hyperosmolarity with coma |
| 25021 | Diabetes with hyperosmolarity, type I [juvenile type], not stated as uncontrolled | E1069 | Type 1 diabetes mellitus with other specified complication |
| 25022 | Diabetes with hyperosmolarity, type II or unspecified type, uncontrolled | E1100 | Type 2 diabetes mellitus with hyperosmolarity without nonketotic hyperglycemic-hyperosmolar coma (NKHHC) |
| E1165 | Type 2 diabetes mellitus with hyperglycemia |
| 25023 | Diabetes with hyperosmolarity, type I [juvenile type], uncontrolled | E1065 | Type 1 diabetes mellitus with hyperglycemia |
| E1069 | Type 1 diabetes mellitus with other specified complication |
| 25030 | Diabetes with other coma, type II or unspecified type, not states as uncontrolled | E11641 | Type 2 diabetes mellitus with hypoglycemia with coma |
| 25031 | Diabetes with other coma, type I [juvenile type], not stated as uncontrolled | E1011 | Type 1 diabetes mellitus with ketoacidosis with coma |
| E10641 | Type 1 diabetes mellitus with hypoglycemia with coma |
| 25032 | Diabetes with other coma, type II or unspecified type, uncontrolled | E1101 | Type 2 diabetes mellitus with hyperosmolarity with coma |
| E1165 | Type 2 diabetes mellitus with hyperglycemia |
| 25033 | Diabetes with other coma, type I [juvenile type], uncontrolled | E1011 | Type 1 diabetes mellitus with ketoacidosis with coma |
| E1065 | Type 1 diabetes mellitus with hyperglycemia |
| 25040 | Diabetes with renal manifestations, type II or unspecified type, not stated as uncontrolled | E1129 | Type 2 diabetes mellitus with other diabetic kidney complication |
| 25041 | Diabetes with renal manifestations, type I [juvenile type], not stated as uncontrolled | E1029 | Type 1 diabetes mellitus with other diabetic kidney complication |
| 25042 | Diabetes with renal manifestations, type II or unspecified type, uncontrolled | E1121 | Type 2 diabetes mellitus with diabetic nephropathy |
| E1165 | Type 2 diabetes mellitus with hyperglycemia |
| 25043 | Diabetes with renal manifestations, type I [juvenile type], uncontrolled | E1021 | Type 1 diabetes mellitus with diabetic neuropathy |
| E1065 | Type 1 diabetes mellitus with hyperglycemia |
| 25050 | Diabetes with ophthalmic manifestations, type II or unspecified type, not stated as uncontrolled | E11311 | Type 2 diabetes mellitus with unspecified diabetic retinopathy with macular edema. |
| E11319 | Type 2 diabetes mellitus with unspecified diabetic retinopathy without macular edema |
| E1136 | Type 2 diabetes mellitus with diabetic cataract |
| E1139 | Type 2 diabetes mellitus with other diabetic ophthalmic complication |
| 25051 | Diabetes with ophthalmic manifestations, type I [juvenile type], not states as uncontrolled | E10311 | Type 1 diabetes mellitus with unspecified diabetic retinopathy with macular edema. |
| E10319 | Type 1 diabetes mellitus with unspecified diabetic retinopathy without macular edema |
| E1036 | Type 1 diabetes mellitus with diabetic cataract |
| E1039 | Type 1 diabetes mellitus with other diabetic ophthalmic complication |
| 25052 | Diabetes with ophthalmic manifestations, type II or unspecified type, uncontrolled | E11311 | Type 2 diabetes mellitus with unspecified diabetic retinopathy with macular edema. |
| E11319 | Type 2 diabetes mellitus with unspecified diabetic retinopathy without macular edema |
| E1136 | Type 2 diabetes mellitus with diabetic cataract |
| E1139 | Type 2 diabetes mellitus with other diabetic ophthalmic complication |
| E1165 | Type 2 diabetes mellitus with hyperglycemia |
| 25053 | Diabetes with ophthalmic manifestations, type I [juvenile type], uncontrolled) | E10311 | Type 1 diabetes mellitus with unspecified diabetic retinopathy with macular edema. |
| E10319 | Type 1 diabetes mellitus with unspecified diabetic retinopathy without macular edema |
| E1036 | Type 1 diabetes mellitus with diabetic cataract |
| E1039 | Type 1 diabetes mellitus with other diabetic ophthalmic complication |
| E1065 | Type 1 diabetes mellitus with hyperglycemia |
| 25060 | Diabetes with neurological manifestations, type II or unspecified type, not stated as uncontrolled | E1140 | Type 2 diabetes mellitus with diabetic neuropathy, unspecified |
| 25061 | Diabetes with neurological manifestations, type I [juvenile type], not stated as uncontrolled | E1040 | Type 1 diabetes mellitus with diabetic neuropathy, unspecified |
| 25062 | Diabetes with neurological manifestations, type II or unspecified type, uncontrolled | E1140 | Type 2 diabetes mellitus with diabetic neuropathy, unspecified |
| E1165 | Type 2 diabetes mellitus with hyperglycemia |
| 25063 | Diabetes with neurological manifestations, type I [juvenile type], uncontrolled | E1040 | Type 1 diabetes mellitus with diabetic neuropathy, unspecified |
| E1065 | Type 1 diabetes mellitus with hyperglycemia |
| 25070 | Diabetes with peripheral circulatory disorders, type II or unspecified type, not stated as uncontrolled | E1151 | Type 2 diabetes mellitus with diabetic peripheral angiopathy without gangrene |
| 25071 | Diabetes with peripheral circulatory disorders, type I [juvenile type], not stated as uncontrolled | E1051 | Type 1 diabetes mellitus with diabetic peripheral angiopathy without gangrene |
| 25072 | Diabetes with peripheral circulatory disorders, type II or unspecified type, uncontrolled | E1151 | Type 2 diabetes mellitus with diabetic peripheral angiopathy without gangrene |
| E1165 | Type 2 diabetes mellitus with hyperglycemia |
| 25073 | Diabetes with peripheral circulatory disorders, type I [juvenile type], uncontrolled | E1051 | Type 1 diabetes mellitus with diabetic peripheral angiopathy without gangrene |
| E1065 | Type 1 diabetes mellitus with hyperglycemia |
| 25080 | Diabetes with other specified manifestations, type II or unspecified type, not stated as uncontrolled | E11618 | Type 2 diabetes mellitus with other diabetic arthropathy |
| E11620 | Type 2  diabetes mellitus with diabetic dermatitis |
| E11621 | Type 2 diabetes mellitus with foot ulcer |
| E11622 | Type 2 diabetes mellitus with other skin ulcer |
| E11628 | Type 2 diabetes mellitus with other skin complications |
| E11630 | Type 2 diabetes mellitus with periodontal disease |
| E11638 | Type 2 diabetes mellitus with other oral complications |
| E11649 | Type 2 diabetes mellitus with hypoglycemia without coma |
| E1165 | Type 2 diabetes mellitus with hyperglycemia |
| E1169 | Type 2 diabetes mellitus with other specified complication |
| 25081 | Diabetes with other specified manifestations, type I [juvenile type], not stated as uncontrolled | E10618 | Type 1 diabetes mellitus with other diabetic arthropathy |
| E10620 | Type 1 diabetes mellitus with diabetic dermatitis |
| E10621 | Type 1 diabetes mellitus with foot ulcer |
| E10622 | Type 1 diabetes mellitus with other skin ulcer |
| E10628 | Type 1 diabetes mellitus with other skin complications |
| E10630 | Type 1 diabetes mellitus with periodontal disease |
| E10638 | Type 1 diabetes mellitus with other oral complications |
| E10649 | Type 1 diabetes mellitus with hypoglycemia without coma |
| E1065 | Type 1 diabetes mellitus with hyperglycemia |
| E1069 | Type 1 diabetes mellitus with other specified complication |
| 25082 | Diabetes with other specified manifestations, type II or unspecified type, uncontrolled | E1165 | Type 2 diabetes mellitus with hyperglycemia |
| E1169 | Type 2 diabetes mellitus with other specified complication |
| 25083 | Diabetes with other specified manifestations, type I [juvenile type], uncontrolled | E1065 | Type 1 diabetes mellitus with hyperglycemia |
| E1069 | Type 1 diabetes mellitus with other specified complication |
| 25090 | Diabetes with unspecified complication, type II or unspecified type, not stated as uncontrolled | E118 | Type 2 diabetes mellitus with unspecified complications |
| 25091 | Diabetes with unspecified complication, type I [juvenile type], not stated as uncontrolled | E108 | Type 1 diabetes mellitus with unspecified complications |
| 25092 | Diabetes with unspecified complication, type II or unspecified type, uncontrolled | E1165 | Type 2 diabetes mellitus with hyperglycemia |
| E118 | Type 2 diabetes mellitus with unspecified complications |
| 25093 | Diabetes with unspecified complication, type I [juvenile type], uncontrolled | E1065 | Type 1 diabetes mellitus with hyperglycemia |
| E108 | Type 1 diabetes mellitus with unspecified complications |
|  | | E1100 | Type 2 diabetes mellitus with hyperosmolarity without nonketotic hyperglycemic‐hyperosmolar coma (NKHHC) |
| E1101 | Type 2 diabetes mellitus with hyperosmolarity with coma |
| E1121 | Type 2 diabetes mellitus with diabetic nephropathy |
| E1122 | Type 2 diabetes mellitus with diabetic chronic kidney disease |
| E1129 | Type 2 diabetes mellitus with other diabetic kidney complication |
| E11311 | Type 2 diabetes mellitus with unspecified diabetic retinopathy with macular edema |
| E11319 | Type 2 diabetes mellitus with unspecified diabetic retinopathy without macular edema |
| E11321 | Type 2 diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema |
| E11329 | Type 2 diabetes mellitus with mild nonproliferative diabetic retinopathy without macular edema |
| E11331 | Type 2 diabetes mellitus with moderate nonproliferative diabetic retinopathy with macular edema |
| E11339 | Type 2 diabetes mellitus with moderate nonproliferative diabetic retinopathy without macular edema |
| E11341 | Type 2 diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema |
| E11349 | Type 2 diabetes mellitus with severe nonproliferative  diabetic retinopathy without macular edema |
| E11351 | Type 2 diabetes mellitus with severe nonproliferative  diabetic retinopathy with macular edema |
| E11359 | Type 2 diabetes mellitus with proliferative diabetic  retinopathy without macular edema |
| E1136 | Type 2 diabetes mellitus with diabetic cataract |
| E1139 | Type 2 diabetes mellitus with other diabetic ophthalmic complication |
| E1140 | Type 2 diabetes mellitus with diabetic neuropathy,  unspecified |
| E1141 | Type 2 diabetes mellitus with diabetic mononeuropathy |
| E1142 | Type 2 diabetes mellitus with diabetic polyneuropathy |
| E1143 | Type 2 diabetes mellitus with diabetic autonomic  (poly)neuropathy |
| E1144 | Type 2 diabetes mellitus with diabetic amyotrophy |
| E1149 | Type 2 diabetes mellitus with other diabetic neurological complication |
| E1151 | Type 2 diabetes mellitus with diabetic peripheral  angiopathy without gangrene |
| E1152 | Type 2 diabetes mellitus with diabetic peripheral  angiopathy with gangrene |
| E1159 | Type 2 diabetes mellitus with other circulatory  complications |
| E11610 | Type 2 diabetes mellitus with diabetic neuropathic  arthropathy |
| E11618 | Type 2 diabetes mellitus with other diabetic arthropathy |
| E11620 | Type 2 diabetes mellitus with diabetic dermatitis |
| E11621 | Other specified diabetes mellitus with foot ulcer |
| E11622 | Other specified diabetes mellitus with other skin ulcer |
| E11628 | Other specified diabetes mellitus with other skin complications |
| E11630 | Other specified diabetes mellitus with periodontal disease |
| E11638 | Other specified diabetes mellitus with other oral complications |
| E11641 | Other specified diabetes mellitus with hypoglycemia with coma |
| E11649 | Other specified diabetes mellitus with hypoglycemia  without coma |
| E1165 | Other specified diabetes mellitus with hyperglycemia |
| E1169 | Type 2 diabetes mellitus with other specified  complication |
| E118 | Type 2 diabetes mellitus with unspecified complications |
| E119 | Type 2 diabetes mellitus without complications |
| E1300 | Other specified diabetes mellitus with hyperosmolarity  without nonketotic hyperglycemic‐hyperosmolar coma (NKHHC) |
| E1301 | Other specified diabetes mellitus with hyperosmolarity with coma |
| E1310 | Other specified diabetes mellitus with ketoacidosis  without coma |
| E1311 | Other specified diabetes mellitus with ketoacidosis with coma |
| E1321 | Other specified diabetes mellitus with diabetic  nephropathy |
| E1322 | Other specified diabetes mellitus with diabetic chronic kidney disease |
| E1329 | Other specified diabetes mellitus with other diabetic kidney complication |
| E13311 | Other specified diabetes mellitus with unspecified  diabetic retinopathy with macular edema |
| E13319 | Other specified diabetes mellitus with unspecified diabetic retinopathy without macular edema |
| E13321 | Other specified diabetes mellitus with mild  nonproliferative diabetic retinopathy with macular  edema |
| E13329 | Other specified diabetes mellitus with mild  nonproliferative diabetic retinopathy without macular edema |
| E13331 | Other specified diabetes mellitus with moderate  nonproliferative diabetic retinopathy with macular  edema |
| E13339 | Other specified diabetes mellitus with moderate  nonproliferative diabetic retinopathy without macular edema |
| E13341 | Other specified diabetes mellitus with severe  nonproliferative diabetic retinopathy with macular  edema |
| E13349 | Other specified diabetes mellitus with severe  nonproliferative diabetic retinopathy without macular edema |
| E13351 | Other specified diabetes mellitus with severe  nonproliferative diabetic retinopathy without macular edema |
| E13359 | Other specified diabetes mellitus with proliferative  diabetic retinopathy without macular edema |
| E1336 | Other specified diabetes mellitus with diabetic cataract |
| E1339 | Other specified diabetes mellitus with other diabetic ophthalmic complication |
| E1340 | Other specified diabetes mellitus with diabetic  neuropathy, unspecified |
| E1341 | Other specified diabetes mellitus with diabetic  mononeuropathy |
| E1342 | Other specified diabetes mellitus with diabetic polyneuropathy |
| E1343 | Other specified diabetes mellitus with diabetic  autonomic (poly)neuropathy |
| E1344 | Other specified diabetes mellitus with diabetic  amyotrophy |
| E1349 | Other specified diabetes mellitus with other diabetic neurological complication |
| E1351 | Other specified diabetes mellitus with diabetic peripheral angiopathy without gangrene |
| E1352 | Other specified diabetes mellitus with diabetic peripheral angiopathy with gangrene |
| E1359 | Other specified diabetes mellitus with other circulatory complications |
| E13610 | Other specified diabetes mellitus with diabetic  neuropathic arthropathy |
| E13618 | Other specified diabetes mellitus with other diabetic arthropathy |
| E13620 | Other specified diabetes mellitus with other diabetic arthropathy |
| E13621 | Other specified diabetes mellitus with other diabetic |
| E13622 | Other specified diabetes mellitus with other skin ulcer |
| E13628 | Other specified diabetes mellitus with other skin  complications |
| E13630 | Other specified diabetes mellitus with periodontal  disease |
| E13638 | Other specified diabetes mellitus with other oral  complications |
| E13641 | Other specified diabetes mellitus with hypoglycemia with coma |
| E13649 | Other specified diabetes mellitus with hypoglycemia without coma |
| E1365 | Other specified diabetes mellitus with hyperglycemia |
| E1369 | Other specified diabetes mellitus with other specified complication |
| E138 | Other specified diabetes mellitus with unspecified  complications |
| E139 | Other specified diabetes mellitus without complications |