Janssen Research & Development *

Clinical Protocol

Incidence of Diabetic Ketoacidosis among Patients with Type 2 Diabetes Mellitus Treated with SGLT2 inhibitors or Other Antihyperglycemic Agents- A Retrospective, Observational, New-User Cohort Study Using 4 Administrative Claims Databases in the US

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LIST OF ABBREVIATIONS

AE	adverse events
AHA	antihyperglycemic agents
AHRQ	Agency for Healthcare Research and Quality
AUC	area under the receiver operating characteristics curve
BMA	Bayesian model averaging
Cana	canagliflozin
CCD	cyclic coordinate descent
CCI	Charlson comorbidity index
C-CO	case-crossover
CDM	Common Data Model
CI	confidence interval
CPT	current procedure terminology
Dapa	dapagliflozin
DKA	diabetic ketoacidosis
DPP-4(i)	dipeptidyl peptidase-4 inhibitors
DRS	disease risk score
DSC	drug safety communication
Empa	empagliflozin
EPS	exposure propensity score
FU	follow-up time
GAD	glutamic acid decarboxylase
GADA	antiglutamic acid decarboxylase autoantibody
GLP-1(a)	Glucagon-like peptide-1 agonists
HbA1c	hemoglobin A1c
HR	hazard ratio
ICA	islet cell autoantibodies
ICD-9	International classification of disease, version 9
LADA	latent autoimmune diabetes in adults
LASSO	least absolute shrinkage and selection operator
MI	Myocardial infarction
NDC	national drug codes
OMOP	Observational Medical Outcomes Partnership
OR	odds ratio
PH	proportional hazards
PS	propensity score
RLRM	regularized logistic regression model
RMP	risk management plan
ROC	receiver operating characteristics
RR	risk ratio, relative risk
SCCS	self-controlled case series
SDM	secondary diabetes mellitus
SGLT2	sodium-glucose co-transporter 2
SGLT2i	sodium-glucose co-transporter 2 inhibitors
SNOMED-CT	Systematized Nomenclature of Medicine--Clinical Terms
SU	sulfonylureas
T1DM	type 1 diabetes mellitus
T2DM	type 2 diabetes mellitus
TZD	thiazolidinedione
UGE	urinary glucose excretion
US	the United States

1. RESPONSIBLE PARTIES

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2. ABSTRACT

2.1. Rationale and Background (See Section 5 for the full version)

Diabetic ketoacidosis (DKA) is one of the serious acute metabolic complications of diabetes characterized by absolute or relative insulin deficiency (1), and its diagnostic criteria include hyperglycemia, acidosis, and ketosis (2). Most patients with DKA have autoimmune diabetes; however, patients with type 2 diabetes mellitus (T2DM) are also at risk under stressful conditions such as trauma, surgery, or infection (2).

On 15 May 2015, the United States (US) Food and Drug Administration (FDA) issued a Drug Safety Communication (DSC) that medicines for T2DM in the sodium glucose co-transporter 2 (SGLT2) inhibitor class of drugs may lead to ketoacidosis (3). There are 3 SGLT2 inhibitors (SGLT2i) that are currently approved in the US for the treatment of T2DM: canagliflozin, first approved in the US on March 29, 2013; dapagliflozin, approved in the US on January 8, 2014, empagliflozin, approved in the US on August 1, 2014. DKA and related events occurred at a low frequency in the T2DM clinical program for canagliflozin (note that DKA data from dapagliflozin and empagliflozin clinical programs are not yet published), and did not show statistically significant difference between canagliflozin and the comparators (4).

There is a lack of data for DKA incidence among T2DM from the literature, with most reports either combining T2DM with T1DM, or combining DKA with other short-term complications for diabetes (and also combining both T1DM and T2DM). The incidence also depends on age, sex, race/ethnicity, case definition, calendar time period, country of study sample, etc. DKA incidence has been reported roughly in the range of about 0.5 to 17 per 1,000 person-years (5-11), including cases of T1DM and T2DM combined, and cases presenting with DKA that led to the initial diabetes diagnosis, and cases almost exclusively ascertained from hospital settings.

2.2. Research Question and Objectives

To address the safety concern of DKA among patients with T2DM, this study will estimate and compare DKA incidence rates among patients with T2DM and newly treated with SGLT2i or other antihyperglycemic agents (AHAs) in the real world.

The primary objective is to compare DKA incidence between new users of SGLT2i (combined) and new users of other AHAs (a total of 7 comparator groups) among patients diagnosed with T2DM and having similar baseline characteristics. Secondary objectives include (1) comparison of DKA incidence rates between individual SGLT2i and other AHAs (a total of 7 comparator groups) among patients diagnosed with T2DM and having similar baseline characteristics, (2) estimation of DKA incidence rates among patients diagnosed with T2DM and newly treated with different AHAs (including individual SGLT2i separately and combined, and other AHA groups separately), (3) identification of potential precipitating events and evaluation of risk factors for incident DKA.

2.3. Study Design

A retrospective, observational, new-user cohort study will be conducted using 4 insurance claims databases in the US (See Section 6.4 below). A predictive model will be built to estimate the SGLT2i exposure propensity score (EPS), and an EPS pair-matched sample will be constructed to compare DKA incidence between new users of SGLT2i and new users of other AHAs.

2.4. Population

Patients diagnosed with T2DM and initiated on SGLT2i or other AHAs between April 1, 2013 and the most recent claims data available.

2.5. Data Sources

Truven commercial claims & encounters database; Truven Medicare Supplemental, Truven Medicaid, Optum Clinformatics (See Section 6.4 below).

2.6. Data Analysis

The crude incidence rates of DKA in the different AHA new-user groups will be estimated as the number of first incident DKA cases (i.e., counts of unique patients) divided by the total follow-up time at risk. Survival analysis of time to first incident DKA outcome will be conducted in the EPS-matched sample to estimate the hazard ratio comparing SGLT2i (combined and separately by individual SGLT2i) with other AHAs, adjusted for all potential confounders measured or derived at baseline by the Cox proportional hazards regression model, stratified on the EPS-matched sets.

3. MILESTONES

For the new analyses requested by PRAC, the milestones are outlined below, which (the dates) will be updated when the final agreement on study design is reached with PRAC.

Milestone:	Planned Date:	Actual Date:	Comments:
Start of data collection	18 April 2018	18 April 2018	
End of data collection	13 July 2018	TBD	
Study progress and interim report(s) of the study	N/A		
Registration in the EU PAS register	2 May 2018		Registered within 4 weeks after the study protocol is finalized
Final report of study results	08 October 2018	TBD	

For the analyses that were completed based on the original study protocol, the key milestones are outlined below:

Milestone:	Planned Date:	Actual Date:	Comments:
Start of data collection	25 June 2015	25 June 2015	Initial feasibility assessment checking in existing licensed databases
End of data collection	19 May 2016	14 Oct 2016	Data analyses are completed according to pre-specified study protocol
Registration in the EU PAS register			To be registered post-PRAC feedback.
Registration in the US	01 December 2015	17 December 2015	Registration with clinicaltrials.gov https://www.clinicaltrials.gov/ct2/show/NCT02636192.
Final report of study results	Q1, 2017		

4. RATIONALE AND BACKGROUND

Diabetic ketoacidosis (DKA) is one of the serious acute metabolic complications of diabetes characterized by absolute or relative insulin deficiency (1, 12), with an overall mortality rate of less than 5% in experienced healthcare centers (13). Insulin deficiency, increased insulin counter-regulatory hormones (cortisol, glucagon, growth hormone, and catecholamines) and peripheral insulin resistance lead to hyperglycemia, dehydration, ketosis, and electrolyte imbalance, which underlie the pathophysiology of DKA (1). According to a consensus statement from the American Diabetes Association (ADA), the diagnostic criteria of DKA include

hyperglycemia [blood glucose >250 mg/dl (13.9 mmol/l)], acidosis (arterial pH <7.3 and serum bicarbonate <15 mEq/l), and ketosis (moderate ketonuria or ketonemia) (2). DKA with mild hyperglycemia (some reported blood glucose <200 mg/dl (11.1 mmol/l) is relatively uncommon, but caloric restriction, starvation, persistent vomiting, and pregnancy can be contributory factors in its development (14-16). While DKA is a commonly recognized vulnerability in autoimmune diabetes, patients with T2DM are also at risk under stressful conditions such as trauma, surgery, or infection (2). In fact, studies have reported that patients with T2DM accounted for 12% to 56% of the DKA cases, had longer hospital stay, and higher mortality (which possibly was due to advanced age and comorbidities) compared with type 1 diabetes mellitus (T1DM) (13, 17).

On 15 May 2015, the United States (US) Food and Drug Administration (FDA) issued a Drug Safety Communication (DSC) that medicines for T2DM in the sodium glucose co-transporter 2 (SGLT2) inhibitor class of drugs may lead to ketoacidosis (3). There are 3 SGLT2 inhibitors (SGLT2i) that are currently approved in the US for the treatment of T2DM: canagliflozin, first approved in the US on March 29, 2013; dapagliflozin, approved in the US on January 8, 2014, empagliflozin, approved in the US on August 1, 2014. Based on analysis of 17,596 patients from randomized clinical trials of canagliflozin in subjects with T2DM through May 11, 2015, the incidence rates of serious adverse events of DKA and related events (ketoacidosis, metabolic acidosis, and acidosis) were 0.522, 0.763, and 0.238 per 1,000 patient-years in canagliflozin 100 mg, canagliflozin 300 mg, and comparator, respectively (corresponding number of DKA cases 4,6, and 2, respectively) (4). No statistically significant differences in the incidence rates were detected between the canagliflozin and comparator groups. Furthermore, after removing 6 DKA cases (3 on canagliflozin 300 mg and 3 on canagliflozin 100 mg) who turned out to have autoimmune diabetes (i.e., T1DM, latent autoimmune diabetes in adults (LADA), or glutamic acid decarboxylase (GAD) 65 antibody positivity), the DKA incidence rates were 0.130 and 0.381 per 1000 patient-years in canagliflozin 100 mg and canagliflozin 300 mg, respectively, with the comparator rate remaining at 0.238 per 1,000 patient-years (no cases found from comparator group had autoimmune diabetes). Eight of the ten cases from canagliflozin arms, and one of the two DKA cases from the comparator arm were taking insulin (4). To date, we have not found any publications of DKA incidence from the dapagliflozin and empagliflozin clinical trials.

There is a lack of data for DKA incidence among T2DM from the literature, with most reports either combining T2DM with T1DM, or additionally combining DKA with other short-term complications for diabetes (e.g., diabetes with hyperosmolarity). The incidence also depends on age, sex, race/ethnicity, case definition, calendar time period, country of study sample, etc. DKA incidence has been reported roughly in the range of about 0.5 to 17 per 1,000 person-years (5-11), including cases of T1DM and T2DM combined, cases presenting with DKA that led to the initial diabetes diagnosis, and cases almost exclusively ascertained from hospital settings. To the best of our knowledge, only one study reported DKA incidence specifically for T2DM, and the estimate of 0.5 per 1,000 per year was based on 8 lab-confirmed DKA cases during the 1997-2000 period from 4,041 adults with T2DM in a hospital catchment area in Northern Sweden (11). Using 4 large insurance claims databases in the US (described below in Section 6.4), the authors estimated DKA incidence in T2DM overall ranged from 0.32 to 2.00 per 1,000 person-years (See Annex 3, which has also been submitted as Attachment 7 of the FDA response document and issued in the

sponsor's ERIS system, Friday, June 12, 2015, as "JNJ-28431754_HA Response_GenCorrspndnc_Type 2 DiabetesMellitus_Pub_NOA_us_NDA_10959 EDMS-ERI-105525253"). In contrast, incidence of DKA among adults with T1DM has been reported that ranges from about 8 to 86 per 1,000 patient-years in the US, Europe and Israel (18).

Misclassification or misdiagnosis of autoimmune diabetes as Type 2 DM (or vice versa) is known to occur (19). For example, some patients initially diagnosed with T2DM are subsequently found to have LADA. The prevalence of LADA (sometimes incorrectly labeled as "Type 1.5 diabetes" in the literature) has been estimated to be about 10% of patients considered to have T2DM (20-23), with some suggesting between 6% and 50% of people considered to have T2DM (24) actually have LADA, depending on the different populations and tests (e.g., Islet cell antibodies (ICAs), GAD antibodies (GADAs)). DKA presentation may prompt the correct diagnosis of LADA in patients previously diagnosed with T2DM (25); ketosis-prone T2DM (sometimes referred to as Idiopathic Type 1 or Type 1b diabetes, Atypical Diabetes, Flatbush diabetes, phasic insulin-dependent diabetes) is another form characterized with episodic DKA without immunologic markers of T1DM (26), and needs to be considered in all non-white patients presenting with DKA, especially those from African-Caribbean, west African, and Hispanic backgrounds, although it has also been reported in white and other minority populations (27). There have also been case reports of DKA in 2 patients treated with dapagliflozin for T2DM that upon further investigation turned out to be type 3c diabetes (as the authors reported "characterized by negative autoantibodies", "low insulin and C-peptide concentrations", and "abnormal pancreatic imaging", with blood glucose levels of "10.4 mM (187 mg/dl)", and "5.9 mM (106 mg/dl)" for the 2 patients) (28). Case reports of DKA have been published in patients taking SGLT2i for T1DM (off-label use) as well as for T2DM (29). An important impediment in establishing adequate and effective management strategies is the lack of a good understanding of the disease development and of a clear definition (30) for these sub-types or forms of diabetes. To further complicate research, incomplete and incorrect coding, as well as misdiagnosis of diabetes types may be common in primary care (31-33). Therefore we developed operational definitions for T2DM to differentiate from autoimmune diabetes overall based on published algorithms for administrative data (34-37), electronic health records (EHR) data (38, 39), as well as other data settings (40).

Some biological hypotheses have been proposed that SGLT2 inhibitors may directly or indirectly increase the risk of DKA through their effects on ketone body metabolism (41). However, such effects have not been established in animal models or in humans. In February 2016, the EMA confirmed recommendations to minimize the risk of DKA in T2DM patients taking SGLT2 inhibitors. An Article 20 Referral procedure concluded that DKA is a serious complication of diabetes; rare events of DKA, including life-threatening ones, have occurred in patients taking SGLT2 inhibitors for T2DM and a number of these cases have been atypical, with patients not having blood sugar levels as high as expected.(42) The PRAC also considered that "DKA with atypical presentation" should be added as an important identifiable risk to the Risk Management Plan (RMP) of SGLT2 inhibitors. Following these recommendations, further evaluation of DKA in T2DM patients taking SGLT2 inhibitors are needed to clarify the mechanism behind possible

SGLT2 inhibitors-induced DKA and to characterize important identified risk of DKA with atypical presentation.

5. RESEARCH QUESTION & OBJECTIVES

5.1. Research Question

- What are incidence rates of DKA among 'real-world' patients diagnosed with T2DM taking various AHAs, including SGLT2i?
- Is SGLT2i treatment associated with a higher incidence of DKA hospitalization compared with other AHAs among patients with T2DM having similar baseline characteristics?

5.2. Objectives

5.2.1. Primary Objective(s):

- To compare the incidence of DKA among patients diagnosed with T2DM and pair-matched on exposure propensity scores for new use of any SGLT2i versus new use of various other AHAs, including 1). SU, 2). DPP-4 inhibitors, 3). GLP-1 agonists, 4). thiazolidinediones (TZDs), 5). insulin, 6). metformin, and 7). insulinotropic AHAs combined as one group (DPP-4, GLP-1, SU, nateglinide, repaglinide).

5.2.2. Secondary Objective(s):

- To compare the incidence of DKA among patients diagnosed with T2DM and pair-matched on exposure propensity scores for new use of individual SGLT2i (primarily canagliflozin) versus new use of various other AHAs, including 1). SU, 2). DPP-4 inhibitors, 3). GLP-1 agonists, 4). thiazolidinediones (TZDs), 5). insulin, 6). Metformin, and 7). insulinotropic AHAs combined as one group (DPP-4, GLP-1 SU, nateglinide, repaglinide), 8) other AHAs
- To estimate the incidence rate of DKA for new users of SGLT2i and new users of other AHAs among patients diagnosed with T2DM. New users to the following 8 groups of AHAs will be studied: SGLT2 inhibitors (both combined and separately by individual SGLT2i), sulfonylureas (SU), DPP-4 inhibitors (DPP4i), GLP-1 agonists, thiazolidinediones (TZDs), insulin, metformin, and insulinotropic AHAs combined as one group (DPP-4, GLP-1 SU, nateglinide, repaglinide), other AHAs.
- To estimate and compare the incidence of DKA among patients with T2DM, stratified by age group, sex, history of DKA, and insulin use, respectively
- To identify potential precipitating events and evaluate risk factors for incident DKA.

6. RESEARCH METHODS

6.1. Study Design

This study will be an overall retrospective, observational, new-user cohort study using 4 large administrative claims databases in the US. Cohort studies allow direct estimation of incidence rates following exposure of interest, and the new-user design (43) can capture early events following treatment exposures while avoiding confounding from previous treatment effects. New use allows for a clear exposure index date designation, but patients new to one drug or drug class

can be prevalent users of other AHAs. Retrospective, observational studies using automated databases employ existing large datasets efficiently at lower resource costs, and typically in a more timely manner compared with prospective cohort creation and follow-up. Comparison across different therapeutic alternatives under appropriate context can help inform treatment decisions and risk management.

The main exposure group of interest is the SGLT2 inhibitor (SGLT2i) drug class, which for this study includes canagliflozin (approved in the US on March 29, 2013), dapagliflozin (approved in the US on January 8, 2014), and empagliflozin (approved in the US on August 1, 2014). The study period extends from April 1, 2013 to end of claims data availability in each of 4 the databases in the US (specified in Section 6.4, the most recent data available at the time of the analysis). The overall or unadjusted (or crude) DKA incidence will be estimated for new users of SGLT2i (combined and separately by individual SGLT2i), metformin, SU, TZDs, DPP-4i, GLP-1 agonists, insulin and other miscellaneous AHAs (see Section 6.3.1.1 for detail, and Annex 2 for drug ingredient list). The AHA drugs and classes are chosen because they are the main pharmacotherapies for the management of patients with T2DM in the US (44). Separate analysis by individual SGLT2i will focus on canagliflozin in this study. The category of other miscellaneous AHAs is used to capture all diverse antihyperglycemic medications that are not commonly used (combined prevalence below 5% among patients with T2DM in the US National Health and Nutrition Survey (NHANES) 2005-2012, data not shown).

New use of AHAs during the study period will be defined as no prior exposure to the drug or drug class in question during all available enrollment history, which is required to be at least 12 months immediately prior to the new use. This definition is intended to approximate true initial exposure to the AHAs in question, while balancing impact on sample size. For example, a considerable proportion of patients were found to resume their previous AHA therapies after a break of at least 6 months. It is possible that some patients may have had prior use of an AHA more than 12 months ago. In a patient's entire treatment history for T2DM (including history that is not captured by the available enrollment history), new use as defined above may represent initiating (as initial, add-on or switching therapy) or resuming the AHA in question after a gap of at least 12 months.

Because combination therapies are common in T2DM, a new user could be simultaneously taking medications from more than 1 of the 8 AHA groups, including non-fixed or fixed dose combinations (FDC). New users of AHA combinations will be checked to see if they qualify as new users to each individual AHA component, i.e., non-AHA components such as statins will be considered as co-meds only rather than as new type of AHA. For example, if a new user of DPP-4i and metformin FDC was taking metformin any time in the past, the patient will be considered as a new user of DPP-4i and a prevalent user of metformin; if a new user of TZD and SU FDC was taking SU any time in the past, the patient will be considered as a new user of TZD. New users of both an SGLT2i and a non-SGLT2i AHAs in combination (as FDC or as separate prescriptions on the same day) will be considered as, and grouped with, new users of SGLT2i (the non-SGLT2i co-meds will be recorded as a baseline covariate). New-users to 2 or more non-SGLT2i AHA groups (FDC or not) will form an additional exposure group if the number of such new-users make

up ≥5% of the total final analytic cohort. Otherwise, these 'combo' new-users will be grouped with new users of the other miscellaneous AHAs.

A cohort creation flowchart is shown in Figure 1 in Section 10.

In each database, all subjects with at least 1 AHA prescription during the study period of between April 1, 2013 and end of claims data availability (the most recent data available at the time of the analysis) inclusive will be identified. Those who had 1 or more SGLT2i prescriptions will be identified, and the date of the first SGLT2i prescription will be designated as the index date of cohort entry for the individual patients.

For the remaining subjects without any SGLT2i prescriptions, the first (i.e., the earliest by calendar date) AHA prescription claim during the study period that is preceded immediately by at least 12 months of continuous enrollment (with prescription drug coverage) will be identified. Classify each of the prescribed AHAs on the first script into one of the 7 non-SGLT2i index AHA groups, and check if one or more of the first prescribed AHAs qualifies as new use as defined above (i.e., no prescriptions in the same AHA group any time prior, or new to the drug or drug class according to all available claims records in the entire enrollment history, which may exceed the required minimum of 12 months). If the first AHA prescription does not qualify as new use, search the subsequent AHA prescriptions consecutively until one qualifying as new use is found (exclude if none exists or qualifies). Designate the date of the first AHA prescription that qualifies as new use as the index date for cohort entry, and record the index drug(s) as well as the index AHA drug group for each individual patient.

New users of SGLT2i, and new users of other AHAs identified above will be included for analysis if they have met all inclusion/exclusion criteria specified in Section 6.2.3, and Section 6.2.4.

Given concerns over miscoding and misdiagnosis of ambiguous phenotypes in T2DM, we have developed 2 algorithms to define T2DM in the insurance claims databases. One "broad" algorithm requires T2DM diagnosis, and no diagnosis of T1DM as well as no diagnosis of secondary diabetes (SDM) (45) ***any time prior to or on*** the index AHA exposure date. This broad algorithm is aimed at capturing all patients who appeared to have T2DM, including those patients who may have been misdiagnosed as T2DM but later corrected to a diagnosis of T1DM or SDM for any reasons, especially DKA presentation after exposure index. The other "narrow" algorithm builds on the "broad" algorithm, but further requires (1) no T1DM or SDM diagnosis **after** (**in addition to** no T1DM diagnosis and no SDM diagnosis **before or on**) exposure index date (i.e., only T2DM diagnosis but no T1DM diagnosis and no SDM diagnosis anytime throughout all enrollment records), (2) not taking insulin mono-therapy any time prior to exposure index date, and (3) age 40 or above on exposure index date. The "narrow" algorithm is aimed to approximate "bona fide" T2DM. Operationally, exclusion of insulin mono-therapy users was achieved by keeping otherwise eligible patients who did not use insulin at all, and those who used insulin in combination with non-insulin therapies that are considered as T2DM-specific AHAs (i.e., the same drugs that make up the 6 AHA groups other than SGLT2i and insulin). Differences in the results between the broad and narrow T2DM definitions can inform the potential extent that SGLT2i drugs relative to other AHAs may reveal hidden autoimmune diabetes from among the

phenotypic T2DM, including perhaps some through DKA presentation unfortunately. Limitations of these algorithms are discussed in Section 6.9.2 (Discussion bullet point 2). A graphical illustration is provided in Section 10, Figure 2.

The primary outcome is the first incident DKA diagnosis over the study period that is recorded in hospital or emergency room (ER) (3) claims (see Section 6.3.1.2 "Outcome").

Cohort follow-up starts from the drug exposure index date (time origin for analysis), and ends at first incident DKA diagnosis by hospital or ER claims, disenrollment, or end of database coverage date, whichever comes first. During the study follow-up, new users may discontinue the index drug, add or switch to other AHAs that qualify as new use-- any such occurrences will be identified. In a sensitivity analysis, censoring will be applied to new use of non-index AHAs at time of treatment switch and discontinuation of the index drug, defined by the first refill gap of 90 days for the index drug. Refill gap is calculated from the day the index AHA supply from the previous prescription is expected to run out (based on recorded or imputed median days-supplied). To assess the robustness of using different refill gap in analysis, we will also compare the number of cases, time-at-risk, and event incidence rates using different thresholds for the refill gap (60 and 120 days). Descriptive data will be provided. Therefore, the primary follow-up time analysis may be considered as an observational study analogue of the ***intent-to-treat*** analysis in randomized clinical trials, the sensitivity analysis as an observational study analogue of the ***per protocol*** analysis. Without baseline randomization, it is not known in general which of these 2 types of analyses is more robust to bias in observational studies. The primary analysis will compare DKA incidence between new users of SGLT2i (combined) and new users of other AHAs (a total of 7 comparator groups) in T2DM patients with similar baseline characteristics according to estimated propensity scores. It is important to recognize that patients in the real-world practice are not randomized to different treatments, the choice of which may depend on various factors, such as tiered insurance coverage, local or national guidelines, patient-specific characteristics, physician preference, etc. For example, metformin is the recommended initial therapy for T2DM (44, 46), while other AHAs (including SGLT2i drugs) are commonly added later during disease progression, and some drugs may not even be on drug formulary in some insurance plans during the study period. New users to the different drugs or drug classes are thus likely at different stages in their disease course and treatment. Therefore any differences in the estimated crude DKA incidence rates across the 8 AHA groups will also reflect (i.e., confounded with) the differences among these patients before treatment. Of note, based on our prior experience, patients receiving metformin as new prescriptions are typically representing a different patient population from new users of SGLT2i or other non-SGLT2i AHA therapies, e.g., different patient characteristics and different disease stage. As a result, there could be difficulties to find an appropriate match for comparison. Diagnostic test will be performed prior to formal analyses and analyses will be conducted only if a matched cohort can be satisfactorily identified. Each SGLT2i new user will be matched 1:1 to new users of other AHAs based on exposure propensity score (EPS).

The 4 insurance claims databases represent different populations in terms of demographics and insurance types (see Section 6.4). However, we will evaluate if it is appropriate to generate a "pooled" summary estimate of the hazard ratio (HR) for DKA comparing SGLT2i with other AHA

therapies across the 4 databases. If considered appropriate clinically, and if I-squared is less than 75% (47), a pooled estimate will be provided using a random effects approach to the weighting and combining of the estimates (48). Reasons for heterogeneity of results (if any) across the 4 databases will be examined.

6.2. Setting and Study Population

6.2.1. Study Setting

Patients with T2DM who had prescription claims for AHAs will be identified from 4 large administrative claims databases in the US. Data from adjudicated health insurance claims will be used to identify all drug exposure, medical conditions, and procedures.

6.2.2. Study Population

- Men and women who are new users of SGLT2 inhibitors (alone or in combination with other AHAs), or other AHAs during the period from April 1, 2013 to end of database (the most recent data available at the time of the analysis).
- Index date is designated as the date of the first prescription that qualifies for new use (i.e., no prior use ever) of SGLT2i or other AHAs during the study period that is preceded by at least 12 months of continuous enrollment. These patients are new to the index drug or drug class but can be prevalent users of other AHAs.
- Broad definition for T2DM requires diagnosis of T2DM but no T1DM or SDM (ICD-9 codes in Annex 1) on or before exposure index date. The broad definition represents all patients considered to be T2DM when they newly took (or initiated) the index AHA.
- Narrow definition for T2DM further requires no diagnosis of T1DM or SDM after (in addition to on or before) index drug exposure, and excludes patients taking insulin monotherapy before index drug exposure, as well as excludes patients with age <40 years on exposure index date. The narrow definition is aimed to approximate 'bona fide' T2DM patients, and the focus is to remove any potential autoimmune diabetes, even at the expense of excluding some true T2DM.

6.2.3. Subject Selection: Inclusion Criteria

- The inclusion/exclusion process is illustrated in the flowchart (Figure 1, Section 10). The study period is defined between 4/1/13 and the most recent data available at the time of the analysis. The first SGLT2 inhibitor (i.e., canagliflozin) was approved in the US on March 29, 2013. Lagging in insurance claims adjudication and database update results in different end of data availability in the 4 databases.
- The 12-month continuous enrollment immediately prior to new use (or exposure index) of the AHAs is considered as baseline, which is required for capturing at least some basic information about the patients for any meaningful analysis. Some patients may have more than 12 months of available enrollment history, which will be used to check for any prior AHA exposures and any prior DKA history. Other characteristics (including diagnosis of various comorbidities, non-AHA prescriptions, procedures) will only be obtained within the 12 months of baseline period.

6.2.4. Subject Selection: Exclusion Criteria

Diabetes mellitus (DM) is not a single entity, and the ICD-9, ICD-10, and other diagnosis codes for DM include T1DM, T2DM, and SDM (provided in Annex 1). In the broad T2DM definition, we exclude patients who were already known to have T1DM and/or SDM ***prior to*** **or on** the index date. In the narrow T2DM definition, we additionally exclude patients who receive diagnosis of T1DM and/or SDM any time after index date, who took insulin monotherapy before index drug exposure, and patients with age <40 years on exposure index date.

6.2.5. Subject Selection: Matching and Other Sampling Techniques

To compare DKA incidence between new users of SGLT2i and new users of other AHAs in patients with similar baseline characteristics, each SGLT2i new user will be matched 1:1 to new users of other AHAs based on estimated exposure propensity score (EPS). Large scale EPS will be estimated using regularized logistic regression models (RLRM) (49) with the dependent variable being SGLT2i new user (yes vs no), and independent variables including all potential baseline confounders available from the databases as candidate predictors, including demographics, baseline comorbidities and medications, as well as procedures. The optimal regularization hyper-parameters will be estimated using 10-fold cross-validation. Baseline variables will be evaluated based on claims data in the 12 months prior to exposure index date. For completeness, history of DKA and AHA use will include **all available enrollment records prior to** the exposure index date. To avoid over-fitting models and to accommodate a large number of predictors, the RLRM will be fit using a cyclic coordinate descending (CCD) method with L1 penalty (i.e., least absolute shrinkage and selection operator (LASSO)) (50). Covariates with non-zero coefficients in the model will be manually evaluated for potential instrumental variables (51). Conventional greedy algorithms with nearest neighbor matching minimizing the absolute difference between EPS will be used for matching (52). Empirical distribution of the estimated EPS will be plotted according to the index AHA exposure groups. Maximum matching caliper of the propensity score (on the logit scale) will be 20% of the standard deviation of the logit of the propensity scores (53), and we will record how many (if any) SGLT2i new users fail to find a match. Standardized differences will be tabulated across potential confounders to evaluate the matching effectiveness.

The estimated EPS allows understanding about which measured baseline characteristics predicts new use or exposure to SGLT2i versus other AHAs, in addition to balancing overall measured baseline confounders, although not necessarily (and unlikely) balancing on all individual variables that are functional components of the EPS (54). Residual confounding likely remains even after EPS matching on measured baseline variables, and we will additionally adjust for these individual baseline covariates in the Cox regression models. Similar to regularized logistic regression to overcome dimensionality issue in predicting EPS, regression coefficients will be regularized on all covariates except for main exposures of interest (including AHAs, and history of DKA).

A sensitivity analysis will be conducted to evaluate potential heterogeneity of any association between SGLT2i and DKA incidence across the EPS quantiles.

Based on our prior experience, patients receiving metformin as new prescriptions are typically representing a different patient population from new users of SGLT2i or other non-SGLT2i AHA

therapies, e.g., different patient characteristics and different disease stage. As a result, there could be difficulties to find an appropriate match for comparison. Similar to metformin, we have found very different prescribing pattern for SU compared with other AHAs, particularly SGLT2i. Most new users of SU were either treatment-naïve or have only taken metformin before, while most new users of other non-metformin AHAs have had at least 2 different non-index AHAs before. Prior to formal analyses, diagnostic test will be performed to evaluate whether the baseline covariates are well balanced between the target and comparator cohorts.

6.3. Variables

6.3.1. Variables for Analytical Studies

6.3.1.1. Exposure

Prescriptions for SGLT2i and other AHAs will be identified. A list of drug ingredients is provided in Annex 2. Initial dosage form for the SGLT2i drugs (canagliflozin 100 mg/tablet or 300 mg/tablet, dapagliflozin 5 mg/tablet or 10 mg/tablet, empagliflozin 10 mg/tablet or 25 mg/tablet) will be evaluated where available (some drug codes do not contain dosage information). Sub-analysis by dosage form of the prescribed SGLT2i will be conducted if feasible (i.e., at least 10 DKA events on a specific dosage).

6.3.1.2. Outcome

The primary outcome is the first incident DKA diagnosis over the study period that is recorded in hospital or emergency room (ER) (3) claims. ICD-9, ICD-10, and other diagnostic codes for DKA (including DKA in T2DM, T1DM, or SDM) are provided in Annex 1. To address potential bias due to misclassification of the DKA outcome (55), particularly when some DKA cases only had ER-diagnoses without hospital admission (deaths during ER encounters are not captured in the claims data), we a priori specify a sensitivity analysis that is restricted to DKA cases identified by inpatient diagnosis (56) in the claims databases. To avoid misclassification of a prevalent event (i.e., an existing event before the exposure) as an incident outcome, if there exists a DKA event prior to the exposure index date (i.e., history of DKA or pre-index DKA), the first incident DKA on or after exposure index date will only qualify as an outcome if it happens at least 30 days after the pre-index DKA (i.e., the first post-exposure DKA must not be a continuation of a pre-index DKA episode). We will record how many (if any) of DKA events are not qualified by this requirement.

Preliminary evaluation of claims records for DKA diagnosis in outpatient settings indicates poor reliability (i.e., lacking records of symptoms, diagnostic and treatment procedures, as well as potential precipitating events or other healthcare encounters that indicate true DKA). Therefore, we defined the first incident inpatient or emergency room (ER) DKA diagnosis (3) as the primary DKA outcome.

Due to lack of access to medical records, an empirical review of the insurance claims data for DKA cases was conducted to understand potential issues with this DKA definition. A detailed empirical evaluation of the insurance claims data for about 40 randomly selected DKA cases was conducted as follows: Janssen clinicians (Mehul Desai, and Don Sun) were blinded to the AHA treatment

exposures (except for insulin) of these DKA cases identified from the cohort, and reviewed all other claims (including non-AHA prescriptions, procedures, diagnosis, etc.) of the DKA cases. The focus for the empirical DKA case review was to check for potential data quality issues, and to inspect the claims for any supporting evidence for or against the DKA occurrence, including the presence or absence of symptoms (e.g., dehydration/volume depletion, nausea, vomiting, abdominal pain), diagnostic procedures (e.g., blood gas analysis (including arterial blood gases or venous blood gases), electrolyte, basic metabolic panel, osmolarity, ketone panels (e.g., β-hydroxybutyrate (β-OH)/acetoacetate), complete blood count with differential, urinalysis and urine ketones by dipstick, treatment (e.g., fluid supplement, insulin infusion, bicarbonate administration), and potential triggering events (e.g., recent infections, hospitalizations, MI, surgeries, pump failure). Note that the use of insulin for the treatment of DKA in the ER or hospital setting is separate from insulin prescriptions in the prescription drug claims. Many relevant diagnostic and/or treatment procedures are also not available (one possibility is that bundled hospital services may not require listing of the individual procedures for claims filing). Therefore it is not possible to adjudicate whether DKA occurred or not based on the claims data.

In addition, since the laboratory test and data are not systematically collected in the claim database used for this study, the laboratory results are only available to a small proportion of patients (voluntarily reported) and may not be representative of the patient cohort to be studied. Furthermore, to our knowledge, many patients who were diagnosed with DKA while receiving SGLT2i therapy seem atypical (i.e., plasma glucose < 250 mg/dL). Therefore, we will not use the laboratory results as part of definition to identify DKA cases for this analysis. However, we will check the availability of relevant laboratory test results (particularly the measures of plasma glucose, arterial pH, serum bicarbonate, and urine ketones) for all identified DKA cases in our databases. As an exploratory exercise, we will explore concordance between DKA diagnosis based on diagnostic codes and based on available laboratory testing results, and the extent to which we can categorize the cases into typical and atypical DKA. We will perform descriptive analysis on typical, atypical, and unknown DKA cases if it is feasible.

6.3.1.3. Potential Confounders

We will evaluate the following variables as potential confounders: age, sex, history of acidosis, diabetic ketoacidosis, acute/chronic pancreatitis, pancreatectomy, acute medical illnesses involving the cardiovascular system (myocardial infarction, stroke, acute thrombosis) and gastrointestinal tract (bleeding), diseases of endocrine axis (acromegaly, Cushing's syndrome, hyperthyroidism, hypothyroidism), recent surgical procedures, eating disorder, alcoholism, substance abuse, insulin use, urinary tract infections (UTI), upper respiratory tract infections, sepsis, any other infections (e.g., pneumonia), previous hospitalizations, autoimmune diseases, other thyroid disorders, any pancreatic disorders, vaccination, pulmonary embolism, hyperlipidemia, hypertriglyceridemia, medications such as diuretics, beta-blockers, corticosteroids, second-generation anti-psychotics, and/or anti-convulsants (may affect carbohydrate metabolism and volume status) (1), didanosine, tetracycline, sulfonamides, frequency of healthcare encounters.

6.3.1.4. Other Variables

6.3.2. Variables for Descriptive Studies

Demographics: age, sex

Medical history: all diagnoses, procedures, conditions and observations that are available from the insurance claims

Co-meds: all concomitant and history of medications (AHAs and other prescriptions)

Precipitating events and risk factors for diabetic acidosis (e.g. prior insulin therapy, prior surgeries, applied SGLT2i doses)

Other: Length of enrollment history captured in the databases, frequency of healthcare encounters during the baseline (i.e., within **12** months of exposure index date), season/months in which DKA outcomes occurred will be described. Winter season for this study is defined as calendar date from November 1 to December 31, and January 1 to end of February (57, 58). Other derived or summary variables such as the Charlson Comorbidity Score (59), diabetes complications severity index (DCSI) (60) will also be considered for EPS estimation and regression model adjustment.

6.4. Data Sources

6.4.1. Describe Data Source(s)

We will use data from 4 large US insurance claims databases: Truven MarketScan Commercial Claims and Encounters (CCAE), Truven MarketScan Medicare Supplemental (MDCR), Truven MarketScan Medicaid (MDCD), Optum Clinformatics (OPTUM).

Truven MarketScan Commercial Claims and Encounters (CCAE)

Truven MarketScan CCAE is an administrative health claims database for active employees, early retirees, COBRA continues, and their dependents insured by employer-sponsored plans (individuals in plans or product lines with fee-for-service plans and fully capitated or partially capitated plans). It captures person-specific clinical utilization, expenditures, and enrollment across inpatient, outpatient, prescription drug, and carve-out services. It also includes results for outpatient lab tests processed by large national lab vendors. Health Reimbursement Arrangement (HRA) data is available. Strengths of this database includes (1) large population representative of commercially insured patients in U.S.; (2) members maintain their same identifier even if they leave the system for a brief period of time; (3) both inpatient and outpatient claims are provided; (4) data exhibits consistency over time; enrollment, inpatient, and outpatient trends remain similar over the years. Limitations of this database includes (1) the commercially insured patients represent a higher socioeconomic status than the overall U.S. population; (2) some members are enrolled in plans with only medical coverage; (3) exact birth date is not available, only year of birth; (4) data based on financial claims filed for reimbursement, disease coding may reflect financial incentives for reimbursement rather than clinically and systemically verified definitions; (5) prescriptions are those filled, not those prescribed. We do not know the universe of prescribed

records that went unfulfilled; (6) there is data lag, MarketScan only sends records that are 100% paid, which can take about 6 months after year end.

For this study, CCAE claims data from 1/1/2000 to the most recent data available at the time of the analysis (at least the end of 2016).

Truven MarketScan Medicare Supplemental (MDCR)

Truven MarketScan MDCR is an administrative health claims database for Medicare-eligible active and retired employees and their Medicare-eligible dependents from employer-sponsored supplemental plans (predominantly fee-for-service plans). Only plans where both the Medicare-paid amounts and the employer-paid amounts were available and evident on the claims were selected for this database.

The database captures person-specific clinical utilization, expenditures, and enrollment across inpatient, outpatient, prescription drug, and carve-out services. It also includes results for outpatient lab tests processed by large national lab vendors.

The following limitations of Truven MDCR should be noted: The commercially insured patients represent a higher socioeconomic status than the overall Medicare population; Some members were enrolled in plans with only medical coverage; Exact birth date is not available, only year of birth; Data based on financial claims filed for reimbursement, disease coding my reflect financial incentives for reimbursement rather than clinically and systemically verified definitions; Prescriptions are those filled, not those prescribed. We do not know the universe of prescribed records that went unfulfilled; There are data lag, MarketScan only sends records that are 100% paid, which can take about 6 months after year end.

For this study, MDCR claims data from 1/1/2000 to the most recent data available at the time of the analysis (at least the end of 2016).

Truven MarketScan Medicaid (MDCD)

Truven MarketScan Medicaid database is an administrative health claims database for Medicaid-eligible active and retired employees and their Medicaid-eligible dependents from employer-sponsored supplemental plans (predominantly fee-for-service plans). Only plans where both the Medicaid-paid amounts and the employer-paid amounts were available and evident on the claims were selected for this database. The data captures person-specific clinical utilization, expenditures, and enrollment across inpatient, outpatient, prescription drug, and carve-out services. The following limitations of Truven MDCD should be noted: No state information is available. Exact birth date is not available, only year of birth. Some members were enrolled in plans with only medical coverage. Lab tests processed by large national lab vendors are not available for MDCD patients. Members eligible for Medicaid may have incomplete data. Data based on financial claims filed for reimbursement, disease coding may reflect financial incentives for reimbursement rather than clinically and systemically verified definitions. Prescriptions are those filled, not those prescribed. We do not know the universe of prescribed records that went unfulfilled. There is data lag, MarketScan only sends records that are 100% paid, which can take about 6 months after year end.

For this study, MDCD claims data from 1/1/2006 to the most recent data available at the time of the analysis (at least the end of 2016).

Optum ClinFormatics (Optum)

Optum ClinFormatics (Optum) is a longitudinal claims-based database comprised of United Healthcare (UHC) fully insured patients, UHC administrative services only, Medicaid, and legacy Medicare Choice membership and claims. Data available include integrated enrollment, medical and prescription claims data. We used the OMOP common data model with data from October 2005 through 2013 covering more than 36 million lives.

The following limitations of the Optum database should be noted: Family enrollment, death, capitated plan information and exact birth date are not available. Incomplete cost data: net pay from insurer as well as total allowed pay are not available. Definition of inpatient encounters is not consistent over the years with limited members from Medicaid and Medicare population. Data based on financial claims filed for reimbursement, disease coding may reflect financial incentives for reimbursement rather than clinically and systemically verified definitions. Prescriptions are those filled, not those prescribed. We do not know the universe of prescribed records that went unfulfilled.

For this study, Optum claims data from 1/1/2005 to the most recent data available at the time of the analysis (at least the end of 2016).

All 4 databases used in this study have been converted to Observational Medical Outcomes Partnership (OMOP) Common Data Model (CDM http://omop.org/cdm) version 5.0, which includes a standard representation of health care experiences (such as information related to drug utilization and condition occurrence), as well as common vocabularies for coding clinical concepts and enables consistent application of analyses across multiple disparate data sources (61).

6.5. Sample Size and Study Power

The sample size of the cohorts based on currently available data is listed below. These patient counts represent the initial population, prior to statistical adjustment, so provide an upper bound of exposure available for each analysis.

cohort name	CCAE	MDCD	MDCR	Optum
New users of SGLT2i	127,055	7,630	14,892	55,103
new users of canagliflozin	75,122	6,534	11,088	40,602
new users of any DPP-4 inhibitor	119,098	15,963	32,256	75,790
new users of any GLP-1 agonist	75,732	7,895	9,455	36,718
new users of any TZD	29,980	4,040	6,774	24,961
new users of any SU	130,809	21,986	32,165	90,952
new users of insulin	86,725	23,231	23,446	62,022
new users of metformin	283,027	41,344	54,743	177,631
new users of insulinotropic AHAs (DPP-4, GLP-1, SU, nateglinide, repaglinide)	195,431	30,047	41,441	121,617

For population-level effect estimation, where our aim is to produce an unbiased estimate of the average treatment effect, the precision we will achieve will vary by the incidence rate of each outcome. Because our focus is to estimate the magnitude of the effect, it is acceptable to be underpowered for the analyses, recognizing that this will manifest as wider confidence intervals that account for the random sampling error inherent to the analysis.

Note that we will not pool the raw data across the 4 databases for analysis. Combining the summary results across from the 4 databases (specified as in Section 6.1) will only improve precision of the HR estimate as an weighted average of the individual HRs estimated from the 4 databases.

6.6. Data Management and Data Preparation

The data used for this study are licensed through external data vendors. All patient-level data are de-identified by the vendor prior to receipt, and upon receipt, are stored in a secure server infrastructure hosted within Johnson & Johnson's internal network. Data access requires approved user authentication. Data are stored and maintained in relational database management systems (AWS Redshift and Microsoft Analytics Platform System [APS] database appliance). All databases are standardized to the OMOP Common Data Model v5.0.1 (http://omop.org/CDM), where data quality assessment is performed on the source data prior to analysis.

The internal Epidemiologic Data Analytical Group is responsible for data management and preparation for the analyses specified in this protocol. All analyses are performed using SQL and R through standardized tools from Observational Health Data Sciences and Informatics (OHDSI) and custom programming. All analyses will be led by a statistical programmer, and a different analyst will review source code and results to assess the quality independently. All aggregate

summary results generated from patient-level data are archived, along with source code and associated documentation, on a secure network share drive. We rely on unit tests for validation of the software. Unit tests are automated validation tests that are performed every time a modification is made to the R package and are an integral part of these packages. The tests relevant for this study can be found below:

CohortMethod package: https://github.com/OHDSI/CohortMethod/tree/master/tests/testthat

Cyclops package: https://github.com/OHDSI/Cyclops/tree/master/tests/testthat

The primary investigator and sponsor will be blinded to the results of any study comparisons for decisions needed to resolve any unanticipated analytical or data issues.

6.7. Data Analysis

6.7.1. Descriptive Summary

For each of the propensity-score matched pairwise comparison cohorts, the following statistics will be calculated:

- Number of persons exposed
- Time-at-risk (days observed in ITT and PP)
- Number of persons with an outcome during time-at-risk
- Incidence rate = Number of persons with an outcome during time-at-risk / Time-at-risk

Of note, these incidence rates only provide context for frequency of new events within a population. The rates should not be directly compared between cohorts, as crude rate ratios can be biased. When formal comparisons between cohorts are required, a full comparative analysis will be conducted to estimate adjusted relative risk and used for comparison as described below.

Baseline characteristics (see details in Section 6.3.2) including risk factors for DKA (e.g. prior insulin use, prior surgeries, applied SGLT2i) will be summarized for patients treated with SGLT2i (combined and separately for each individual SGLT2 inhibitors) versus other AHAs. Standardized output from the OMOP CDM will be generated. For continuous variables, minimum, maximum, median, mean and standard deviation (SD) will be reported; for categorical variables, frequencies/proportions will be reported. To assess confounding by disease severity, the proportion of patients in each treatment cohort that received monotherapy, combined therapy, or triple therapy of AHAs will also be described. Between-group differences will be assessed using Wilcoxon rank-sum tests for continuous variables and chi-squared tests for categorical variables. The standardized difference after propensity-score matching (see details in Section 6.2.5) will also be presented. The propensity score will be estimated through large-scale regularized regression, with demographics, all prior conditions/drugs/procedures, risk scores, utilization density as baseline covariates as described in Section 6.3.2. Covariate balance statistics will be evaluated before and after propensity score matching to ensure adequate comparability between cohorts has been achieved, overall and with specific focus on key baseline characteristics. If feasible,

descriptive analysis will be also performed to compare the proportion of typical, atypical, and unknown (due to lack of lab results) DKA cases in each treatment group.

The crude incidence rates of DKA in each of the 8 AHA new-user cohorts will be estimated as the number of first incident DKA cases (i.e., counts of unique patients) divided by the total at-risk follow-up time, and will be reported as number of cases per 1,000 person-years of at-risk time. In the ITT approach, patients will be followed from their cohort start date (as defined by first exposure) until the end of their observation time, regardless of whether they discontinue, switch or augment treatment. DKAs that occur during this time-at-risk will be considered as candidate events. In the PP approach, censoring will be applied to new use of non-index AHAs at time of treatment switch and discontinuation of the index drug, defined by the first refill gap of 90 days for the index drug. Refill gap is calculated from the day the index AHA supply from the previous prescription is expected to run out (based on recorded or imputed median days-supplied). To assess the robustness of using different refill gap in analysis, we will also compare the number of cases, time-at-risk, and event incidence rates using different thresholds for the refill gap (60 and 120 days). DKAs that occur during this time-at-risk while on the index treatment, estimated based on outpatient pharmacy dispensing records, will be considered as candidate events. The crude incidence rates will also be reported by age group and sex, history of DKA, and history of insulin use. We will provide crude incidence rate estimates according to both the intent-to-treat and the per protocol approaches.

Since mortality information is not reliably collected in the claim databases, we cannot clearly differentiate fatal and non-fatal DKA events. Instead, we will provide descriptive statistics to illustrate frequency of fatal DKA events and non-fatal DKA patients based on hospital discharge status and information of subsequent medical encounters (any cause), which will indirectly show the vital status of those patients after the initial DKA encounter.

6.7.2. Population-level Estimation

We will use a conditional Cox proportional hazards model based on time-to-first event approach to estimate Hazard Ratio (HR) associated with SGLT2i (combined and separately by individual SGLT2i) versus other AHAs. Each propensity-score matched set will be treated as a separate stratum in Cox model.

P-values of less than 0.05 will be considered statistically significant, and all statistical tests are two-sided. Adjustment for multiple comparisons will not be made. However, an empirical p-value calibration will be conducted (62) using outcomes that are believed not to be associated with antihyperglycemic agents (negative control outcomes) to address potential systematic bias. Currently, 78 candidates screened from LAERTES (https://github.com/OHDSI/KnowledgeBase/tree/master/LAERTES, (63)) are under review by Janssen clinician Dr. Mehul Desai. Model diagnostics will be generated and will include propensity score distribution, covariate balance, and empirical null from negative control outcomes. Final results of Cox model will include the HR, 95% CI, and p-value (pre- and post-empirical calibration). A Kaplan-Meier plot will be generated to visualize the time-to-event attrition in the comparison cohorts.

In total, for population-level estimates, (7 overall SGLT2i comparisons + 7 canagliflozin comparisons) * 2 time-at-risk windows * 2 T2DM definition * 4 databases = 224 target-comparator-outcome-analysis-database studies will be performed (subject to first passing the study diagnostics).

Given that this study is based on pre-specified hypothesis, we do not intend to adjust for multiple comparisons in our analyses, to ensure we will detect all associations of interest.

Several mock tables and figures outlining output of the descriptive and analytic results are presented in Section 11. These tables are presented as examples, and actual presentation (eg, format) could be different.

6.8. Quality Control

All analyses will be performed within the Epidemiology Analytics team. A lead programmer will develop and execute the source code. A second programmer will review the code and execute to confirm the results generated. Analysis source code will be provided as part of the final output generated.

6.9. Strengths and Limitations of the Research Methods

6.9.1. Strengths

- To the best of our knowledge, this is the first observational study to estimate DKA incidence in new users of various AHAs among patients with T2DM.
- Our large databases enable relatively large sample size to evaluate a potential safety signal efficiently and timely.
- Cohort studies allow direct estimation of incidence rates following exposure of interest, and the new-user design (43) can capture early events following treatment exposures while avoiding confounding from previous treatment effects. New use allows for a clear exposure index date designation but patients new to one drug or drug class can be prevalent users of other AHAs.
- Exposure propensity score (EPS) matching allows balancing on a large number of baseline potential confounders (54).

6.9.2. Limitations

1. Misclassification among different types of diabetes is possible as a result of misdiagnosis and/or inaccurate coding. For example, (i) LADA (an autoimmune form of T1DM presenting in adulthood) is often initially misdiagnosed and treated with oral AHAs, and DKA may develop before LADA is correctly diagnosed and treated (25). One study estimated that the prevalence of LADA was about 10% among non-insulin-requiring patients older than 35 years at diagnosis with phenotypic type 2 diabetes (23). There are no ICD-9 codes for LADA, although it is supposed to be coded the same as T1DM. (ii) ICD-9 codes for T2DM are also used for unspecified type of diabetes, e.g., ICD-9 250.10 codes for “DIABETES WITH KETOACIDOSIS, TYPE II OR UNSPECIFIED TYPE, NOT STATED AS UNCONTROLLED” (Annex 1).

2. Our broad and narrow definitions for T2DM rely on ICD-9 codes taken at face value, and some patients with bona fide autoimmune diabetes may still remain despite our best attempt to exclude them using the narrow definition. For example, it's possible that some patients with T1DM who are older than 40 years of age are correctly recognized as T1DM by their treating healthcare providers, yet their insurance claims captured during entire enrollment history never use codes for T1DM. Some patients with T1DM may take insulin together with oral AHAs, including metformin (64), DPP-4i (65), GLP-1 (66), canagliflozin (29), etc. The focus of our narrow definition for T2DM is to exclude all suspected T1DM to the maximal extent, even at the expense of excluding some patients with T2DM (such as those taking insulin mono-therapy or younger than 40). The narrow definition can help us better understand potential association, if any, between SGLT2 inhibitors and DKA in true T2DM. From public health perspective, all DKA cases following new exposure to the different AHAs are captured by the broad definition for T2DM, including those diagnosed as DKA in T1DM, and DKA in SDM.
3. We did not include patients with T2DM who were not managed by any AHAs. Some of these patients may be newly diagnosed with T2DM and managed by diet and exercise (which is not usually captured by insurance claims), some may have pre-diabetes or may have diagnostic testing to rule out T2DM, and some may not have prescription drug coverage. DKA risk may be lower among newly diagnosed T2DM (or people without diabetes) compared with patients with established T2DM and managed on AHAs. On the other hand, DKA risk may be high in patients with T2DM but not managed by AHAs (or perhaps not even managed by diet and exercise). These patients are considered not comparable to patients with established T2DM, and not clinically relevant in terms of choosing different therapeutic alternatives (i.e., the clinical question about which drug to choose instead of whether to take AHAs or not).
4. We did not estimate DKA incidence rates that are restricted to initial T2DM diagnosis made through DKA presentation. This is because our study entry criteria requires treatment for established T2DM.
5. Causality between drug exposure and DKA cannot be drawn for individual cases. It is especially true when lab test results (such as arterial pH <7.3, or serum bicarbonate <15 mEq/l, or plasma glucose) are not available or incompletely captured in the insurance claims databases. It is not possible to validate the DKA diagnosis or identify true DKA. Additional important information is also missing as stated below.
6. Socioeconomic variables (such as race/ethnicity, education, income), behavioral variables (such as diet, alcohol consumption, eating disorders), some acute DKA triggering events (such as fasting, inadequate insulin dose, in contrast to infections which can be generally well captured), symptoms (such as vomiting and abdominal pain) are not available or may not be completely captured from these databases, which will lower the validity for outcome identification, risk factor/confounding adjustment, or causal interpretation.
7. Free drug samples are not captured in insurance claims databases, which may result in misclassification of some exposure as non-exposure, prevalent drug use as new use (potentially missing incident events or incident events following exposure misclassified as historical events). Although some HMOs forbid direct access to sales representatives and therefore may not have the free-sample issue, sensitivity analyses are not done due to limited sample size and changing of insurance over time.
8. In the US, different dosage forms of the SGLT2i drugs are sold at the same price. It is possible for patients to fill the high dosage form prescriptions but actually take low doses by splitting

pills. This will not influence estimated cumulative dosage but could misclassify the high versus low dosage form.

9. Differential diagnosis of DKA is a possibility to be considered because of known or hypothesized mechanisms of actions of SGLT2i drugs and publicity. We define the outcome as hospitalized DKA events or ER encounters. Sensitivity analysis of inpatient DKA only addresses the concern over outcome misclassification for DKA recorded only in ER claims without subsequent hospital admission. We included ER encounters in the DKA outcome definition to avoid missing potentially important DKA events, for example, the FDA communication stated that "All patients required emergency room visits or hospitalization to treat the ketoacidosis". Also, on July 16th, 2015, the sponsor received advice from an expert panel that using hospitalized DKA only will miss cases treated in the ER.
10. We assume that any association (or no association) between SGLT2i and DKA does not vary substantially across the different EPS-matched strata.
11. Large-scale propensity score may not completely remove confounding bias (51). For example, some variables may only be associated with exposure but not DKA (we will evaluate this possibility for all variables selected by the EPS model); disease severity and inherent DKA risk at baseline is not directly measurable, and there is in general lack of data on behavioral and lifestyle data, genetics or ethnicity in claims databases.
12. There is some data overlap between the CCAE and Optum because some insurance plans contribute claims data to both vendors. The overlap is not released by the database vendors to protect proprietary information and privacy. This represents a violation of the assumption of data independence in the pooled HR estimates across the databases, and may result in underestimation of heterogeneity and exaggerated precision of the pooled HR estimate.
13. Since mortality information is not reliably collected in the claim databases, we cannot clearly differentiate fatal and non-fatal DKA events during the observational period. However, we will be able to identify fatal DKA events based on discharge status among DKA patients that are admitted to hospitalization, though the number of cases may be small. Descriptive statistics will be provided to illustrate frequency of fatal DKA events and non-fatal DKA patients with subsequent medical encounters (any cause), which will indirectly show the vital status of those patients after the initial DKA encounter.
14. In the claim databases used for this analysis, the information on time since the first T2DM diagnosis or the first AHA treatment is very limited. Therefore we are not able to include such data as confounding variables in analysis.

7. PROTECTION OF HUMAN SUBJECTS

- The use of Optum and Truven Marketscan databases was reviewed by the New England Institution Review Board (IRB) and was determined to be exempt from broad IRB approval, as this research project did not involve human subjects research.
- The study is using only de-identified data.
- Confidentiality of patient records will be maintained at all times. All study reports will contain aggregate data only and will not identify individual patients or physicians. At no time during the study will the sponsor receive patient identifying information except when it is required by regulations in case of reporting adverse events.

8. MANAGEMENT AND REPORTING OF ADVERSE EVENTS AND ADVERSE REACTIONS

This study uses coded data that already exist in an electronic database. First, in this type of database, the patient and reporter of any adverse reaction or adverse event are not identifiable. Second, it is not possible to directly link (i.e., establish a causal association between) a particular medicinal product with observed adverse events on individual level. Thus, the *minimum criteria for reporting an adverse event (i.e., identifiable patient, identifiable reporter, the suspect product, and the suspect event) are not available* and adverse events are not reportable as individual AE reports. The study results will be assessed for medically important results".

Note: Please refer to POL-06206 for a definition of "medically important results".

9. PLANS FOR DISSEMINATING AND COMMUNICATING STUDY RESULTS

The protocol will be registered both in the US (www.clinicaltrials.gov) and EU (http://www.encepp.eu/encepp/studiesDatabase.jsp) after finalization. Results will be reported to the registration location within 12 months of completion. Additionally, results will be submitted for peer-reviewed publication.

10. LIST OF TABLES & FIGURES

Figure 1: Cohort Creation Flowchart, Study Period from April 1, 2013 to the most recent data available at the time of the analysis

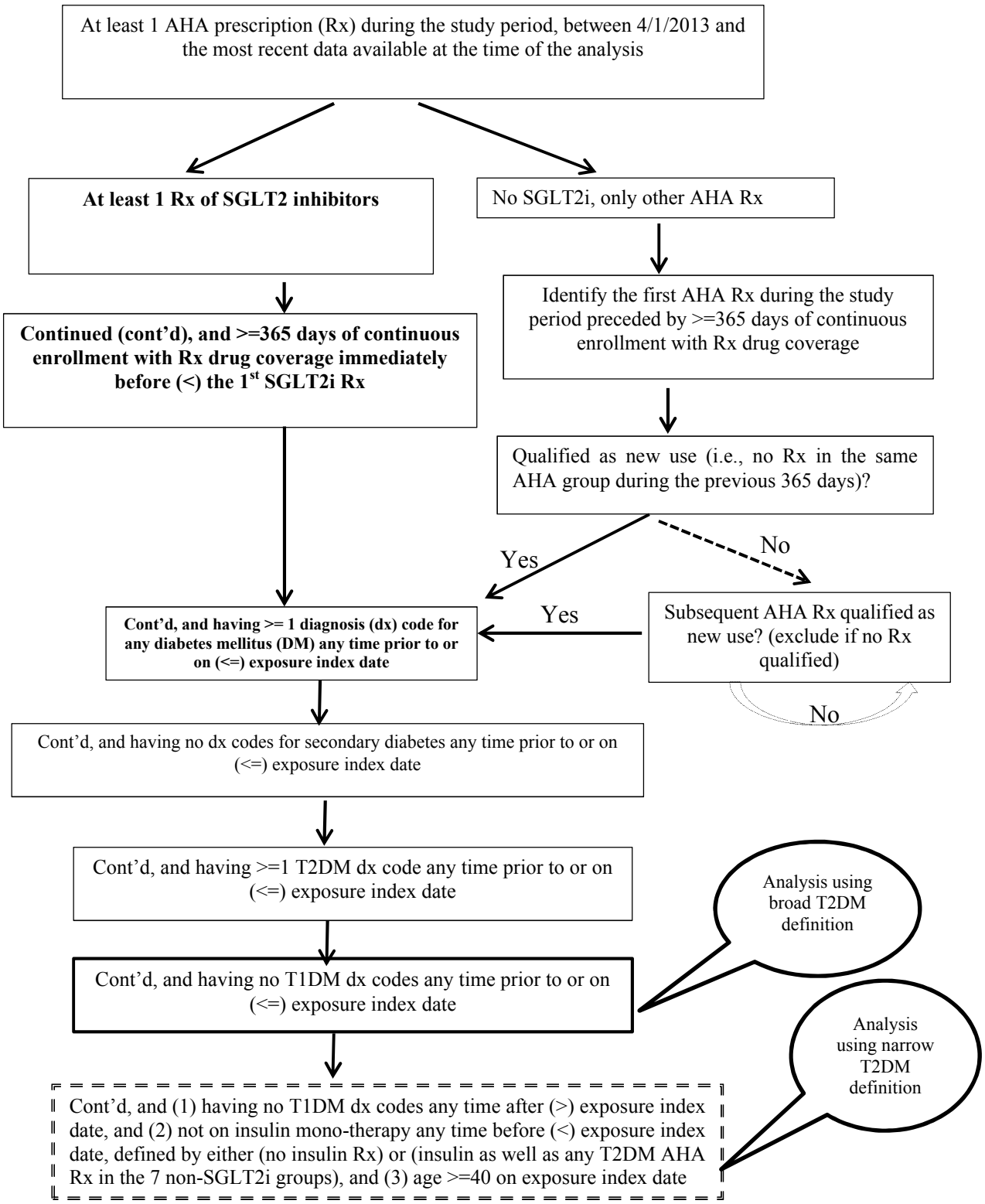
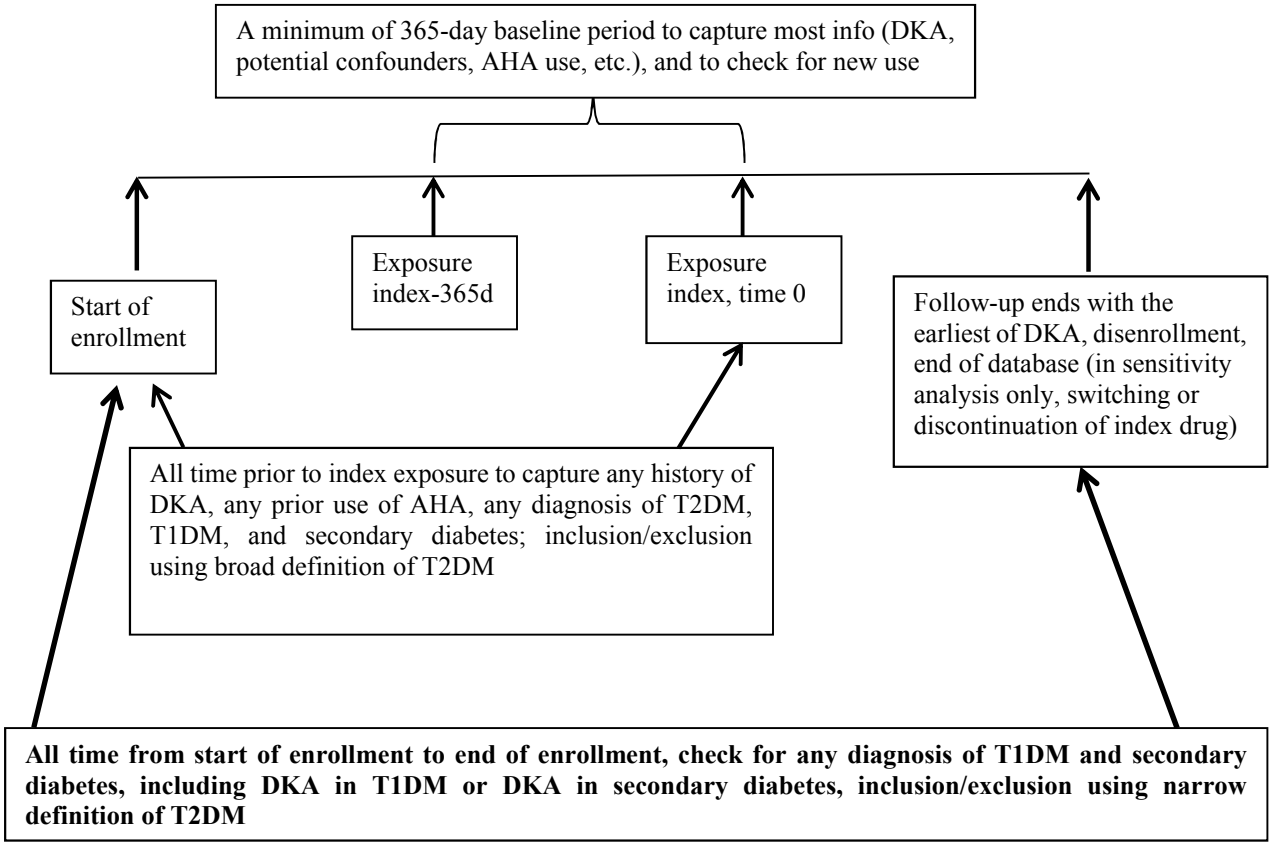


Figure 2: Illustration of Broad and Narrow Definitions for T2DM



Shell table 1§ Cohort Creation (separate tables 1a, CCAE, 1b, MDCR, 1c, MDCD, 1d Optum)

	SGLT2i	Cana	Dapa	Empa	DPP4i	GLP1	Insulin	Metformin	SU	TZD	Insulinotropic AHAs
Total # new users* between 4/1/13 and end of complete data availability											
Cont'd, and having >= 1 diagnosis (dx) code for any diabetes mellitus (DM) any time prior to or on (<=) exposure index date											
Cont'd, and having no dx code of secondary diabetes any time prior to or on (<=) exposure index date											
Cont'd, and having >=1 T2DM dx code any time prior to or on (<=) exposure index date											
Cont'd, and having no T1DM dx code any time prior to or on (<=) exposure index date											
**Cont'd, and having no T1DM dx code any time after (>) exposure index date (in addition to having no T1DM dx code any time prior to or on (<=) exposure index date)											
Cont'd, and (not taking insulin) or (taking insulin as well as other T2DM Rx*) (i.e. insulin mono excluded) any time before (<) exposure index date											
**Cont'd, and Age >=40 on index drug date											

§Final results may be reported in standardized on-line output (including graphics) instead of shell table format.

*New user defined in the protocol
**Narrow definition of T2DM further restricts inclusion conditions
*** non-insulin T2DM Rx listed in Annex 2

Shell table 2§ Descriptions of the study cohort (separate tables 2a, CCAE, 2b, MDCR, 2c, MDCD, 2d Optum)

	SGLT2i	Cana	Dapa	Empa	DPP-4i	GLP1	Insulin	Metformin	SU	TZD
Demographics (age, sex)										
Comorbidities										
Co-meds										
History of DKA within 12 months of index AHA exposure										
History of DKA any time prior (Enrollment length)										
History of each specific AHA use										
Derived variables such as Charlson comorbidity index (CCI), Diabetes complications severity index (DCSI), …										

§Final results may be reported in standardized on-line output (including graphics) instead of shell table format.

Shell table 3§. Crude incidence of DKA in AHA new users with T2DM, (separate tables 3a, CCAE, 3b, MDCR, 3c, MDCD, 3d Optum)

	SGLT2i	cana	dapa	empa	DPP4i	GLP1	Insulin	Metformin	SU	TZD	Insulinotropic AHAs
Total N											
Mean (SD) follow-up (FU) time, years											
Median follow-up in years (range)											
Total follow-up time in years, sum											
Total # of DKA cases (inpatient and ER dx)											
DKA cases by inpatient dx											
Crude incidence rate (per 1000 patient-years)											
FU censored on switching/discontinuation, sum											
Total # of DKA cases (inpatient and ER dx)											
DKA cases by inpatient dx											
Crude incidence rate (per 1000 patient-years), on censored F/U											
Crude incidence rate in those with baseline insulin											
Crude incidence rate in those with any prior insulin											
Crude incidence rate in men											
Crude incidence rate in women											
Crude incidence rate in T2DM narrow definition											
Crude incidence rate in those without a history of DKA											
Crude incidence rate on SGLT2i+metformin FDC			/			/	/	/	/	/	/

§Final results may be reported in standardized on-line output (including graphics) instead of shell table format.

Shell table 4§. Descriptions of matched AHA NEW USER cohort (separate tables 4a, CCAE, 4b, MDCR, 4c, MDCD, 4d Optum)

		Matched comparators									
	SGLT2i	insulin	DPP4i	GLP-1	SU	TZD	Metformin	insulinotropic AHAs	Cana	Dapa	Empa
Total N											
Standardized differences in co-meds, co-morbidities, …											
DKA history, %											
Baseline AHA, % (list in Annex 2)…											
Baseline insulin, %											
Any prior use of AHA, %											
Any prior insulin, %											
Length of all enrollment history prior to exposure index											

§Final results may be reported in standardized on-line output (including graphics) instead of shell table format.

Shell table 5 §. COX PH MODEL ESTIMATED HAZARD RATIOS (MATCHED AHA NEW USER COHORT (separate tables 5a, CCAE, 5b, MDCR, 5c, MDCD, 5d Optum)

	SGLT2i	Matched comparators	p-value (Negative control adjusted) e.g., 0.64 (0.77)
# DKA cases			/
Total FU			/
Crude incidence rate			/
Cox PH model adjusted HR, 95% (CI)		1 (ref)	
Broad T2DM definition, HR (95% CI)		1 (ref)	
Censored on switching/discontinuation, HR (95% CI)		1 (ref)	/
Narrow T2DM definition, HR (95% CI)		1 (ref)	/
HR (95%) in patients without prior DKA		1 (ref)	

§Final results may be reported in standardized on-line output (including graphics) instead of shell table format.

Shell table 6 §. Descriptions of DKA cases (separate tables 6a, CCAE, 6b, MDCR, 6c, MDCD, 6d Optum)

	Overall	SGLT2i	Cana	Dapa	Empa	DPP4i	GLP1	Insulin	Metformin	SU	TZD	insulinotropic AHAs
Total N												
Age, mean (sd)												
Sex												
T2DM narrow definition met?												
Duration in database since initial T2DM encounter, years												
Days since index date, mean (sd), median, range												
DKA by inpatient 1st listed diagnosis												
DKA censored by switching/discontinuation, n												
Baseline insulin use, n												
Insulin use any time prior, n												
Type of insulin (basal, MDI, etc)												
DKA within supply of index drug since last Rx												
Other drugs that had length of Rx supply enough to cover DKA event date (list out by rows)												
DKA in winter months (Jan, Feb, Nov, Dec),%												
Charlson comorbidity index (CCI)												
Diabetes complications severity index (DCSI)												
Baseline hospital admissions, %												
Potential precipitating events (e.g., 1 mon prior to DKA onset)												
Urinary tract infections												
Upper respiratory infections												
Surgeries												
Pancreatitis												

11. ANNEX. LIST OF STAND-ALONE DOCUMENTS

Add a full and correct list of the ICD codes used for identification of DKA cases.

Annex 1: List of definitions and code sets for main variables* included in the protocol (Excel spreadsheet attached provides further detail)

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Secondary Diabetes	45911488	157652	malnutrition-related diabetes mellitus with peripheral circulatory complications	Diagnosis	Condition	CIEL
Secondary Diabetes	45914871	130189	Pineal Hyperplasia and Diabetes Mellitus Syndrome	Diagnosis	Condition	CIEL
Secondary Diabetes	45915384	134721	Malnutrition Related Diabetes Mellitus	Diagnosis	Condition	CIEL
Secondary Diabetes	45917526	158480	pre-existing malnutrition-related diabetes mellitus	Diagnosis	Condition	CIEL
Secondary Diabetes	45924089	126985	Secondary Diabetes Mellitus	Diagnosis	Condition	CIEL
Secondary Diabetes	45924403	128343	Protein-Deficient Diabetes Mellitus	Diagnosis	Condition	CIEL
Secondary Diabetes	45926458	142482	Diabetes Mellitus Associated with Pancreatic Disease	Diagnosis	Condition	CIEL
Secondary Diabetes	45926459	142484	Diabetes Mellitus Associated with Genetic Syndrome	Diagnosis	Condition	CIEL
Secondary Diabetes	45929223	157650	malnutrition-related diabetes mellitus with ketoacidosis	Diagnosis	Condition	CIEL
Secondary Diabetes	45932228	140205	Fibrocalculous Pancreatic Diabetes	Diagnosis	Condition	CIEL
Secondary Diabetes	45932730	142481	Diabetes Mellitus Associated with Receptor Abnormality	Diagnosis	Condition	CIEL
Secondary Diabetes	45932731	142485	Diabetes Mellitus and Insipidus with Optic Atrophy and Deafness	Diagnosis	Condition	CIEL
Secondary Diabetes	45937441	157651	malnutrition-related diabetes mellitus with multiple complications	Diagnosis	Condition	CIEL
Secondary Diabetes	45937442	157653	malnutrition-related diabetes mellitus with renal complications	Diagnosis	Condition	CIEL
Secondary Diabetes	45940837	141730	Drug-Induced Diabetes Mellitus	Diagnosis	Condition	CIEL
Secondary Diabetes	45945036	142479	Insulinopathy	Diagnosis	Condition	CIEL

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Secondary Diabetes	45945037	142483	Diabetes Mellitus Associated with Hormonal Etiology	Diagnosis	Condition	CIEL
Secondary Diabetes	45946526	154205	diabetes mellitus related to cystic fibrosis	Diagnosis	Condition	CIEL
Secondary Diabetes	45950730	142480	Diabetes Mellitus due to Insulin Receptor Antibodies	Diagnosis	Condition	CIEL
Secondary Diabetes	45542740	E12.1	Malnutrition-related diabetes mellitus with ketoacidosis	ICD10 code	Condition	ICD10
Secondary Diabetes	45547629	E12.9	Malnutrition-related diabetes mellitus without complications	ICD10 code	Condition	ICD10
Secondary Diabetes	45548716	O24.2	Pre-existing malnutrition-related diabetes mellitus	ICD10 code	Condition	ICD10
Secondary Diabetes	45557115	E12.6	Malnutrition-reltaed diabetes mellitus with other specified complications	ICD10 code	Condition	ICD10
Secondary Diabetes	45576445	E12.2	Malnutrition-related diabetes mellitus with renal complications	ICD10 code	Condition	ICD10
Secondary Diabetes	45586141	E12	Malnutrition-related diabetes mellitus	ICD10 Hierarchy	Condition	ICD10
Secondary Diabetes	45600643	E12.7	Malnutrition-related diabetes mellitus with multiple complications	ICD10 code	Condition	ICD10
Secondary Diabetes	45605406	E12.5	Malnutrition-related diabetes mellitus with peripheral circulatory complications	ICD10 code	Condition	ICD10
Secondary Diabetes	45755356	E12.8	Malnutrition-related diabetes mellitus with unspecified complications	ICD10 code	Condition	ICD10
Secondary Diabetes	1567923	E09	Drug or chemical induced diabetes mellitus	3-char nonbill code	Condition	ICD10CM
Secondary Diabetes	1567924	E09.0	Drug or chemical induced diabetes mellitus with hyperosmolarity	4-char nonbill code	Condition	ICD10CM
Secondary Diabetes	1567925	E09.1	Drug or chemical induced diabetes mellitus with ketoacidosis	4-char nonbill code	Condition	ICD10CM
Secondary Diabetes	1567926	E09.2	Drug or chemical induced diabetes mellitus with kidney complications	4-char nonbill code	Condition	ICD10CM
Secondary Diabetes	1567927	E09.3	Drug or chemical induced diabetes mellitus with ophthalmic complications	4-char nonbill code	Condition	ICD10CM
Secondary Diabetes	1567928	E09.31	Drug or chemical induced diabetes mellitus with unspecified diabetic retinopathy	5-char nonbill code	Condition	ICD10CM

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Secondary Diabetes	1567929	E09.32	Drug or chemical induced diabetes mellitus with mild nonproliferative diabetic retinopathy	5-char nonbill code	Condition	ICD10CM
Secondary Diabetes	1567930	E09.33	Drug or chemical induced diabetes mellitus with moderate nonproliferative diabetic retinopathy	5-char nonbill code	Condition	ICD10CM
Secondary Diabetes	1567931	E09.34	Drug or chemical induced diabetes mellitus with severe nonproliferative diabetic retinopathy	5-char nonbill code	Condition	ICD10CM
Secondary Diabetes	1567932	E09.35	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy	5-char nonbill code	Condition	ICD10CM
Secondary Diabetes	1567933	E09.4	Drug or chemical induced diabetes mellitus with neurological complications	4-char nonbill code	Condition	ICD10CM
Secondary Diabetes	1567934	E09.5	Drug or chemical induced diabetes mellitus with circulatory complications	4-char nonbill code	Condition	ICD10CM
Secondary Diabetes	1567935	E09.6	Drug or chemical induced diabetes mellitus with other specified complications	4-char nonbill code	Condition	ICD10CM
Secondary Diabetes	1567936	E09.61	Drug or chemical induced diabetes mellitus with diabetic arthropathy	5-char nonbill code	Condition	ICD10CM
Secondary Diabetes	1567937	E09.62	Drug or chemical induced diabetes mellitus with skin complications	5-char nonbill code	Condition	ICD10CM
Secondary Diabetes	1567938	E09.63	Drug or chemical induced diabetes mellitus with oral complications	5-char nonbill code	Condition	ICD10CM
Secondary Diabetes	1567939	E09.64	Drug or chemical induced diabetes mellitus with hypoglycemia	5-char nonbill code	Condition	ICD10CM
Secondary Diabetes	1567948	E10.35	Type 1 diabetes mellitus with proliferative diabetic retinopathy	5-char nonbill code	Condition	ICD10CM
Secondary Diabetes	1567955	E10.64	Type 1 diabetes mellitus with hypoglycemia	5-char nonbill code	Condition	ICD10CM
Secondary Diabetes	1567964	E11.35	Type 2 diabetes mellitus with proliferative diabetic retinopathy	5-char nonbill code	Condition	ICD10CM
Secondary Diabetes	1567971	E11.64	Type 2 diabetes mellitus with hypoglycemia	5-char nonbill code	Condition	ICD10CM
Secondary Diabetes	1567988	E13.64	Other specified diabetes mellitus with hypoglycemia	5-char nonbill code	Condition	ICD10CM
Secondary Diabetes	45533009	E08.21	Diabetes mellitus due to underlying condition with diabetic nephropathy	5-char billing code	Condition	ICD10CM

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Secondary Diabetes	45533010	E08.311	Diabetes mellitus due to underlying condition with unspecified diabetic retinopathy with macular edema	6-char billing code	Condition	ICD10CM
Secondary Diabetes	45533011	E08.620	Diabetes mellitus due to underlying condition with diabetic dermatitis	6-char billing code	Condition	ICD10CM
Secondary Diabetes	45533012	E09.331	Drug or chemical induced diabetes mellitus with moderate nonproliferative diabetic retinopathy with macular edema	6-char billing code	Condition	ICD10CM
Secondary Diabetes	45533014	E09.610	Drug or chemical induced diabetes mellitus with diabetic neuropathic arthropathy	6-char billing code	Condition	ICD10CM
Secondary Diabetes	45533015	E09.9	Drug or chemical induced diabetes mellitus without complications	4-char billing code	Condition	ICD10CM
Secondary Diabetes	45537954	E08.638	Diabetes mellitus due to underlying condition with other oral complications	6-char billing code	Condition	ICD10CM
Secondary Diabetes	45537955	E09.10	Drug or chemical induced diabetes mellitus with ketoacidosis without coma	5-char billing code	Condition	ICD10CM
Secondary Diabetes	45537956	E09.628	Drug or chemical induced diabetes mellitus with other skin complications	6-char billing code	Condition	ICD10CM
Secondary Diabetes	45537957	E09.69	Drug or chemical induced diabetes mellitus with other specified complication	5-char billing code	Condition	ICD10CM
Secondary Diabetes	45542728	E08.29	Diabetes mellitus due to underlying condition with other diabetic kidney complication	5-char billing code	Condition	ICD10CM
Secondary Diabetes	45542729	E08.349	Diabetes mellitus due to underlying condition with severe nonproliferative diabetic retinopathy without macular edema	6-char billing code	Condition	ICD10CM
Secondary Diabetes	45542730	E08.610	Diabetes mellitus due to underlying condition with diabetic neuropathic arthropathy	6-char billing code	Condition	ICD10CM
Secondary Diabetes	45542731	E08.69	Diabetes mellitus due to underlying condition with other specified complication	5-char billing code	Condition	ICD10CM
Secondary Diabetes	45542732	E09.36	Drug or chemical induced diabetes mellitus with diabetic cataract	5-char billing code	Condition	ICD10CM
Secondary Diabetes	45542734	E09.630	Drug or chemical induced diabetes mellitus with periodontal disease	6-char billing code	Condition	ICD10CM
Secondary Diabetes	45547617	E08.42	Diabetes mellitus due to underlying condition with diabetic polyneuropathy	5-char billing code	Condition	ICD10CM
Secondary Diabetes	45547618	E08.622	Diabetes mellitus due to underlying condition with other skin ulcer	6-char billing code	Condition	ICD10CM

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Secondary Diabetes	45547619	E09.351	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy with macular edema	6-char billing code	Condition	ICD10CM
Secondary Diabetes	45547620	E09.40	Drug or chemical induced diabetes mellitus with neurological complications with diabetic neuropathy, unspecified	5-char billing code	Condition	ICD10CM
Secondary Diabetes	45552372	E08.22	Diabetes mellitus due to underlying condition with diabetic chronic kidney disease	5-char billing code	Condition	ICD10CM
Secondary Diabetes	45552373	E08.319	Diabetes mellitus due to underlying condition with unspecified diabetic retinopathy without macular edema	6-char billing code	Condition	ICD10CM
Secondary Diabetes	45552374	E08.39	Diabetes mellitus due to underlying condition with other diabetic ophthalmic complication	5-char billing code	Condition	ICD10CM
Secondary Diabetes	45552375	E08.641	Diabetes mellitus due to underlying condition with hypoglycemia with coma	6-char billing code	Condition	ICD10CM
Secondary Diabetes	45552376	E09.21	Drug or chemical induced diabetes mellitus with diabetic nephropathy	5-char billing code	Condition	ICD10CM
Secondary Diabetes	45552377	E09.329	Drug or chemical induced diabetes mellitus with mild nonproliferative diabetic retinopathy without macular edema	6-char billing code	Condition	ICD10CM
Secondary Diabetes	45557107	E08.331	Diabetes mellitus due to underlying condition with moderate nonproliferative diabetic retinopathy with macular edema	6-char billing code	Condition	ICD10CM
Secondary Diabetes	45557108	E09.622	Drug or chemical induced diabetes mellitus with other skin ulcer	6-char billing code	Condition	ICD10CM
Secondary Diabetes	45561940	E08.359	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy without macular edema	6-char billing code	Condition	ICD10CM
Secondary Diabetes	45561941	E08.41	Diabetes mellitus due to underlying condition with diabetic mononeuropathy	5-char billing code	Condition	ICD10CM
Secondary Diabetes	45561943	E08.649	Diabetes mellitus due to underlying condition with hypoglycemia without coma	6-char billing code	Condition	ICD10CM
Secondary Diabetes	45561944	E09.00	Drug or chemical induced diabetes mellitus with hyperosmolarity without nonketotic hyperglycemic-hyperosmolar coma (NKHHC)	5-char billing code	Condition	ICD10CM

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Secondary Diabetes	45561945	E09.22	Drug or chemical induced diabetes mellitus with diabetic chronic kidney disease	5-char billing code	Condition	ICD10CM
Secondary Diabetes	45561946	E09.39	Drug or chemical induced diabetes mellitus with other diabetic ophthalmic complication	5-char billing code	Condition	ICD10CM
Secondary Diabetes	45566723	E08.339	Diabetes mellitus due to underlying condition with moderate nonproliferative diabetic retinopathy without macular edema	6-char billing code	Condition	ICD10CM
Secondary Diabetes	45566724	E08.36	Diabetes mellitus due to underlying condition with diabetic cataract	5-char billing code	Condition	ICD10CM
Secondary Diabetes	45566725	E09.339	Drug or chemical induced diabetes mellitus with moderate nonproliferative diabetic retinopathy without macular edema	6-char billing code	Condition	ICD10CM
Secondary Diabetes	45566727	E09.620	Drug or chemical induced diabetes mellitus with diabetic dermatitis	6-char billing code	Condition	ICD10CM
Secondary Diabetes	45571650	E08.628	Diabetes mellitus due to underlying condition with other skin complications	6-char billing code	Condition	ICD10CM
Secondary Diabetes	45571651	E08.630	Diabetes mellitus due to underlying condition with periodontal disease	6-char billing code	Condition	ICD10CM
Secondary Diabetes	45571652	E08.9	Diabetes mellitus due to underlying condition without complications	4-char billing code	Condition	ICD10CM
Secondary Diabetes	45576430	E09.01	Drug or chemical induced diabetes mellitus with hyperosmolarity with coma	5-char billing code	Condition	ICD10CM
Secondary Diabetes	45576431	E09.29	Drug or chemical induced diabetes mellitus with other diabetic kidney complication	5-char billing code	Condition	ICD10CM
Secondary Diabetes	45576432	E09.311	Drug or chemical induced diabetes mellitus with unspecified diabetic retinopathy with macular edema	6-char billing code	Condition	ICD10CM
Secondary Diabetes	45576433	E09.319	Drug or chemical induced diabetes mellitus with unspecified diabetic retinopathy without macular edema	6-char billing code	Condition	ICD10CM
Secondary Diabetes	45576434	E09.321	Drug or chemical induced diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema	6-char billing code	Condition	ICD10CM
Secondary Diabetes	45576435	E09.621	Drug or chemical induced diabetes mellitus with foot ulcer	6-char billing code	Condition	ICD10CM

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Secondary Diabetes	45581342	E08.341	Diabetes mellitus due to underlying condition with severe nonproliferative diabetic retinopathy with macular edema	6-char billing code	Condition	ICD10CM
Secondary Diabetes	45581344	E08.621	Diabetes mellitus due to underlying condition with foot ulcer	6-char billing code	Condition	ICD10CM
Secondary Diabetes	45581345	E09.349	Drug or chemical induced diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema	6-char billing code	Condition	ICD10CM
Secondary Diabetes	45581347	E09.51	Drug or chemical induced diabetes mellitus with diabetic peripheral angiopathy without gangrene	5-char billing code	Condition	ICD10CM
Secondary Diabetes	45586133	E09.11	Drug or chemical induced diabetes mellitus with ketoacidosis with coma	5-char billing code	Condition	ICD10CM
Secondary Diabetes	45586134	E09.341	Drug or chemical induced diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema	6-char billing code	Condition	ICD10CM
Secondary Diabetes	45586135	E09.359	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy without macular edema	6-char billing code	Condition	ICD10CM
Secondary Diabetes	45586136	E09.8	Drug or chemical induced diabetes mellitus with unspecified complications	4-char billing code	Condition	ICD10CM
Secondary Diabetes	45591023	E08.351	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy with macular edema	6-char billing code	Condition	ICD10CM
Secondary Diabetes	45591025	E09.618	Drug or chemical induced diabetes mellitus with other diabetic arthropathy	6-char billing code	Condition	ICD10CM
Secondary Diabetes	45595789	E08.43	Diabetes mellitus due to underlying condition with diabetic autonomic (poly)neuropathy	5-char billing code	Condition	ICD10CM
Secondary Diabetes	45595790	E08.49	Diabetes mellitus due to underlying condition with other diabetic neurological complication	5-char billing code	Condition	ICD10CM
Secondary Diabetes	45595792	E08.65	Diabetes mellitus due to underlying condition with hyperglycemia	5-char billing code	Condition	ICD10CM
Secondary Diabetes	45600633	E08.321	Diabetes mellitus due to underlying condition with mild nonproliferative diabetic retinopathy with macular edema	6-char billing code	Condition	ICD10CM

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Secondary Diabetes	45600634	E08.329	Diabetes mellitus due to underlying condition with mild nonproliferative diabetic retinopathy without macular edema	6-char billing code	Condition	ICD10CM
Secondary Diabetes	45600635	E09.52	Drug or chemical induced diabetes mellitus with diabetic peripheral angiopathy with gangrene	5-char billing code	Condition	ICD10CM
Secondary Diabetes	45605392	E08.40	Diabetes mellitus due to underlying condition with diabetic neuropathy, unspecified	5-char billing code	Condition	ICD10CM
Secondary Diabetes	45605393	E08.44	Diabetes mellitus due to underlying condition with diabetic amyotrophy	5-char billing code	Condition	ICD10CM
Secondary Diabetes	45605394	E08.618	Diabetes mellitus due to underlying condition with other diabetic arthropathy	6-char billing code	Condition	ICD10CM
Secondary Diabetes	45605395	E08.8	Diabetes mellitus due to underlying condition with unspecified complications	4-char billing code	Condition	ICD10CM
Secondary Diabetes	45605396	E09.638	Drug or chemical induced diabetes mellitus with other oral complications	6-char billing code	Condition	ICD10CM
Secondary Diabetes	44819498	249.20	Secondary diabetes mellitus with hyperosmolarity, not stated as uncontrolled, or unspecified	5-dig billing code	Condition	ICD9CM
Secondary Diabetes	44819499	249.21	Secondary diabetes mellitus with hyperosmolarity, uncontrolled	5-dig billing code	Condition	ICD9CM
Secondary Diabetes	44820680	249.00	Secondary diabetes mellitus without mention of complication, not stated as uncontrolled, or unspecified	5-dig billing code	Condition	ICD9CM
Secondary Diabetes	44820681	249.11	Secondary diabetes mellitus with ketoacidosis, uncontrolled	5-dig billing code	Condition	ICD9CM
Secondary Diabetes	44821785	249.70	Secondary diabetes mellitus with peripheral circulatory disorders, not stated as uncontrolled, or unspecified	5-dig billing code	Condition	ICD9CM
Secondary Diabetes	44821786	249.8	Secondary diabetes mellitus with other specified manifestations	4-dig nonbill code	Condition	ICD9CM
Secondary Diabetes	44822932	249.50	Secondary diabetes mellitus with ophthalmic manifestations, not stated as uncontrolled, or unspecified	5-dig billing code	Condition	ICD9CM
Secondary Diabetes	44822933	249.61	Secondary diabetes mellitus with neurological manifestations, uncontrolled	5-dig billing code	Condition	ICD9CM

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Secondary Diabetes	44825262	249.6	Secondary diabetes mellitus with neurological manifestations	4-dig nonbill code	Condition	ICD9CM
Secondary Diabetes	44825263	249.81	Secondary diabetes mellitus with other specified manifestations, uncontrolled	5-dig billing code	Condition	ICD9CM
Secondary Diabetes	44828788	249.5	Secondary diabetes mellitus with ophthalmic manifestations	4-dig nonbill code	Condition	ICD9CM
Secondary Diabetes	44828789	249.7	Secondary diabetes mellitus with peripheral circulatory disorders	4-dig nonbill code	Condition	ICD9CM
Secondary Diabetes	44828790	249.80	Secondary diabetes mellitus with other specified manifestations, not stated as uncontrolled, or unspecified	5-dig billing code	Condition	ICD9CM
Secondary Diabetes	44828791	249.9	Secondary diabetes mellitus with unspecified complication	4-dig nonbill code	Condition	ICD9CM
Secondary Diabetes	44828792	249.90	Secondary diabetes mellitus with unspecified complication, not stated as uncontrolled, or unspecified	5-dig billing code	Condition	ICD9CM
Secondary Diabetes	44829876	249.60	Secondary diabetes mellitus with neurological manifestations, not stated as uncontrolled, or unspecified	5-dig billing code	Condition	ICD9CM
Secondary Diabetes	44829877	249.91	Secondary diabetes mellitus with unspecified complication, uncontrolled	5-dig billing code	Condition	ICD9CM
Secondary Diabetes	44831044	249.2	Secondary diabetes mellitus with hyperosmolarity	4-dig nonbill code	Condition	ICD9CM
Secondary Diabetes	44832187	249	Secondary diabetes mellitus	3-dig nonbill code	Condition	ICD9CM
Secondary Diabetes	44832188	249.01	Secondary diabetes mellitus without mention of complication, uncontrolled	5-dig billing code	Condition	ICD9CM
Secondary Diabetes	44832189	249.3	Secondary diabetes mellitus with other coma	4-dig nonbill code	Condition	ICD9CM
Secondary Diabetes	44833364	249.40	Secondary diabetes mellitus with renal manifestations, not stated as uncontrolled, or unspecified	5-dig billing code	Condition	ICD9CM
Secondary Diabetes	44834547	249.4	Secondary diabetes mellitus with renal manifestations	4-dig nonbill code	Condition	ICD9CM
Secondary Diabetes	44835747	249.1	Secondary diabetes mellitus with ketoacidosis	4-dig nonbill code	Condition	ICD9CM

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Secondary Diabetes	44835748	249.10	Secondary diabetes mellitus with ketoacidosis, not stated as uncontrolled, or unspecified	5-dig billing code	Condition	ICD9CM
Secondary Diabetes	44835749	249.30	Secondary diabetes mellitus with other coma, not stated as uncontrolled, or unspecified	5-dig billing code	Condition	ICD9CM
Secondary Diabetes	44835750	249.41	Secondary diabetes mellitus with renal manifestations, uncontrolled	5-dig billing code	Condition	ICD9CM
Secondary Diabetes	44835751	249.71	Secondary diabetes mellitus with peripheral circulatory disorders, uncontrolled	5-dig billing code	Condition	ICD9CM
Secondary Diabetes	44836911	249.0	Secondary diabetes mellitus, without mention of complication	4-dig nonbill code	Condition	ICD9CM
Secondary Diabetes	44836912	249.31	Secondary diabetes mellitus with other coma, uncontrolled	5-dig billing code	Condition	ICD9CM
Secondary Diabetes	44836913	249.51	Secondary diabetes mellitus with ophthalmic manifestations, uncontrolled	5-dig billing code	Condition	ICD9CM
Secondary Diabetes	28660	C580192	Immune Dysregulation, Polyendocrinopathy, Enteropathy, X-Linked Syndrome	Suppl Concept	Condition	MeSH
Secondary Diabetes	45612164	D014929	Wolfram Syndrome	Main Heading	Condition	MeSH
Secondary Diabetes	45615209	C562776	Hyperproinsulinemia	Suppl Concept	Condition	MeSH
Secondary Diabetes	45617592	C562780	Immunodysregulation, Polyendocrinopathy, and Enteropathy, X-Linked	Suppl Concept	Condition	MeSH
Secondary Diabetes	45618693	C536246	Noninsulin-dependent diabetes mellitus with deafness	Suppl Concept	Condition	MeSH
Secondary Diabetes	45426570	C10N100	Cystic fibrosis related diabetes mellitus	Read	Condition	Read
Secondary Diabetes	45429953	Cyu2200	[X]Malnutrition-related diabetes mellitus with unspecified complications	Read	Condition	Read
Secondary Diabetes	45433201	C10N.00	Secondary diabetes mellitus	Read	Condition	Read
Secondary Diabetes	45433920	PKyP.11	Wolfram syndrome	Read	Condition	Read
Secondary Diabetes	45439813	C10A.00	Malnutrition-related diabetes mellitus	Read	Condition	Read
Secondary Diabetes	45439814	C10B.00	Diabetes mellitus induced by steroids	Read	Condition	Read

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Secondary Diabetes	45446454	C10G000	Secondary pancreatic diabetes mellitus without complication	Read	Condition	Read
Secondary Diabetes	45456477	C10G.00	Secondary pancreatic diabetes mellitus	Read	Condition	Read
Secondary Diabetes	45466598	C10J.00	Insulin autoimmune syndrome	Read	Condition	Read
Secondary Diabetes	45470495	L180700	Pre-existing malnutrition-related diabetes mellitus	Read	Condition	Read
Secondary Diabetes	45473338	C10A200	Malnutrition-related diabetes mellitus with renal complications	Read	Condition	Read
Secondary Diabetes	45473339	C10A700	Malnutrition-related diabetes mellitus without complications	Read	Condition	Read
Secondary Diabetes	45480757	PKyP.00	Diabetes insipidus, diabetes mellitus, optic atrophy and deafness	Read	Condition	Read
Secondary Diabetes	45483324	C10A.11	Jamaica type diabetes	Read	Condition	Read
Secondary Diabetes	45483325	C10A600	Malnutrition-related diabetes mellitus with multiple complications	Read	Condition	Read
Secondary Diabetes	45486689	C10AX00	Malnutrition-related diabetes mellitus with other specified complications	Read	Condition	Read
Secondary Diabetes	45486692	C10L.00	Fibrocalculous pancreatopathy	Read	Condition	Read
Secondary Diabetes	45486724	Cyu2100	[X]Malnutrition-related diabetes mellitus with other specified complications	Read	Condition	Read
Secondary Diabetes	45489968	C10H000	Diabetes mellitus induced by non-steroid drugs without complication	Read	Condition	Read
Secondary Diabetes	45493247	C10N000	Secondary diabetes mellitus without complication	Read	Condition	Read
Secondary Diabetes	45499865	C10AW00	Malnutrition-related diabetes mellitus with unspecified complications	Read	Condition	Read
Secondary Diabetes	45499866	C10B000	Steroid induced diabetes mellitus without complication	Read	Condition	Read
Secondary Diabetes	45499874	C11y000	Steroid induced diabetes	Read	Condition	Read
Secondary Diabetes	45503176	C10A500	Malnutrition-related diabetes mellitus with peripheral circulatory complications	Read	Condition	Read

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Secondary Diabetes	45503197	C1zy600	Rabson-Mendenhall syndrome	Read	Condition	Read
Secondary Diabetes	45509824	C10A100	Malnutrition-related diabetes mellitus with ketoacidosis	Read	Condition	Read
Secondary Diabetes	45513207	C10H.00	Diabetes mellitus induced by non-steroid drugs	Read	Condition	Read
Secondary Diabetes	195771	8801005	Secondary diabetes mellitus	Clinical Finding	Condition	SNOMED
Secondary Diabetes	4009780	111554008	Rare form of secondary diabetes mellitus, due to disorder other than malnutrition, protein deficiency, pancreatic disease, hormonal disease, drugs, receptor abnormality, OR genetic syndrome	Clinical Finding	Condition	SNOMED
Secondary Diabetes	4030061	237600004	Malnutrition-related diabetes mellitus - fibrocalculous	Clinical Finding	Condition	SNOMED
Secondary Diabetes	4034960	237601000	Secondary endocrine diabetes mellitus	Clinical Finding	Condition	SNOMED
Secondary Diabetes	4034962	237613005	Hyperproinsulinemia	Clinical Finding	Condition	SNOMED
Secondary Diabetes	4062687	199231005	Pre-existing malnutrition-related diabetes mellitus	Clinical Finding	Condition	SNOMED
Secondary Diabetes	4079850	276560009	Diabetes mellitus in neonate small for gestational age	Clinical Finding	Condition	SNOMED
Secondary Diabetes	4096041	190406000	Malnutrition-related diabetes mellitus with ketoacidosis	Clinical Finding	Condition	SNOMED
Secondary Diabetes	4096042	190412005	Malnutrition-related diabetes mellitus without complications	Clinical Finding	Condition	SNOMED
Secondary Diabetes	4096670	190407009	Malnutrition-related diabetes mellitus with renal complications	Clinical Finding	Condition	SNOMED
Secondary Diabetes	4096671	190410002	Malnutrition-related diabetes mellitus with peripheral circulatory complications	Clinical Finding	Condition	SNOMED
Secondary Diabetes	4099334	190447002	Steroid-induced diabetes	Clinical Finding	Condition	SNOMED
Secondary Diabetes	4099652	190411003	Malnutrition-related diabetes mellitus with multiple complications	Clinical Finding	Condition	SNOMED
Secondary Diabetes	4099653	190416008	Steroid-induced diabetes mellitus without complication	Clinical Finding	Condition	SNOMED

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Secondary Diabetes	4099741	2751001	Fibrocalculous pancreatic diabetes	Clinical Finding	Condition	SNOMED
Secondary Diabetes	4129516	237619009	Diabetes-deafness syndrome maternally transmitted	Clinical Finding	Condition	SNOMED
Secondary Diabetes	4130166	237618001	Insulin-dependent diabetes mellitus secretory diarrhea syndrome	Clinical Finding	Condition	SNOMED
Secondary Diabetes	4136889	413183008	Diabetes mellitus induced by non-steroid drugs without complication	Clinical Finding	Condition	SNOMED
Secondary Diabetes	4140808	33559001	Rabson-Mendenhall syndrome	Clinical Finding	Condition	SNOMED
Secondary Diabetes	4143529	426705001	Diabetes mellitus associated with cystic fibrosis	Clinical Finding	Condition	SNOMED
Secondary Diabetes	4144583	427089005	Diabetes mellitus due to cystic fibrosis	Clinical Finding	Condition	SNOMED
Secondary Diabetes	4178452	51002006	Diabetes mellitus associated with pancreatic disease	Clinical Finding	Condition	SNOMED
Secondary Diabetes	4178790	42954008	Diabetes mellitus associated with receptor abnormality	Clinical Finding	Condition	SNOMED
Secondary Diabetes	4192852	75682002	Diabetes mellitus due to insulin receptor antibodies	Clinical Finding	Condition	SNOMED
Secondary Diabetes	4202383	5368009	Drug-induced diabetes mellitus	Clinical Finding	Condition	SNOMED
Secondary Diabetes	4212631	57886004	Protein-deficient diabetes mellitus	Clinical Finding	Condition	SNOMED
Secondary Diabetes	4235410	408540003	Diabetes mellitus induced by non-steroid drugs	Clinical Finding	Condition	SNOMED
Secondary Diabetes	4237068	91352004	Diabetes mellitus due to structurally abnormal insulin	Clinical Finding	Condition	SNOMED
Secondary Diabetes	4240589	59079001	Diabetes mellitus associated with hormonal etiology	Clinical Finding	Condition	SNOMED
Secondary Diabetes	4245270	5969009	Diabetes mellitus associated with genetic syndrome	Clinical Finding	Condition	SNOMED
Secondary Diabetes	4252384	408539000	Insulin autoimmune syndrome	Clinical Finding	Condition	SNOMED
Secondary Diabetes	4322638	70694009	Diabetes mellitus AND insipidus with optic atrophy AND deafness	Clinical Finding	Condition	SNOMED

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Secondary Diabetes	4327944	75524006	Malnutrition related diabetes mellitus	Clinical Finding	Condition	SNOMED
Secondary Diabetes	40386801	190404002	Malnutrition-related diabetes mellitus	Clinical Finding	Condition	SNOMED
Secondary Diabetes	40386813	190415007	Steroid-induced diabetes	Clinical Finding	Condition	SNOMED
Secondary Diabetes	40482883	445260006	Posttransplant diabetes mellitus	Clinical Finding	Condition	SNOMED
Secondary Diabetes	40488810	446641003	Renal cysts and diabetes syndrome	Clinical Finding	Condition	SNOMED
Secondary Diabetes	40585456	408542006	Diabetes mellitus due to insulin receptor antibodies	Clinical Finding	Condition	SNOMED
Secondary Diabetes	40585458	408544007	Drug-induced diabetes mellitus	Clinical Finding	Condition	SNOMED
Secondary Diabetes	40585459	408545008	Fibrocalculous pancreatic diabetes	Clinical Finding	Condition	SNOMED
Secondary Diabetes	44797029	425691000000105	[X]Malnutrition-related diabetes mellitus with unspecified complications	Clinical Finding	Condition	SNOMED
Secondary Diabetes	44800669	478671000000103	[X]Malnutrition-related diabetes mellitus with other specified complications	Clinical Finding	Condition	SNOMED
Type II Diabetes	0	DIQ080	Diabetes affected eyes			JNJ_NHANES_COND_SM
Type II Diabetes	45909850	142446	Diabetic Intracapillary Glomerulosclerosis	Diagnosis	Condition	CIEL
Type II Diabetes	45920221	136773	Insulin-Treated Non-Insulin-Dependent Diabetes Mellitus	Diagnosis	Condition	CIEL
Type II Diabetes	45935120	155993	disorder associated with type II diabetes mellitus	Diagnosis	Condition	CIEL
Type II Diabetes	45944463	133039	NIDDM in Nonobese	Diagnosis	Condition	CIEL
Type II Diabetes	45946029	152429	Type 1 Diabetes Mellitus with Diabetic Cataract	Diagnosis	Condition	CIEL
Type II Diabetes	45917298	156162	erectile dysfunction associated with type 2 diabetes mellitus	Diagnosis	Condition	CIEL
Type II Diabetes	45919533	115223	Nonproliferative Diabetic Retinopathy	Diagnosis	Condition	CIEL

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	45929270	142472	Diabetes Mellitus Type 2 in Obese	Diagnosis	Condition	CIEL
Type II Diabetes	45930321	152434	Type 2 Diabetes Mellitus with Mononeuropathy	Diagnosis	Condition	CIEL
Type II Diabetes	45951720	159187	type 1 diabetes mellitus with persistent microalbuminuria	Diagnosis	Condition	CIEL
Type II Diabetes	45911531	158013	non-insulin-dependent diabetes mellitus with multiple complications	Diagnosis	Condition	CIEL
Type II Diabetes	45950716	142336	Diffuse Type Diabetic Glomerulosclerosis	Diagnosis	Condition	CIEL
Type II Diabetes	45913240	111750	Type I Diabetes Mellitus with Nephropathy	Diagnosis	Condition	CIEL
Type II Diabetes	45932729	142460	Diabetes with Hyperosmolar Coma	Diagnosis	Condition	CIEL
Type II Diabetes	45909852	142458	Diabetes-Nephrosis Syndrome	Diagnosis	Condition	CIEL
Type II Diabetes	45925324	123941	Type II or Unspecified Type Diabetes Mellitus with Neurological Manifestations, not Stated as Uncontrolled	Diagnosis	Condition	CIEL
Type II Diabetes	45925325	123942	Type II Diabetes Mellitus with Nephropathy	Diagnosis	Condition	CIEL
Type II Diabetes	45947752	119461	Type II Diabetes Mellitus with Neurological Manifestations	Diagnosis	Condition	CIEL
Type II Diabetes	45920461	132978	Nodular Type Diabetic Glomerulosclerosis	Diagnosis	Condition	CIEL
Type II Diabetes	45922040	159193	type II diabetes mellitus with ulcer	Diagnosis	Condition	CIEL
Type II Diabetes	45924409	128401	Proliferative Diabetic Retinopathy	Diagnosis	Condition	CIEL
Type II Diabetes	45930564	154201	controlled type 2 diabetes with retinopathy	Diagnosis	Condition	CIEL
Type II Diabetes	45954768	119457	Type II Diabetes Mellitus with Peripheral Circulatory Disorder	Diagnosis	Condition	CIEL
Type II Diabetes	45914398	126603	Severe Nonproliferative Diabetic Retinopathy	Diagnosis	Condition	CIEL
Type II Diabetes	45909849	142430	Diabetic Retinal Microaneurysm	Diagnosis	Condition	CIEL

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	45924319	119450	Diabetic Ophtho Manifestation Juven	Diagnosis	Condition	CIEL
Type II Diabetes	45926455	142471	Diabetes Mellitus with Hyperosmolar Coma	Diagnosis	Condition	CIEL
Type II Diabetes	45928487	155914	diabetes mellitus type 2 in nonobese	Diagnosis	Condition	CIEL
Type II Diabetes	45930136	158474	pre-existing diabetes mellitus, non-insulin-dependent	Diagnosis	Condition	CIEL
Type II Diabetes	45934304	154241	type 2 diabetes, controlled, with peripheral circulatory disorder	Diagnosis	Condition	CIEL
Type II Diabetes	45918675	117348	Diabetic Hypoglycemic Coma	Diagnosis	Condition	CIEL
Type II Diabetes	45935108	155916	diabetes with proteinuria	Diagnosis	Condition	CIEL
Type II Diabetes	45945031	142445	Diabetic Iritis	Diagnosis	Condition	CIEL
Type II Diabetes	45949310	157649	malnutrition-related diabetes mellitus with coma	Diagnosis	Condition	CIEL
Type II Diabetes	45907663	111735	Diabetes Mellitus Type II, Controlled, with no Complications	Diagnosis	Condition	CIEL
Type II Diabetes	45911932	158495	preproliferative diabetic retinopathy	Diagnosis	Condition	CIEL
Type II Diabetes	45926452	142429	Diabetic Retinopathy	Diagnosis	Condition	CIEL
Type II Diabetes	45932728	142454	Diabetic Coma with Ketoacidosis	Diagnosis	Condition	CIEL
Type II Diabetes	45945034	142455	Diabetic Cataract	Diagnosis	Condition	CIEL
Type II Diabetes	45947664	111367	Diabetic Visual Loss: Near-Total Vision Impairment of Both Eyes	Diagnosis	Condition	CIEL
Type II Diabetes	45941503	159342	Non-ketotic non-hyperosmolar coma associated with diabetes mellitus	Diagnosis	Condition	CIEL
Type II Diabetes	45938351	111368	Diabetic Visual Loss: Blindness of Both Eyes	Diagnosis	Condition	CIEL
Type II Diabetes	45945035	142473	Non-insulin dependent diabetes mellitus	Diagnosis	Condition	CIEL

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	45948564	152433	Type 2 Diabetes Mellitus with Diabetic Cataract	Diagnosis	Condition	CIEL
Type II Diabetes	45924320	119465	Type II Diabetes Mellitus with Hyperosmolarity	Diagnosis	Condition	CIEL
Type II Diabetes	45932726	142444	Diabetic Macular Edema	Diagnosis	Condition	CIEL
Type II Diabetes	45936900	134141	Mild Non Proliferative Diabetic Retinopathy	Diagnosis	Condition	CIEL
Type II Diabetes	45934103	159189	type 2 diabetes mellitus with peripheral angiopathy	Diagnosis	Condition	CIEL
Type II Diabetes	45949993	136774	Insulin-Resistant Diabetes Mellitus and Acanthosis Nigricans	Diagnosis	Condition	CIEL
Type II Diabetes	45907664	111740	Type II Diabetes Mellitus with Ketoacidosis	Diagnosis	Condition	CIEL
Type II Diabetes	45936569	133150	Nephrotic Syndrome in Diabetes Mellitus	Diagnosis	Condition	CIEL
Type II Diabetes	45948882	154231	controlled type 1 diabetes with renal manifestation	Diagnosis	Condition	CIEL
Type II Diabetes	45954172	134012	Moderate Nonproliferative Diabetic Retinopathy	Diagnosis	Condition	CIEL
Type II Diabetes	45934108	159227	unspecified diabetes mellitus with coma	Diagnosis	Condition	CIEL
Type II Diabetes	45938368	111737	Type II Diabetes Mellitus with Renal Manifestations	Diagnosis	Condition	CIEL
Type II Diabetes	45947750	119455	Type I Diabetes Mellitus with Hyperosmolarity	Diagnosis	Condition	CIEL
Type II Diabetes	45947751	119459	Type II Diabetes Mellitus with Ophthalmic Manifestations	Diagnosis	Condition	CIEL
Type II Diabetes	45917082	154229	controlled type 2 diabetes with renal manifestation	Diagnosis	Condition	CIEL
Type II Diabetes	45931415	110785	Background Diabetic Retinopathy	Diagnosis	Condition	CIEL
Type II Diabetes	45920946	142431	Diabetic Nephropathy	Diagnosis	Condition	CIEL
Type II Diabetes	45929269	142469	Diabetes Mellitus with Renal Manifestation	Diagnosis	Condition	CIEL

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	45931224	123945	Type I Diabetes Mellitus with Ophthalmic Complications	Diagnosis	Condition	CIEL
Type II Diabetes	45945032	142448	Diabetic Glomerulopathy	Diagnosis	Condition	CIEL
Type II Diabetes	45571660	E13.5	Other specified diabetes mellitus with peripheral circulatory complications	ICD10 code	Condition	ICD10
Type II Diabetes	45595800	E12.0	Malnutrition-related diabetes mellitus with coma	ICD10 code	Condition	ICD10
Type II Diabetes	45591036	E14.3	Unspecified diabetes mellitus with ophthalmic complications	ICD10 code	Condition	ICD10
Type II Diabetes	45534187	O24.1	Pre-existing diabetes mellitus, non-insulin-dependent	ICD10 code	Condition	ICD10
Type II Diabetes	45561950	E11.7	Non-insulin-dependent diabetes mellitus with multiple complications	ICD10 code	Condition	ICD10
Type II Diabetes	45576442	E11.4	Non-insulin-dependent diabetes mellitus with neurological complications	ICD10 code	Condition	ICD10
Type II Diabetes	45581357	E13.0	Other specified diabetes mellitus with coma	ICD10 code	Condition	ICD10
Type II Diabetes	45557114	E11.5	Non-insulin-dependent diabetes mellitus with peripheral circulatory complications	ICD10 code	Condition	ICD10
Type II Diabetes	45591032	E13.3	Other specified diabetes mellitus with ophthalmic complications	ICD10 code	Condition	ICD10
Type II Diabetes	45576441	E11.0	Non-insulin-dependent diabetes mellitus with coma	ICD10 code	Condition	ICD10
Type II Diabetes	45552380	E10.3	Insulin-dependent diabetes mellitus with ophthalmic complications	ICD10 code	Condition	ICD10
Type II Diabetes	45561951	E11.8	Non-insulin-dependent diabetes mellitus with unspecified complications	ICD10 code	Condition	ICD10
Type II Diabetes	45605407	E14.2	Unspecified diabetes mellitus with renal complications	ICD10 code	Condition	ICD10
Type II Diabetes	45533286	H28.0	Diabetic cataract	ICD10 code	Condition	ICD10
Type II Diabetes	45571657	E12.3	Malnutrition-related diabetes mellitus with ophthalmic complications	ICD10 code	Condition	ICD10
Type II Diabetes	45542742	E13.4	Other specified diabetes mellitus with neurological complications	ICD10 code	Condition	ICD10

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	45591028	E11.3	Non-insulin-dependent diabetes mellitus with ophthalmic complications	ICD10 code	Condition	ICD10
Type II Diabetes	45547630	E13.1	Other specified diabetes mellitus with ketoacidosis	ICD10 code	Condition	ICD10
Type II Diabetes	45586137	E10.2	Insulin-dependent diabetes mellitus with renal complications	ICD10 code	Condition	ICD10
Type II Diabetes	45755355	E10.0	Insulin-dependent diabetes mellitus with coma	ICD10 code	Condition	ICD10
Type II Diabetes	45552387	E11.6	Non-insulin-dependent diabetes mellitus with other specified complications	ICD10 code	Condition	ICD10
Type II Diabetes	45591331	H36.0	Diabetic retinopathy	ICD10 code	Condition	ICD10
Type II Diabetes	45547631	E13.2	Other specified diabetes mellitus with renal complications	ICD10 code	Condition	ICD10
Type II Diabetes	45592124	N08.3	Glomerular disorders in diabetes mellitus	ICD10 code	Condition	ICD10
Type II Diabetes	45542739	E11.1	Non-insulin-dependent diabetes mellitus with ketoacidosis	ICD10 code	Condition	ICD10
Type II Diabetes	45561959	E14.0	Unspecified diabetes mellitus with coma	ICD10 code	Condition	ICD10
Type II Diabetes	45561952	E11.9	Non-insulin-dependent diabetes mellitus without complications	ICD10 code	Condition	ICD10
Type II Diabetes	45571656	E11	Non-insulin-dependent diabetes mellitus	ICD10 Hierarchy	Condition	ICD10
Type II Diabetes	45605400	E11.2	Non-insulin-dependent diabetes mellitus with renal complications	ICD10 code	Condition	ICD10
Type II Diabetes	1567959	E11.3	Type 2 diabetes mellitus with ophthalmic complications	4-char nonbill code	Condition	ICD10CM
Type II Diabetes	45552374	E08.39	Diabetes mellitus due to underlying condition with other diabetic ophthalmic complication	5-char billing code	Condition	ICD10CM
Type II Diabetes	45552378	E09.641	Drug or chemical induced diabetes mellitus with hypoglycemia with coma	6-char billing code	Condition	ICD10CM
Type II Diabetes	45566723	E08.339	Diabetes mellitus due to underlying condition with moderate nonproliferative diabetic retinopathy without macular edema	6-char billing code	Condition	ICD10CM

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	45586135	E09.359	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy without macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	1567914	E08.34	Diabetes mellitus due to underlying condition with severe nonproliferative diabetic retinopathy	5-char nonbill code	Condition	ICD10CM
Type II Diabetes	1567942	E10.2	Type 1 diabetes mellitus with kidney complications	4-char nonbill code	Condition	ICD10CM
Type II Diabetes	45552379	E10.21	Type 1 diabetes mellitus with diabetic nephropathy	5-char billing code	Condition	ICD10CM
Type II Diabetes	45557112	E11.341	Type 2 diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	45561958	E13.641	Other specified diabetes mellitus with hypoglycemia with coma	6-char billing code	Condition	ICD10CM
Type II Diabetes	45605403	E11.40	Type 2 diabetes mellitus with diabetic neuropathy, unspecified	5-char billing code	Condition	ICD10CM
Type II Diabetes	1567907	E08.0	Diabetes mellitus due to underlying condition with hyperosmolarity	4-char nonbill code	Condition	ICD10CM
Type II Diabetes	1567931	E09.34	Drug or chemical induced diabetes mellitus with severe nonproliferative diabetic retinopathy	5-char nonbill code	Condition	ICD10CM
Type II Diabetes	45552381	E10.311	Type 1 diabetes mellitus with unspecified diabetic retinopathy with macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	45557107	E08.331	Diabetes mellitus due to underlying condition with moderate nonproliferative diabetic retinopathy with macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	1567947	E10.34	Type 1 diabetes mellitus with severe nonproliferative diabetic retinopathy	5-char nonbill code	Condition	ICD10CM
Type II Diabetes	1571687	O24.11	Pre-existing diabetes mellitus, type 2, in pregnancy	5-char nonbill code	Condition	ICD10CM
Type II Diabetes	45533009	E08.21	Diabetes mellitus due to underlying condition with diabetic nephropathy	5-char billing code	Condition	ICD10CM
Type II Diabetes	45537958	E10.349	Type 1 diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema	6-char billing code	Condition	ICD10CM

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	45552373	E08.319	Diabetes mellitus due to underlying condition with unspecified diabetic retinopathy without macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	45561946	E09.39	Drug or chemical induced diabetes mellitus with other diabetic ophthalmic complication	5-char billing code	Condition	ICD10CM
Type II Diabetes	45561949	E11.641	Type 2 diabetes mellitus with hypoglycemia with coma	6-char billing code	Condition	ICD10CM
Type II Diabetes	45561953	E13.00	Other specified diabetes mellitus with hyperosmolarity without nonketotic hyperglycemic-hyperosmolar coma (NKHHC)	5-char billing code	Condition	ICD10CM
Type II Diabetes	45561955	E13.22	Other specified diabetes mellitus with diabetic chronic kidney disease	5-char billing code	Condition	ICD10CM
Type II Diabetes	45595802	E13.321	Other specified diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	1567932	E09.35	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy	5-char nonbill code	Condition	ICD10CM
Type II Diabetes	1567962	E11.33	Type 2 diabetes mellitus with moderate nonproliferative diabetic retinopathy	5-char nonbill code	Condition	ICD10CM
Type II Diabetes	1567975	E13.2	Other specified diabetes mellitus with kidney complications	4-char nonbill code	Condition	ICD10CM
Type II Diabetes	1567976	E13.3	Other specified diabetes mellitus with ophthalmic complications	4-char nonbill code	Condition	ICD10CM
Type II Diabetes	35206882	E11.9	Type 2 diabetes mellitus without complications	4-char billing code	Condition	ICD10CM
Type II Diabetes	45533022	E11.52	Type 2 diabetes mellitus with diabetic peripheral angiopathy with gangrene	5-char billing code	Condition	ICD10CM
Type II Diabetes	45537961	E11.331	Type 2 diabetes mellitus with moderate nonproliferative diabetic retinopathy with macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	45542738	E11.00	Type 2 diabetes mellitus with hyperosmolarity without nonketotic hyperglycemic-hyperosmolar coma (NKHHC)	5-char billing code	Condition	ICD10CM

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	45581342	E08.341	Diabetes mellitus due to underlying condition with severe nonproliferative diabetic retinopathy with macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	45581354	E11.329	Type 2 diabetes mellitus with mild nonproliferative diabetic retinopathy without macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	45591031	E11.649	Type 2 diabetes mellitus with hypoglycemia without coma	6-char billing code	Condition	ICD10CM
Type II Diabetes	1567969	E11.62	Type 2 diabetes mellitus with skin complications	5-char nonbill code	Condition	ICD10CM
Type II Diabetes	45547621	E10.22	Type 1 diabetes mellitus with diabetic chronic kidney disease	5-char billing code	Condition	ICD10CM
Type II Diabetes	45547625	E11.41	Type 2 diabetes mellitus with diabetic mononeuropathy	5-char billing code	Condition	ICD10CM
Type II Diabetes	45547632	E13.331	Other specified diabetes mellitus with moderate nonproliferative diabetic retinopathy with macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	45552385	E11.321	Type 2 diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	45557110	E10.11	Type 1 diabetes mellitus with ketoacidosis with coma	5-char billing code	Condition	ICD10CM
Type II Diabetes	45566731	E11.638	Type 2 diabetes mellitus with other oral complications	6-char billing code	Condition	ICD10CM
Type II Diabetes	45576447	E13.311	Other specified diabetes mellitus with unspecified diabetic retinopathy with macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	45586134	E09.341	Drug or chemical induced diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	45591027	E11.21	Type 2 diabetes mellitus with diabetic nephropathy	5-char billing code	Condition	ICD10CM
Type II Diabetes	45591033	E13.359	Other specified diabetes mellitus with proliferative diabetic retinopathy without macular edema	6-char billing code	Condition	ICD10CM

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	45595803	E13.349	Other specified diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	45600633	E08.321	Diabetes mellitus due to underlying condition with mild nonproliferative diabetic retinopathy with macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	45600634	E08.329	Diabetes mellitus due to underlying condition with mild nonproliferative diabetic retinopathy without macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	45605402	E11.349	Type 2 diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	45605405	E11.65	Type 2 diabetes mellitus with hyperglycemia	5-char billing code	Condition	ICD10CM
Type II Diabetes	1567946	E10.33	Type 1 diabetes mellitus with moderate nonproliferative diabetic retinopathy	5-char nonbill code	Condition	ICD10CM
Type II Diabetes	1567957	E11.0	Type 2 diabetes mellitus with hyperosmolarity	4-char nonbill code	Condition	ICD10CM
Type II Diabetes	45533020	E11.44	Type 2 diabetes mellitus with diabetic amyotrophy	5-char billing code	Condition	ICD10CM
Type II Diabetes	45566734	E13.36	Other specified diabetes mellitus with diabetic cataract	5-char billing code	Condition	ICD10CM
Type II Diabetes	45586140	E11.618	Type 2 diabetes mellitus with other diabetic arthropathy	6-char billing code	Condition	ICD10CM
Type II Diabetes	45605404	E11.49	Type 2 diabetes mellitus with other diabetic neurological complication	5-char billing code	Condition	ICD10CM
Type II Diabetes	1567929	E09.32	Drug or chemical induced diabetes mellitus with mild nonproliferative diabetic retinopathy	5-char nonbill code	Condition	ICD10CM
Type II Diabetes	1567965	E11.4	Type 2 diabetes mellitus with neurological complications	4-char nonbill code	Condition	ICD10CM
Type II Diabetes	45533021	E11.51	Type 2 diabetes mellitus with diabetic peripheral angiopathy without gangrene	5-char billing code	Condition	ICD10CM
Type II Diabetes	45542732	E09.36	Drug or chemical induced diabetes mellitus with diabetic cataract	5-char billing code	Condition	ICD10CM

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	45552377	E09.329	Drug or chemical induced diabetes mellitus with mild nonproliferative diabetic retinopathy without macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	45552386	E11.359	Type 2 diabetes mellitus with proliferative diabetic retinopathy without macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	45561944	E09.00	Drug or chemical induced diabetes mellitus with hyperosmolarity without nonketotic hyperglycemic-hyperosmolar coma (NKHHC)	5-char billing code	Condition	ICD10CM
Type II Diabetes	45576443	E11.59	Type 2 diabetes mellitus with other circulatory complications	5-char billing code	Condition	ICD10CM
Type II Diabetes	1567963	E11.34	Type 2 diabetes mellitus with severe nonproliferative diabetic retinopathy	5-char nonbill code	Condition	ICD10CM
Type II Diabetes	45533019	E11.39	Type 2 diabetes mellitus with other diabetic ophthalmic complication	5-char billing code	Condition	ICD10CM
Type II Diabetes	45542736	E10.319	Type 1 diabetes mellitus with unspecified diabetic retinopathy without macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	45547627	E11.628	Type 2 diabetes mellitus with other skin complications	6-char billing code	Condition	ICD10CM
Type II Diabetes	45552376	E09.21	Drug or chemical induced diabetes mellitus with diabetic nephropathy	5-char billing code	Condition	ICD10CM
Type II Diabetes	45552388	E13.29	Other specified diabetes mellitus with other diabetic kidney complication	5-char billing code	Condition	ICD10CM
Type II Diabetes	45576434	E09.321	Drug or chemical induced diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	45595797	E11.22	Type 2 diabetes mellitus with diabetic chronic kidney disease	5-char billing code	Condition	ICD10CM
Type II Diabetes	45605397	E10.339	Type 1 diabetes mellitus with moderate nonproliferative diabetic retinopathy without macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	1567956	E11	Type 2 diabetes mellitus	3-char nonbill code	Condition	ICD10CM
Type II Diabetes	1567958	E11.2	Type 2 diabetes mellitus with kidney complications	4-char nonbill code	Condition	ICD10CM
Type II Diabetes	1567980	E13.34	Other specified diabetes mellitus with severe nonproliferative diabetic retinopathy	5-char nonbill code	Condition	ICD10CM

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	45552383	E10.641	Type 1 diabetes mellitus with hypoglycemia with coma	6-char billing code	Condition	ICD10CM
Type II Diabetes	45561954	E13.01	Other specified diabetes mellitus with hyperosmolarity with coma	5-char billing code	Condition	ICD10CM
Type II Diabetes	45576431	E09.29	Drug or chemical induced diabetes mellitus with other diabetic kidney complication	5-char billing code	Condition	ICD10CM
Type II Diabetes	45595799	E11.69	Type 2 diabetes mellitus with other specified complication	5-char billing code	Condition	ICD10CM
Type II Diabetes	1567945	E10.32	Type 1 diabetes mellitus with mild nonproliferative diabetic retinopathy	5-char nonbill code	Condition	ICD10CM
Type II Diabetes	35206881	E11.8	Type 2 diabetes mellitus with unspecified complications	4-char billing code	Condition	ICD10CM
Type II Diabetes	45571654	E10.359	Type 1 diabetes mellitus with proliferative diabetic retinopathy without macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	45576446	E13.11	Other specified diabetes mellitus with ketoacidosis with coma	5-char billing code	Condition	ICD10CM
Type II Diabetes	45581355	E11.621	Type 2 diabetes mellitus with foot ulcer	6-char billing code	Condition	ICD10CM
Type II Diabetes	45582457	O24.112	Pre-existing diabetes mellitus, type 2, in pregnancy, second trimester	6-char billing code	Condition	ICD10CM
Type II Diabetes	1567924	E09.0	Drug or chemical induced diabetes mellitus with hyperosmolarity	4-char nonbill code	Condition	ICD10CM
Type II Diabetes	1567930	E09.33	Drug or chemical induced diabetes mellitus with moderate nonproliferative diabetic retinopathy	5-char nonbill code	Condition	ICD10CM
Type II Diabetes	1567943	E10.3	Type 1 diabetes mellitus with ophthalmic complications	4-char nonbill code	Condition	ICD10CM
Type II Diabetes	1567966	E11.5	Type 2 diabetes mellitus with circulatory complications	4-char nonbill code	Condition	ICD10CM
Type II Diabetes	1567970	E11.63	Type 2 diabetes mellitus with oral complications	5-char nonbill code	Condition	ICD10CM
Type II Diabetes	1567978	E13.32	Other specified diabetes mellitus with mild nonproliferative diabetic retinopathy	5-char nonbill code	Condition	ICD10CM
Type II Diabetes	1567981	E13.35	Other specified diabetes mellitus with proliferative diabetic retinopathy	5-char nonbill code	Condition	ICD10CM

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	45533012	E09.331	Drug or chemical induced diabetes mellitus with moderate nonproliferative diabetic retinopathy with macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	45547633	E13.339	Other specified diabetes mellitus with moderate nonproliferative diabetic retinopathy without macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	45561940	E08.359	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy without macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	45571659	E13.351	Other specified diabetes mellitus with proliferative diabetic retinopathy with macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	45587292	O24.111	Pre-existing diabetes mellitus, type 2, in pregnancy, first trimester	6-char billing code	Condition	ICD10CM
Type II Diabetes	45591030	E11.351	Type 2 diabetes mellitus with proliferative diabetic retinopathy with macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	1567968	E11.61	Type 2 diabetes mellitus with diabetic arthropathy	5-char nonbill code	Condition	ICD10CM
Type II Diabetes	45542728	E08.29	Diabetes mellitus due to underlying condition with other diabetic kidney complication	5-char billing code	Condition	ICD10CM
Type II Diabetes	45561947	E10.331	Type 1 diabetes mellitus with moderate nonproliferative diabetic retinopathy with macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	45571658	E13.329	Other specified diabetes mellitus with mild nonproliferative diabetic retinopathy without macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	45600642	E11.622	Type 2 diabetes mellitus with other skin ulcer	6-char billing code	Condition	ICD10CM
Type II Diabetes	45605401	E11.29	Type 2 diabetes mellitus with other diabetic kidney complication	5-char billing code	Condition	ICD10CM
Type II Diabetes	1567967	E11.6	Type 2 diabetes mellitus with other specified complications	4-char nonbill code	Condition	ICD10CM
Type II Diabetes	45552382	E10.36	Type 1 diabetes mellitus with diabetic cataract	5-char billing code	Condition	ICD10CM
Type II Diabetes	45567896	O24.113	Pre-existing diabetes mellitus, type 2, in pregnancy, third trimester	6-char billing code	Condition	ICD10CM

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	45576438	E10.39	Type 1 diabetes mellitus with other diabetic ophthalmic complication	5-char billing code	Condition	ICD10CM
Type II Diabetes	45581345	E09.349	Drug or chemical induced diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	45591029	E11.339	Type 2 diabetes mellitus with moderate nonproliferative diabetic retinopathy without macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	45595794	E10.341	Type 1 diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	45600641	E11.610	Type 2 diabetes mellitus with diabetic neuropathic arthropathy	6-char billing code	Condition	ICD10CM
Type II Diabetes	45606547	O24.119	Pre-existing diabetes mellitus, type 2, in pregnancy, unspecified trimester	6-char billing code	Condition	ICD10CM
Type II Diabetes	1567979	E13.33	Other specified diabetes mellitus with moderate nonproliferative diabetic retinopathy	5-char nonbill code	Condition	ICD10CM
Type II Diabetes	45552375	E08.641	Diabetes mellitus due to underlying condition with hypoglycemia with coma	6-char billing code	Condition	ICD10CM
Type II Diabetes	45566724	E08.36	Diabetes mellitus due to underlying condition with diabetic cataract	5-char billing code	Condition	ICD10CM
Type II Diabetes	45576433	E09.319	Drug or chemical induced diabetes mellitus with unspecified diabetic retinopathy without macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	45581353	E11.319	Type 2 diabetes mellitus with unspecified diabetic retinopathy without macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	45595798	E11.36	Type 2 diabetes mellitus with diabetic cataract	5-char billing code	Condition	ICD10CM
Type II Diabetes	45600637	E10.29	Type 1 diabetes mellitus with other diabetic kidney complication	5-char billing code	Condition	ICD10CM
Type II Diabetes	1567961	E11.32	Type 2 diabetes mellitus with mild nonproliferative diabetic retinopathy	5-char nonbill code	Condition	ICD10CM
Type II Diabetes	45547626	E11.620	Type 2 diabetes mellitus with diabetic dermatitis	6-char billing code	Condition	ICD10CM
Type II Diabetes	45547635	E13.39	Other specified diabetes mellitus with other diabetic ophthalmic complication	5-char billing code	Condition	ICD10CM

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	45557106	E08.01	Diabetes mellitus due to underlying condition with hyperosmolarity with coma	5-char billing code	Condition	ICD10CM
Type II Diabetes	45576432	E09.311	Drug or chemical induced diabetes mellitus with unspecified diabetic retinopathy with macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	45586139	E11.01	Type 2 diabetes mellitus with hyperosmolarity with coma	5-char billing code	Condition	ICD10CM
Type II Diabetes	45595793	E10.321	Type 1 diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	1567960	E11.31	Type 2 diabetes mellitus with unspecified diabetic retinopathy	5-char nonbill code	Condition	ICD10CM
Type II Diabetes	45542729	E08.349	Diabetes mellitus due to underlying condition with severe nonproliferative diabetic retinopathy without macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	45542741	E13.21	Other specified diabetes mellitus with diabetic nephropathy	5-char billing code	Condition	ICD10CM
Type II Diabetes	45561945	E09.22	Drug or chemical induced diabetes mellitus with diabetic chronic kidney disease	5-char billing code	Condition	ICD10CM
Type II Diabetes	45566725	E09.339	Drug or chemical induced diabetes mellitus with moderate nonproliferative diabetic retinopathy without macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	45576437	E10.351	Type 1 diabetes mellitus with proliferative diabetic retinopathy with macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	45586133	E09.11	Drug or chemical induced diabetes mellitus with ketoacidosis with coma	5-char billing code	Condition	ICD10CM
Type II Diabetes	1567973	E13.0	Other specified diabetes mellitus with hyperosmolarity	4-char nonbill code	Condition	ICD10CM
Type II Diabetes	45547634	E13.341	Other specified diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	45576430	E09.01	Drug or chemical induced diabetes mellitus with hyperosmolarity with coma	5-char billing code	Condition	ICD10CM
Type II Diabetes	45581352	E11.311	Type 2 diabetes mellitus with unspecified diabetic retinopathy with macular edema	6-char billing code	Condition	ICD10CM

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	45591023	E08.351	Diabetes mellitus due to underlying condition with proliferative diabetic retinopathy with macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	45591026	E10.329	Type 1 diabetes mellitus with mild nonproliferative diabetic retinopathy without macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	1567977	E13.31	Other specified diabetes mellitus with unspecified diabetic retinopathy	5-char nonbill code	Condition	ICD10CM
Type II Diabetes	1571686	O24.1	Pre-existing diabetes mellitus, type 2, in pregnancy, childbirth and the puerperium	4-char nonbill code	Condition	ICD10CM
Type II Diabetes	45537953	E08.11	Diabetes mellitus due to underlying condition with ketoacidosis with coma	5-char billing code	Condition	ICD10CM
Type II Diabetes	45582458	O24.13	Pre-existing diabetes mellitus, type 2, in the puerperium	5-char billing code	Condition	ICD10CM
Type II Diabetes	45533010	E08.311	Diabetes mellitus due to underlying condition with unspecified diabetic retinopathy with macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	45533023	E11.630	Type 2 diabetes mellitus with periodontal disease	6-char billing code	Condition	ICD10CM
Type II Diabetes	45537962	E11.43	Type 2 diabetes mellitus with diabetic autonomic (poly)neuropathy	5-char billing code	Condition	ICD10CM
Type II Diabetes	45547619	E09.351	Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy with macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	45552372	E08.22	Diabetes mellitus due to underlying condition with diabetic chronic kidney disease	5-char billing code	Condition	ICD10CM
Type II Diabetes	45557113	E11.42	Type 2 diabetes mellitus with diabetic polyneuropathy	5-char billing code	Condition	ICD10CM
Type II Diabetes	45586142	E13.319	Other specified diabetes mellitus with unspecified diabetic retinopathy without macular edema	6-char billing code	Condition	ICD10CM
Type II Diabetes	44820684	250.53	Diabetes with ophthalmic manifestations, type I [juvenile type], uncontrolled	5-dig billing code	Condition	ICD9CM
Type II Diabetes	44824073	250.22	Diabetes with hyperosmolarity, type II or unspecified type, uncontrolled	5-dig billing code	Condition	ICD9CM
Type II Diabetes	44828794	250.5	Diabetes with ophthalmic manifestations	4-dig nonbill code	Condition	ICD9CM

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	44834547	249.4	Secondary diabetes mellitus with renal manifestations	4-dig nonbill code	Condition	ICD9CM
Type II Diabetes	44829878	250.10	Diabetes with ketoacidosis, type II or unspecified type, not stated as uncontrolled	5-dig billing code	Condition	ICD9CM
Type II Diabetes	44832193	250.32	Diabetes with other coma, type II or unspecified type, uncontrolled	5-dig billing code	Condition	ICD9CM
Type II Diabetes	44823040	362.03	Nonproliferative diabetic retinopathy NOS	5-dig billing code	Condition	ICD9CM
Type II Diabetes	44824074	250.4	Diabetes with renal manifestations	4-dig nonbill code	Condition	ICD9CM
Type II Diabetes	44826459	250.2	Diabetes mellitus with hyperosmolarity	4-dig nonbill code	Condition	ICD9CM
Type II Diabetes	44836913	249.51	Secondary diabetes mellitus with ophthalmic manifestations, uncontrolled	5-dig billing code	Condition	ICD9CM
Type II Diabetes	44836916	250.20	Diabetes with hyperosmolarity, type II or unspecified type, not stated as uncontrolled	5-dig billing code	Condition	ICD9CM
Type II Diabetes	44826461	250.82	Diabetes with other specified manifestations, type II or unspecified type, uncontrolled	5-dig billing code	Condition	ICD9CM
Type II Diabetes	44833367	250.72	Diabetes with peripheral circulatory disorders, type II or unspecified type, uncontrolled	5-dig billing code	Condition	ICD9CM
Type II Diabetes	44822935	250.41	Diabetes with renal manifestations, type I [juvenile type], not stated as uncontrolled	5-dig billing code	Condition	ICD9CM
Type II Diabetes	44834647	362.04	Mild nonproliferative diabetic retinopathy	5-dig billing code	Condition	ICD9CM
Type II Diabetes	44820683	250.33	Diabetes with other coma, type I [juvenile type], uncontrolled	5-dig billing code	Condition	ICD9CM
Type II Diabetes	44832194	250.42	Diabetes with renal manifestations, type II or unspecified type, uncontrolled	5-dig billing code	Condition	ICD9CM
Type II Diabetes	44832299	362.05	Moderate nonproliferative diabetic retinopathy	5-dig billing code	Condition	ICD9CM
Type II Diabetes	44828788	249.5	Secondary diabetes mellitus with ophthalmic manifestations	4-dig nonbill code	Condition	ICD9CM
Type II Diabetes	44826573	362.0	Diabetic retinopathy	4-dig nonbill code	Condition	ICD9CM
Type II Diabetes	44829879	250.52	Diabetes with ophthalmic manifestations, type II or unspecified type, uncontrolled	5-dig billing code	Condition	ICD9CM

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	44832192	250.31	Diabetes with other coma, type I [juvenile type], not stated as uncontrolled	5-dig billing code	Condition	ICD9CM
Type II Diabetes	44834549	250.43	Diabetes with renal manifestations, type I [juvenile type], uncontrolled	5-dig billing code	Condition	ICD9CM
Type II Diabetes	44836915	250.02	Diabetes mellitus without mention of complication, type II or unspecified type, uncontrolled	5-dig billing code	Condition	ICD9CM
Type II Diabetes	44826460	250.30	Diabetes with other coma, type II or unspecified type, not stated as uncontrolled	5-dig billing code	Condition	ICD9CM
Type II Diabetes	44821870	362.07	Diabetic macular edema	5-dig billing code	Condition	ICD9CM
Type II Diabetes	44824072	250.12	Diabetes with ketoacidosis, type II or unspecified type, uncontrolled	5-dig billing code	Condition	ICD9CM
Type II Diabetes	44827616	250.70	Diabetes with peripheral circulatory disorders, type II or unspecified type, not stated as uncontrolled	5-dig billing code	Condition	ICD9CM
Type II Diabetes	44836914	250.00	Diabetes mellitus without mention of complication, type II or unspecified type, not stated as uncontrolled	5-dig billing code	Condition	ICD9CM
Type II Diabetes	44822932	249.50	Secondary diabetes mellitus with ophthalmic manifestations, not stated as uncontrolled, or unspecified	5-dig billing code	Condition	ICD9CM
Type II Diabetes	44822936	250.51	Diabetes with ophthalmic manifestations, type I [juvenile type], not stated as uncontrolled	5-dig billing code	Condition	ICD9CM
Type II Diabetes	44819500	250.50	Diabetes with ophthalmic manifestations, type II or unspecified type, not stated as uncontrolled	5-dig billing code	Condition	ICD9CM
Type II Diabetes	44829882	250.92	Diabetes with unspecified complication, type II or unspecified type, uncontrolled	5-dig billing code	Condition	ICD9CM
Type II Diabetes	44831148	362.01	Background diabetic retinopathy	5-dig billing code	Condition	ICD9CM
Type II Diabetes	44832190	250.21	Diabetes with hyperosmolarity, type I [juvenile type], not stated as uncontrolled	5-dig billing code	Condition	ICD9CM
Type II Diabetes	44832301	362.2	Other proliferative retinopathy	4-dig nonbill code	Condition	ICD9CM
Type II Diabetes	44836917	250.3	Diabetes with other coma	4-dig nonbill code	Condition	ICD9CM

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	44827617	250.90	Diabetes with unspecified complication, type II or unspecified type, not stated as uncontrolled	5-dig billing code	Condition	ICD9CM
Type II Diabetes	44828795	250.60	Diabetes with neurological manifestations, type II or unspecified type, not stated as uncontrolled	5-dig billing code	Condition	ICD9CM
Type II Diabetes	44833366	250.62	Diabetes with neurological manifestations, type II or unspecified type, uncontrolled	5-dig billing code	Condition	ICD9CM
Type II Diabetes	44831047	250.80	Diabetes with other specified manifestations, type II or unspecified type, not stated as uncontrolled	5-dig billing code	Condition	ICD9CM
Type II Diabetes	44832300	362.06	Severe nonproliferative diabetic retinopathy	5-dig billing code	Condition	ICD9CM
Type II Diabetes	44833364	249.40	Secondary diabetes mellitus with renal manifestations, not stated as uncontrolled, or unspecified	5-dig billing code	Condition	ICD9CM
Type II Diabetes	44835750	249.41	Secondary diabetes mellitus with renal manifestations, uncontrolled	5-dig billing code	Condition	ICD9CM
Type II Diabetes	44831045	250.40	Diabetes with renal manifestations, type II or unspecified type, not stated as uncontrolled	5-dig billing code	Condition	ICD9CM
Type II Diabetes	44833465	362.02	Proliferative diabetic retinopathy	5-dig billing code	Condition	ICD9CM
Type II Diabetes	44833484	366.41	Diabetic cataract	5-dig billing code	Condition	ICD9CM
Type II Diabetes	45610635	D006944	Hyperglycemic Hyperosmolar Nonketotic Coma	Main Heading	Condition	MeSH
Type II Diabetes	45615391	D003928	Diabetic Nephropathies	Main Heading	Condition	MeSH
Type II Diabetes	45615392	D003930	Diabetic Retinopathy	Main Heading	Condition	MeSH
Type II Diabetes	45610489	D003926	Diabetic Coma	Condition	Condition	MeSH
Type II Diabetes	45611690	D003924	Diabetes Mellitus, Type 2	Main Heading	Condition	MeSH
Type II Diabetes	45527840	250 H	COMA DIABETIC	OXMIS	Condition	OXMIS

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	45525872	250 AM	MATURITY ONSET DIABETES (MELLITUS)	OXMIS	Condition	OXMIS
Type II Diabetes	45423311	C104100	Diabetes mellitus, adult onset, with renal manifestation	Read	Condition	Read
Type II Diabetes	45426727	F420400	Diabetic maculopathy	Read	Condition	Read
Type II Diabetes	45445044	2BBP.00	O/E - right eye background diabetic retinopathy	Read	Condition	Read
Type II Diabetes	45453118	C10F011	Type II diabetes mellitus with renal complications	Read	Condition	Read
Type II Diabetes	45463409	F420800	High risk non proliferative diabetic retinopathy	Read	Condition	Read
Type II Diabetes	45463623	K01x111	Kimmelstiel - Wilson disease	Read	Condition	Read
Type II Diabetes	45480459	L180600	Pre-existing diabetes mellitus, non-insulin-dependent	Read	Condition	Read
Type II Diabetes	45426562	C101100	Diabetes mellitus, adult onset, with ketoacidosis	Read	Condition	Read
Type II Diabetes	45453103	C102z00	Diabetes mellitus NOS with hyperosmolar coma	Read	Condition	Read
Type II Diabetes	45453112	C109600	Non-insulin-dependent diabetes mellitus with retinopathy	Read	Condition	Read
Type II Diabetes	45456471	C102100	Diabetes mellitus, adult onset, with hyperosmolar coma	Read	Condition	Read
Type II Diabetes	45459822	C109E12	Type 2 diabetes mellitus with diabetic cataract	Read	Condition	Read
Type II Diabetes	45466591	C109412	Type 2 diabetes mellitus with ulcer	Read	Condition	Read
Type II Diabetes	45473336	C109A00	Non-insulin dependent diabetes mellitus with mononeuropathy	Read	Condition	Read
Type II Diabetes	45489962	C109E00	Non-insulin dependent diabetes mellitus with diabetic cataract	Read	Condition	Read
Type II Diabetes	45493230	C102000	Diabetes mellitus, juvenile type, with hyperosmolar coma	Read	Condition	Read
Type II Diabetes	45499861	C109200	Non-insulin-dependent diabetes mellitus with neurological complications	Read	Condition	Read

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	45509820	C105000	Diabetes mellitus, juvenile type, with ophthalmic manifestation	Read	Condition	Read
Type II Diabetes	45513202	C109512	Type 2 diabetes mellitus with gangrene	Read	Condition	Read
Type II Diabetes	45519996	F420100	Proliferative diabetic retinopathy	Read	Condition	Read
Type II Diabetes	45420119	C10F.00	Type 2 diabetes mellitus	Read	Condition	Read
Type II Diabetes	45425158	2BBk.00	O/E - right eye stable treated proliferative diabetic retinopathy	Read	Condition	Read
Type II Diabetes	45425159	2BBm.00	O/E - right eye clinically significant macular oedema	Read	Condition	Read
Type II Diabetes	45429911	C109000	Non-insulin-dependent diabetes mellitus with renal complications	Read	Condition	Read
Type II Diabetes	45439971	F420200	Preproliferative diabetic retinopathy	Read	Condition	Read
Type II Diabetes	45443101	C109E11	Type II diabetes mellitus with diabetic cataract	Read	Condition	Read
Type II Diabetes	45446453	C10FL00	Type 2 diabetes mellitus with persistent proteinuria	Read	Condition	Read
Type II Diabetes	45449784	C10FM00	Type 2 diabetes mellitus with persistent microalbuminuria	Read	Condition	Read
Type II Diabetes	45463264	C10F911	Type II diabetes mellitus without complication	Read	Condition	Read
Type II Diabetes	45471911	2BBW.00	O/E - right eye diabetic maculopathy	Read	Condition	Read
Type II Diabetes	45493237	C109D12	Type 2 diabetes mellitus with hypoglycaemic coma	Read	Condition	Read
Type II Diabetes	45493243	C10F311	Type II diabetes mellitus with multiple complications	Read	Condition	Read
Type II Diabetes	45503178	C10ED12	Insulin dependent diabetes mellitus with nephropathy	Read	Condition	Read
Type II Diabetes	45506459	C10ED11	Type I diabetes mellitus with nephropathy	Read	Condition	Read
Type II Diabetes	45513203	C109F11	Type II diabetes mellitus with peripheral angiopathy	Read	Condition	Read

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	45523156	C10EF12	Insulin dependent diabetes mellitus with diabetic cataract	Read	Condition	Read
Type II Diabetes	45426567	C10F300	Type 2 diabetes mellitus with multiple complications	Read	Condition	Read
Type II Diabetes	45429917	C10FP00	Type 2 diabetes mellitus with ketoacidotic coma	Read	Condition	Read
Type II Diabetes	45433197	C108F11	Type I diabetes mellitus with diabetic cataract	Read	Condition	Read
Type II Diabetes	45435122	2BBR.00	O/E - right eye preproliferative diabetic retinopathy	Read	Condition	Read
Type II Diabetes	45436525	C108F00	Insulin dependent diabetes mellitus with diabetic cataract	Read	Condition	Read
Type II Diabetes	45439821	C10FC00	Type 2 diabetes mellitus with nephropathy	Read	Condition	Read
Type II Diabetes	45443100	C109B11	Type II diabetes mellitus with polyneuropathy	Read	Condition	Read
Type II Diabetes	45453262	F440700	Diabetic iritis	Read	Condition	Read
Type II Diabetes	45483326	C10E000	Type 1 diabetes mellitus with renal complications	Read	Condition	Read
Type II Diabetes	45496542	C109H00	Non-insulin dependent diabetes mellitus with neuropathic arthropathy	Read	Condition	Read
Type II Diabetes	45499864	C109G11	Type II diabetes mellitus with arthropathy	Read	Condition	Read
Type II Diabetes	45513552	K08yA00	Proteinuric diabetic nephropathy	Read	Condition	Read
Type II Diabetes	45423316	C10F511	Type II diabetes mellitus with gangrene	Read	Condition	Read
Type II Diabetes	45433193	C103000	Diabetes mellitus, juvenile type, with ketoacidotic coma	Read	Condition	Read
Type II Diabetes	45443096	C104z00	Diabetes mellitus with nephropathy NOS	Read	Condition	Read
Type II Diabetes	45453117	C10EN11	Type I diabetes mellitus with ketoacidotic coma	Read	Condition	Read
Type II Diabetes	45466592	C109912	Type 2 diabetes mellitus without complication	Read	Condition	Read

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	45473334	C109212	Type 2 diabetes mellitus with neurological complications	Read	Condition	Read
Type II Diabetes	45480049	C10F111	Type II diabetes mellitus with ophthalmic complications	Read	Condition	Read
Type II Diabetes	45489959	C108111	Type I diabetes mellitus with ophthalmic complications	Read	Condition	Read
Type II Diabetes	45493240	C10E700	Type 1 diabetes mellitus with retinopathy	Read	Condition	Read
Type II Diabetes	45503181	C10FF00	Type 2 diabetes mellitus with peripheral angiopathy	Read	Condition	Read
Type II Diabetes	45503182	C10FM11	Type II diabetes mellitus with persistent microalbuminuria	Read	Condition	Read
Type II Diabetes	45505050	2BBn.00	O/E - left eye clinically significant macular oedema	Read	Condition	Read
Type II Diabetes	45429912	C109111	Type II diabetes mellitus with ophthalmic complications	Read	Condition	Read
Type II Diabetes	45439817	C10E711	Type I diabetes mellitus with retinopathy	Read	Condition	Read
Type II Diabetes	45443099	C108D12	Type 1 diabetes mellitus with nephropathy	Read	Condition	Read
Type II Diabetes	45476733	C109D11	Type II diabetes mellitus with hypoglycaemic coma	Read	Condition	Read
Type II Diabetes	45496541	C109F00	Non-insulin-dependent diabetes mellitus with peripheral angiopathy	Read	Condition	Read
Type II Diabetes	45513201	C100112	Non-insulin dependent diabetes mellitus	Read	Condition	Read
Type II Diabetes	45441723	2BBX.00	O/E - left eye diabetic maculopathy	Read	Condition	Read
Type II Diabetes	45466597	C10FH11	Type II diabetes mellitus with neuropathic arthropathy	Read	Condition	Read
Type II Diabetes	45476732	C109011	Type II diabetes mellitus with renal complications	Read	Condition	Read
Type II Diabetes	45509822	C109B12	Type 2 diabetes mellitus with polyneuropathy	Read	Condition	Read
Type II Diabetes	45509823	C109G00	Non-insulin dependent diabetes mellitus with arthropathy	Read	Condition	Read

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	45513359	F420000	Background diabetic retinopathy	Read	Condition	Read
Type II Diabetes	45516604	C104.00	Diabetes mellitus with renal manifestation	Read	Condition	Read
Type II Diabetes	45420114	C109.12	Type 2 diabetes mellitus	Read	Condition	Read
Type II Diabetes	45429916	C10F611	Type II diabetes mellitus with retinopathy	Read	Condition	Read
Type II Diabetes	45436527	C10E111	Type I diabetes mellitus with ophthalmic complications	Read	Condition	Read
Type II Diabetes	45439811	C107100	Diabetes mellitus, adult onset, with peripheral circulatory disorder	Read	Condition	Read
Type II Diabetes	45439819	C10EL11	Type I diabetes mellitus with persistent microalbuminuria	Read	Condition	Read
Type II Diabetes	45449783	C10FC11	Type II diabetes mellitus with nephropathy	Read	Condition	Read
Type II Diabetes	45466593	C109D00	Non-insulin dependent diabetes mellitus with hypoglycaemic coma	Read	Condition	Read
Type II Diabetes	45489964	C10E012	Insulin-dependent diabetes mellitus with renal complications	Read	Condition	Read
Type II Diabetes	45489967	C10FA11	Type II diabetes mellitus with mononeuropathy	Read	Condition	Read
Type II Diabetes	45496544	C10ED00	Type 1 diabetes mellitus with nephropathy	Read	Condition	Read
Type II Diabetes	45503179	C10F100	Type 2 diabetes mellitus with ophthalmic complications	Read	Condition	Read
Type II Diabetes	45503185	C10P111	Type 2 diabetes mellitus in remission	Read	Condition	Read
Type II Diabetes	45506461	C10FE11	Type II diabetes mellitus with diabetic cataract	Read	Condition	Read
Type II Diabetes	45523150	C109A12	Type 2 diabetes mellitus with mononeuropathy	Read	Condition	Read
Type II Diabetes	45523151	C109G12	Type 2 diabetes mellitus with arthropathy	Read	Condition	Read
Type II Diabetes	45420115	C109900	Non-insulin-dependent diabetes mellitus without complication	Read	Condition	Read

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	45420120	C10FH00	Type 2 diabetes mellitus with neuropathic arthropathy	Read	Condition	Read
Type II Diabetes	45429915	C10F000	Type 2 diabetes mellitus with renal complications	Read	Condition	Read
Type II Diabetes	45439810	C106100	Diabetes mellitus, adult onset, with neurological manifestation	Read	Condition	Read
Type II Diabetes	45456475	C10A000	Malnutrition-related diabetes mellitus with coma	Read	Condition	Read
Type II Diabetes	45470049	C108012	Type 1 diabetes mellitus with renal complications	Read	Condition	Read
Type II Diabetes	45476735	C10FG00	Type 2 diabetes mellitus with arthropathy	Read	Condition	Read
Type II Diabetes	45493231	C108700	Insulin dependent diabetes mellitus with retinopathy	Read	Condition	Read
Type II Diabetes	45496546	C10F900	Type 2 diabetes mellitus without complication	Read	Condition	Read
Type II Diabetes	45430066	F420z00	Diabetic retinopathy NOS	Read	Condition	Read
Type II Diabetes	45443102	C10EF00	Type 1 diabetes mellitus with diabetic cataract	Read	Condition	Read
Type II Diabetes	45446452	C10FB00	Type 2 diabetes mellitus with polyneuropathy	Read	Condition	Read
Type II Diabetes	45459821	C109612	Type 2 diabetes mellitus with retinopathy	Read	Condition	Read
Type II Diabetes	45466596	C10FF11	Type II diabetes mellitus with peripheral angiopathy	Read	Condition	Read
Type II Diabetes	45477062	K01x100	Nephrotic syndrome in diabetes mellitus	Read	Condition	Read
Type II Diabetes	45499858	C108712	Type 1 diabetes mellitus with retinopathy	Read	Condition	Read
Type II Diabetes	45516609	C109C12	Type 2 diabetes mellitus with nephropathy	Read	Condition	Read
Type II Diabetes	45423312	C109100	Non-insulin-dependent diabetes mellitus with ophthalmic complications	Read	Condition	Read
Type II Diabetes	45429914	C10EN00	Type 1 diabetes mellitus with ketoacidotic coma	Read	Condition	Read

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	45449781	C10F200	Type 2 diabetes mellitus with neurological complications	Read	Condition	Read
Type II Diabetes	45470051	C109211	Type II diabetes mellitus with neurological complications	Read	Condition	Read
Type II Diabetes	45499863	C109A11	Type II diabetes mellitus with mononeuropathy	Read	Condition	Read
Type II Diabetes	45503173	C108100	Insulin-dependent diabetes mellitus with ophthalmic complications	Read	Condition	Read
Type II Diabetes	45503177	C10E011	Type I diabetes mellitus with renal complications	Read	Condition	Read
Type II Diabetes	45503180	C10F500	Type 2 diabetes mellitus with gangrene	Read	Condition	Read
Type II Diabetes	45506455	C104y00	Other specified diabetes mellitus with renal complications	Read	Condition	Read
Type II Diabetes	45519843	C10EP00	Type 1 diabetes mellitus with exudative maculopathy	Read	Condition	Read
Type II Diabetes	45449776	C102.00	Diabetes mellitus with hyperosmolar coma	Read	Condition	Read
Type II Diabetes	45473478	F420600	Non proliferative diabetic retinopathy	Read	Condition	Read
Type II Diabetes	45486690	C10EK00	Type 1 diabetes mellitus with persistent proteinuria	Read	Condition	Read
Type II Diabetes	45493235	C109.11	NIDDM - Non-insulin dependent diabetes mellitus	Read	Condition	Read
Type II Diabetes	45499862	C109400	Non-insulin dependent diabetes mellitus with ulcer	Read	Condition	Read
Type II Diabetes	45503172	C103100	Diabetes mellitus, adult onset, with ketoacidotic coma	Read	Condition	Read
Type II Diabetes	45516605	C105.00	Diabetes mellitus with ophthalmic manifestation	Read	Condition	Read
Type II Diabetes	45523152	C109J11	Insulin treated non-insulin dependent diabetes mellitus	Read	Condition	Read
Type II Diabetes	45420117	C10A300	Malnutrition-related diabetes mellitus with ophthalmic complications	Read	Condition	Read
Type II Diabetes	45439812	C108000	Insulin-dependent diabetes mellitus with renal complications	Read	Condition	Read

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	45453110	C109.13	Type II diabetes mellitus	Read	Condition	Read
Type II Diabetes	45453111	C109511	Type II diabetes mellitus with gangrene	Read	Condition	Read
Type II Diabetes	45468624	2BBF.00	Retinal abnormality - diabetes related	Read	Condition	Read
Type II Diabetes	45480045	C108711	Type I diabetes mellitus with retinopathy	Read	Condition	Read
Type II Diabetes	45486686	C107400	NIDDM with peripheral circulatory disorder	Read	Condition	Read
Type II Diabetes	45523155	C10EF11	Type I diabetes mellitus with diabetic cataract	Read	Condition	Read
Type II Diabetes	45436526	C109F12	Type 2 diabetes mellitus with peripheral angiopathy	Read	Condition	Read
Type II Diabetes	45443104	C10FJ11	Insulin treated Type II diabetes mellitus	Read	Condition	Read
Type II Diabetes	45443250	F420500	Advanced diabetic retinal disease	Read	Condition	Read
Type II Diabetes	45453104	C105y00	Other specified diabetes mellitus with ophthalmic complications	Read	Condition	Read
Type II Diabetes	45486687	C108011	Type I diabetes mellitus with renal complications	Read	Condition	Read
Type II Diabetes	45509821	C109611	Type II diabetes mellitus with retinopathy	Read	Condition	Read
Type II Diabetes	45509974	F420.00	Diabetic retinopathy	Read	Condition	Read
Type II Diabetes	45443103	C10FJ00	Insulin treated Type 2 diabetes mellitus	Read	Condition	Read
Type II Diabetes	45449779	C10E712	Insulin dependent diabetes mellitus with retinopathy	Read	Condition	Read
Type II Diabetes	45449782	C10F400	Type 2 diabetes mellitus with ulcer	Read	Condition	Read
Type II Diabetes	45499856	C103.00	Diabetes mellitus with ketoacidotic coma	Read	Condition	Read
Type II Diabetes	45503183	C10FQ11	Type II diabetes mellitus with exudative maculopathy	Read	Condition	Read

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	45423315	C10EK11	Type I diabetes mellitus with persistent proteinuria	Read	Condition	Read
Type II Diabetes	45426564	C109B00	Non-insulin dependent diabetes mellitus with polyneuropathy	Read	Condition	Read
Type II Diabetes	45436532	C10FD00	Type 2 diabetes mellitus with hypoglycaemic coma	Read	Condition	Read
Type II Diabetes	45446449	C108F12	Type 1 diabetes mellitus with diabetic cataract	Read	Condition	Read
Type II Diabetes	45463265	C10FG11	Type II diabetes mellitus with arthropathy	Read	Condition	Read
Type II Diabetes	45468625	2BBV.00	O/E - left eye proliferative diabetic retinopathy	Read	Condition	Read
Type II Diabetes	45473335	C109300	Non-insulin-dependent diabetes mellitus with multiple complications	Read	Condition	Read
Type II Diabetes	45483320	C104.11	Diabetic nephropathy	Read	Condition	Read
Type II Diabetes	45503174	C109311	Type II diabetes mellitus with multiple complications	Read	Condition	Read
Type II Diabetes	45505048	2BBT.00	O/E - right eye proliferative diabetic retinopathy	Read	Condition	Read
Type II Diabetes	45513204	C10FA00	Type 2 diabetes mellitus with mononeuropathy	Read	Condition	Read
Type II Diabetes	45513205	C10FD11	Type II diabetes mellitus with hypoglycaemic coma	Read	Condition	Read
Type II Diabetes	45516611	C10E112	Insulin-dependent diabetes mellitus with ophthalmic complications	Read	Condition	Read
Type II Diabetes	45519842	C109112	Type 2 diabetes mellitus with ophthalmic complications	Read	Condition	Read
Type II Diabetes	45420111	C104000	Diabetes mellitus, juvenile type, with renal manifestation	Read	Condition	Read
Type II Diabetes	45420116	C109H12	Type 2 diabetes mellitus with neuropathic arthropathy	Read	Condition	Read
Type II Diabetes	45466595	C10EL00	Type 1 diabetes mellitus with persistent microalbuminuria	Read	Condition	Read
Type II Diabetes	45468626	2BBo.00	O/E - sight threatening diabetic retinopathy	Read	Condition	Read

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	45470215	F420700	High risk proliferative diabetic retinopathy	Read	Condition	Read
Type II Diabetes	45486688	C109C11	Type II diabetes mellitus with nephropathy	Read	Condition	Read
Type II Diabetes	45486691	C10F.11	Type II diabetes mellitus	Read	Condition	Read
Type II Diabetes	45489963	C109J00	Insulin treated Type 2 diabetes mellitus	Read	Condition	Read
Type II Diabetes	45489966	C10EP11	Type I diabetes mellitus with exudative maculopathy	Read	Condition	Read
Type II Diabetes	45493234	C109.00	Non-insulin dependent diabetes mellitus	Read	Condition	Read
Type II Diabetes	45493236	C109911	Type II diabetes mellitus without complication	Read	Condition	Read
Type II Diabetes	45518460	2BBl.00	O/E - left eye stable treated proliferative diabetic retinopathy	Read	Condition	Read
Type II Diabetes	45520003	F464000	Diabetic cataract	Read	Condition	Read
Type II Diabetes	45426568	C10FB11	Type II diabetes mellitus with polyneuropathy	Read	Condition	Read
Type II Diabetes	45436533	C10FE00	Type 2 diabetes mellitus with diabetic cataract	Read	Condition	Read
Type II Diabetes	45439820	C10F600	Type 2 diabetes mellitus with retinopathy	Read	Condition	Read
Type II Diabetes	45456473	C108112	Type 1 diabetes mellitus with ophthalmic complications	Read	Condition	Read
Type II Diabetes	45471910	2BBS.00	O/E - left eye preproliferative diabetic retinopathy	Read	Condition	Read
Type II Diabetes	45473341	C10F211	Type II diabetes mellitus with neurological complications	Read	Condition	Read
Type II Diabetes	45483322	C109500	Non-insulin dependent diabetes mellitus with gangrene	Read	Condition	Read
Type II Diabetes	45493244	C10FR11	Type II diabetes mellitus with gastroparesis	Read	Condition	Read
Type II Diabetes	45496547	C10FL11	Type II diabetes mellitus with persistent proteinuria	Read	Condition	Read

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	45496548	C10FQ00	Type 2 diabetes mellitus with exudative maculopathy	Read	Condition	Read
Type II Diabetes	45503175	C109C00	Non-insulin dependent diabetes mellitus with nephropathy	Read	Condition	Read
Type II Diabetes	45509828	C10FN00	Type 2 diabetes mellitus with ketoacidosis	Read	Condition	Read
Type II Diabetes	45423463	F420300	Advanced diabetic maculopathy	Read	Condition	Read
Type II Diabetes	45433194	C105100	Diabetes mellitus, adult onset, with ophthalmic manifestation	Read	Condition	Read
Type II Diabetes	45473337	C109J12	Insulin treated Type II diabetes mellitus	Read	Condition	Read
Type II Diabetes	45489961	C109411	Type II diabetes mellitus with ulcer	Read	Condition	Read
Type II Diabetes	45496540	C108D11	Type I diabetes mellitus with nephropathy	Read	Condition	Read
Type II Diabetes	45513206	C10FR00	Type 2 diabetes mellitus with gastroparesis	Read	Condition	Read
Type II Diabetes	45516606	C105z00	Diabetes mellitus NOS with ophthalmic manifestation	Read	Condition	Read
Type II Diabetes	45423317	C10FN11	Type II diabetes mellitus with ketoacidosis	Read	Condition	Read
Type II Diabetes	45450144	K08yA11	Clinical diabetic nephropathy	Read	Condition	Read
Type II Diabetes	45459820	C109012	Type 2 diabetes mellitus with renal complications	Read	Condition	Read
Type II Diabetes	45459823	C10E100	Type 1 diabetes mellitus with ophthalmic complications	Read	Condition	Read
Type II Diabetes	45461780	2BBQ.00	O/E - left eye background diabetic retinopathy	Read	Condition	Read
Type II Diabetes	45470052	C109H11	Type II diabetes mellitus with neuropathic arthropathy	Read	Condition	Read
Type II Diabetes	45480047	C109312	Type 2 diabetes mellitus with multiple complications	Read	Condition	Read
Type II Diabetes	45496536	C100111	Maturity onset diabetes	Read	Condition	Read

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	45496539	C108D00	Insulin dependent diabetes mellitus with nephropathy	Read	Condition	Read
Type II Diabetes	45503184	C10P100	Type II diabetes mellitus in remission	Read	Condition	Read
Type II Diabetes	45516616	C10FP11	Type II diabetes mellitus with ketoacidotic coma	Read	Condition	Read
Type II Diabetes	45523158	C10F411	Type II diabetes mellitus with ulcer	Read	Condition	Read
Type II Diabetes	376065	421326000	Neurologic disorder associated with type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	4096038	190348006	Diabetes mellitus NOS with ophthalmic manifestation	Clinical Finding	Condition	SNOMED
Type II Diabetes	4142579	427134009	Small vessel disease due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	4195044	312909004	Proliferative diabetic retinopathy - iris neovascularization	Clinical Finding	Condition	SNOMED
Type II Diabetes	4198296	314904008	Type 2 diabetes mellitus with neuropathic arthropathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	40386729	190340004	Diabetes mellitus, adult onset, with renal manifestation	Clinical Finding	Condition	SNOMED
Type II Diabetes	40386742	190351004	Diabetes mellitus, adult onset, with neurological manifestation	Clinical Finding	Condition	SNOMED
Type II Diabetes	40386780	190386002	Type II diabetes mellitus with ophthalmic complications	Clinical Finding	Condition	SNOMED
Type II Diabetes	40386794	190399004	Type II diabetes mellitus with hypoglycemic coma	Clinical Finding	Condition	SNOMED
Type II Diabetes	40464154	42873008	Background retinopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	40527825	33248009	Diabetes with non-ketotic non-hyperosmolar coma	Clinical Finding	Condition	SNOMED
Type II Diabetes	40575613	401112005	Type 2 diabetes mellitus with persistent microalbuminuria	Clinical Finding	Condition	SNOMED
Type II Diabetes	43531578	771000119108	Chronic kidney disease due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	45757074	104951000119106	Diabetic vitreous hemorrhage due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	45757363	120731000119103	Hypoglycemia due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	45757392	127991000119101	Hypertension concurrent and due to end stage renal disease on dialysis due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	45769906	90791000119104	End stage renal disease on dialysis due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	45770880	137931000119102	Hyperlipidemia due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	45770881	138921000119104	Moderate nonproliferative retinopathy due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	443734	421750000	Ketoacidosis in type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	4099651	190389009	Type 2 diabetes mellitus with ulcer	Clinical Finding	Condition	SNOMED
Type II Diabetes	4105172	193349004	Preproliferative diabetic retinopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	4109400	193353002	Diabetic retinopathy NOS	Clinical Finding	Condition	SNOMED
Type II Diabetes	4129519	237627000	Pregnancy and type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	4130162	237599002	Insulin treated type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	4140466	427027005	Amyotrophy due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	4195498	314015001	Mixed diabetic maculopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	4199039	314010006	Diffuse diabetic maculopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	4200875	314902007	Type 2 diabetes mellitus with peripheral angiopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	37016768	712883005	Diabetic autonomic neuropathy due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	40320749	154672006	Diabetes mellitus: [adult onset] or [noninsulin dependent]	Clinical Finding	Condition	SNOMED
Type II Diabetes	40350836	267471001	Diabetic retinopathy	Clinical Finding	Condition	SNOMED

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	40545711	366909003	Insulin treated Type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	45769829	71721000119101	Nephrotic syndrome due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	45771064	71421000119105	Hypertension in chronic kidney disease due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	45771072	140521000119107	Ischemic foot ulcer due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	45773064	82541000119100	Traction retinal detachment due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	201531	190330002	Type 1 diabetes mellitus with hyperosmolar coma	Clinical Finding	Condition	SNOMED
Type II Diabetes	4099216	190388001	Type 2 diabetes mellitus with multiple complications	Clinical Finding	Condition	SNOMED
Type II Diabetes	4105173	193350004	Advanced diabetic maculopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	4196141	314903002	Type 2 diabetes mellitus with arthropathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	4224419	421256007	Ophthalmic complication of malnutrition-related diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	4225656	421920002	Diabetic cataract associated with type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	4290822	399872003	Severe nonproliferative diabetic retinopathy with clinically significant macular edema	Clinical Finding	Condition	SNOMED
Type II Diabetes	40350736	267381003	Diabetes mellitus with renal manifestation	Clinical Finding	Condition	SNOMED
Type II Diabetes	40386733	190343002	Diabetes mellitus with ophthalmic manifestation	Clinical Finding	Condition	SNOMED
Type II Diabetes	40386736	190346005	Diabetes mellitus, adult onset, with ophthalmic manifestation	Clinical Finding	Condition	SNOMED
Type II Diabetes	40518519	314371009	Type II diabetes mellitus with polyneuropathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	45757075	104961000119108	Retinal ischemia due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	45770831	97341000119105	Proliferative retinopathy with retinal edema due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	201826	44054006	Type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	4030664	236500003	Proteinuric diabetic nephropathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	4226121	422034002	Diabetic retinopathy associated with type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	4230254	359642000	Type 2 diabetes mellitus in nonobese	Clinical Finding	Condition	SNOMED
Type II Diabetes	4231744	359638003	NIDDM in nonobese	Clinical Finding	Condition	SNOMED
Type II Diabetes	4235260	408410002	O/E - left eye background diabetic retinopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	4243625	38046004	Diffuse type diabetic glomerulosclerosis	Clinical Finding	Condition	SNOMED
Type II Diabetes	37016356	368711000119106	Mild nonproliferative retinopathy due to secondary diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	40303453	141196007	Retinal abnormality - diabetes-related	Clinical Finding	Condition	SNOMED
Type II Diabetes	40321144	154681000	Preproliferative diabetic retinopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	40584359	408287009	Type 1 diabetes mellitus with exudative maculopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	43531597	201000119106	Disorder associated with well controlled type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	45757604	243421000119104	Proteinuria due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	46274058	10656271000119102	Skin ulcer of toe due to diabetes mellitis type 2	Clinical Finding	Condition	SNOMED
Type II Diabetes	443767	25093002	Diabetic oculopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	4099210	190332005	Diabetes mellitus NOS with hyperosmolar coma	Clinical Finding	Condition	SNOMED
Type II Diabetes	4147577	310387003	Diabetic intracapillary glomerulosclerosis	Clinical Finding	Condition	SNOMED
Type II Diabetes	4210129	312908007	Proliferative diabetic retinopathy - quiescent	Clinical Finding	Condition	SNOMED

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	4227824	421164006	Hypoglycemic coma in type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	4338900	232021008	Proliferative diabetic retinopathy with new vessels on disc	Clinical Finding	Condition	SNOMED
Type II Diabetes	37016357	368721000119104	Non-proliferative retinopathy due to secondary diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	40386366	190334006	Diabetes mellitus, juvenile type, with ketoacidotic coma	Clinical Finding	Condition	SNOMED
Type II Diabetes	40386802	190405001	Malnutrition-related diabetes mellitus with coma	Clinical Finding	Condition	SNOMED
Type II Diabetes	40518517	314370005	Type II diabetes mellitus with mononeuropathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	43531608	1491000119102	Diabetic vitreous hemorrhage associated with type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	43531616	1531000119102	Diabetic dermopathy associated with diabetes mellitus type 2	Clinical Finding	Condition	SNOMED
Type II Diabetes	45757065	103981000119101	Proliferative diabetic retinopathy following surgery	Clinical Finding	Condition	SNOMED
Type II Diabetes	45757277	110171000119107	Ulcer of lower extremity due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	45757449	140391000119101	Ulcer of toe due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	45757450	140531000119105	Neuropathic foot ulcer due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	45766052	703138006	Type II diabetes mellitus in remission	Clinical Finding	Condition	SNOMED
Type II Diabetes	45769889	87451000119102	Heel AND/OR midfoot ulcer due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	443732	422014003	Disorder due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	4221495	420756003	Diabetic cataract associated with type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	4223739	421986006	Persistent proteinuria associated with type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	40350832	267468009	Diabetes mellitus: [adult onset] or [noninsulin dependent]	Clinical Finding	Condition	SNOMED

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	40482458	445170001	Macroalbuminuric diabetic nephropathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	43531559	751000119104	Chronic kidney disease stage 1 due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	4101478	25412000	Diabetic retinal microaneurysm	Clinical Finding	Condition	SNOMED
Type II Diabetes	4161671	399870006	Non-high-risk proliferative diabetic retinopathy with no macular edema	Clinical Finding	Condition	SNOMED
Type II Diabetes	4269870	399875001	Non-high-risk proliferative diabetic retinopathy with clinically significant macular edema	Clinical Finding	Condition	SNOMED
Type II Diabetes	4269871	399876000	Very severe nonproliferative diabetic retinopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	37016355	368601000119102	Hyperosmolar coma due to secondary diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	37018728	713703005	Gastroparesis due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	40386747	190356009	Diabetes mellitus, adult onset, with peripheral circulatory disorder	Clinical Finding	Condition	SNOMED
Type II Diabetes	40520431	314888007	Type II diabetes mellitus with diabetic cataract	Clinical Finding	Condition	SNOMED
Type II Diabetes	40525132	31411005	Background diabetic retinopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	40584911	408417004	Type 2 diabetes mellitus with exudative maculopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	43531010	609567009	Pre-existing type 2 diabetes mellitus in pregnancy	Clinical Finding	Condition	SNOMED
Type II Diabetes	45757073	104941000119109	Retinal ischemia due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	45769905	90781000119102	Microalbuminuria due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	45770830	97331000119101	Macular edema and retinopathy due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	45772914	707221002	Diabetic glomerulosclerosis	Clinical Finding	Condition	SNOMED
Type II Diabetes	200687	421893009	Renal disorder associated with type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	4164176	399869005	High risk proliferative diabetic retinopathy not amenable to photocoagulation	Clinical Finding	Condition	SNOMED
Type II Diabetes	4177050	428007007	Erectile dysfunction associated with type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	4210872	314011005	Focal diabetic maculopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	4221933	420996007	Coma associated with malnutrition-related diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	4255400	408412005	O/E - left eye preproliferative diabetic retinopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	4270049	63510008	Nodular type diabetic glomerulosclerosis	Clinical Finding	Condition	SNOMED
Type II Diabetes	37016358	368741000119105	Moderate non-proliferative retinopathy due to secondary diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	37017221	713457002	Neovascular glaucoma due to diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	40386365	190333000	Diabetes mellitus with ketoacidotic coma	Clinical Finding	Condition	SNOMED
Type II Diabetes	40386793	190398007	Type II diabetes mellitus with nephropathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	40386805	190408004	Malnutrition-related diabetes mellitus with ophthalmic complications	Clinical Finding	Condition	SNOMED
Type II Diabetes	40518526	314378003	Type 2 diabetes mellitus with nephropathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	40560648	390718008	Non proliferative diabetic retinopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	43531564	761000119102	Diabetic dyslipidemia associated with type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	43531588	791000119109	Angina associated with type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	45757446	140121000119100	Hypertension in chronic kidney disease stage 3 due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	45757474	1481000119100	Diabetes mellitus type 2 without retinopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	45757798	430801000124103	Proliferative retinopathy	Clinical Finding	Condition	SNOMED

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	45769828	71441000119104	Nephrotic syndrome due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	45769835	72051000119101	Severe malnutrition due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	192279	127013003	Diabetic renal disease	Clinical Finding	Condition	SNOMED
Type II Diabetes	443733	422099009	Diabetic oculopathy associated with type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	4162095	399864000	Diabetic macular edema not clinically significant	Clinical Finding	Condition	SNOMED
Type II Diabetes	4164632	399865004	Very severe proliferative diabetic retinopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	4186542	414908005	O/E - right eye clinically significant macular edema	Clinical Finding	Condition	SNOMED
Type II Diabetes	4193704	313436004	Type 2 diabetes mellitus without complication	Clinical Finding	Condition	SNOMED
Type II Diabetes	4210128	312906006	Proliferative diabetic retinopathy - non high risk	Clinical Finding	Condition	SNOMED
Type II Diabetes	4247107	408409007	O/E - right eye background diabetic retinopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	4295011	401110002	Type 1 diabetes mellitus with persistent microalbuminuria	Clinical Finding	Condition	SNOMED
Type II Diabetes	40325823	163997001	Retinal abnormality - diabetes-related	Clinical Finding	Condition	SNOMED
Type II Diabetes	40386750	190359002	NIDDM with peripheral circulatory disorder	Clinical Finding	Condition	SNOMED
Type II Diabetes	40386756	190364003	Type 1 diabetes mellitus with ophthalmic complications	Clinical Finding	Condition	SNOMED
Type II Diabetes	40386790	190395005	Type II diabetes mellitus without complication	Clinical Finding	Condition	SNOMED
Type II Diabetes	40386798	190401005	Type II diabetes mellitus with peripheral angiopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	40585980	408660003	Type II diabetes mellitus with ketoacidosis	Clinical Finding	Condition	SNOMED
Type II Diabetes	45757444	140101000119109	Hypertension in chronic kidney disease stage 5 due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	45770832	97621000119107	Stasis ulcer due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	4221962	399863006	Very severe nonproliferative diabetic retinopathy with no macular edema	Clinical Finding	Condition	SNOMED
Type II Diabetes	37016180	138891000119109	Moderate nonproliferative retinopathy due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	40386792	190397002	Type II diabetes mellitus with polyneuropathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	43530689	1511000119107	Diabetic peripheral neuropathy associated with type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	43531562	711000119100	Chronic kidney disease stage 5 due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	45772019	41911000119107	Glaucoma due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	378743	312903003	Mild non-proliferative diabetic retinopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	4181588	54181000	Diabetes-nephrosis syndrome	Clinical Finding	Condition	SNOMED
Type II Diabetes	4206115	309426007	Diabetic glomerulopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	4212435	414892004	O/E - left eye clinically significant macular edema	Clinical Finding	Condition	SNOMED
Type II Diabetes	4221487	420715001	Persistent microalbuminuria associated with type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	4226798	421725003	Hypoglycemic coma in diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	4228112	421437000	Hypoglycemic coma in type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	4290823	399877009	Very severe nonproliferative diabetic retinopathy with clinically significant macular edema	Clinical Finding	Condition	SNOMED
Type II Diabetes	37017432	713706002	Polyneuropathy due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	40321139	154677000	Diabetes + nephropathy (& [Kimmelstiel-Wilson syndrome])	Clinical Finding	Condition	SNOMED
Type II Diabetes	40321141	154679002	Proliferative diabetic retinopathy	Clinical Finding	Condition	SNOMED

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	40386781	190387006	Type 2 diabetes mellitus with neurological complications	Clinical Finding	Condition	SNOMED
Type II Diabetes	40520430	314887002	Insulin dependent diabetes mellitus with diabetic cataract	Clinical Finding	Condition	SNOMED
Type II Diabetes	40543502	371056000	Type II diabetes mellitus with complication	Clinical Finding	Condition	SNOMED
Type II Diabetes	43530656	1551000119108	Nonproliferative diabetic retinopathy due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	43530690	1521000119100	Foot ulcer due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	45769888	87441000119104	Ankle ulcer due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	45770883	140381000119104	Neuropathic toe ulcer due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	380097	312912001	Diabetic macular edema	Clinical Finding	Condition	SNOMED
Type II Diabetes	4164175	399868002	Diabetic intraretinal microvascular anomaly	Clinical Finding	Condition	SNOMED
Type II Diabetes	4209538	311782002	Advanced diabetic retinal disease	Clinical Finding	Condition	SNOMED
Type II Diabetes	4221344	420486006	Exudative maculopathy associated with type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	4224254	421075007	Ketoacidotic coma in type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	4266637	399873008	Severe nonproliferative diabetic retinopathy with no macular edema	Clinical Finding	Condition	SNOMED
Type II Diabetes	4304377	81531005	Type 2 diabetes mellitus in obese	Clinical Finding	Condition	SNOMED
Type II Diabetes	4334884	232020009	Diabetic maculopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	37016179	138881000119106	Mild nonproliferative retinopathy due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	40384717	193352007	Advanced diabetic retinal disease	Clinical Finding	Condition	SNOMED
Type II Diabetes	40575612	401111003	Type 2 diabetes mellitus with persistent proteinuria	Clinical Finding	Condition	SNOMED

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	45757535	18521000119106	Microalbuminuria due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	45769836	72061000119104	Osteomyelitis due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	45769890	87461000119100	Forefoot ulcer due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	376683	390834004	Nonproliferative diabetic retinopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	376979	43959009	Diabetic cataract	Clinical Finding	Condition	SNOMED
Type II Diabetes	4095288	26298008	Diabetic coma with ketoacidosis	Clinical Finding	Condition	SNOMED
Type II Diabetes	4164174	399862001	Proliferative diabetic retinopathy - high risk with no macular edema	Clinical Finding	Condition	SNOMED
Type II Diabetes	4223734	421966007	Non-ketotic non-hyperosmolar coma associated with diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	4226238	422126006	Hyperosmolar coma associated with diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	4266041	399871005	Visually threatening diabetic retinopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	4313070	423263001	Diabetic autonomic neuropathy associated with type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	40386367	190335007	Diabetes mellitus, adult onset, with ketoacidotic coma	Clinical Finding	Condition	SNOMED
Type II Diabetes	40386728	190339001	Diabetes mellitus, juvenile type, with renal manifestation	Clinical Finding	Condition	SNOMED
Type II Diabetes	40386799	190402003	Type II diabetes mellitus with arthropathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	40575584	401087005	Diabetes mellitus with persistent microalbuminuria	Clinical Finding	Condition	SNOMED
Type II Diabetes	44805628	775841000000109	Diabetic retinopathy detected by national screening programme	Clinical Finding	Condition	SNOMED
Type II Diabetes	44810565	888211000000106	Type II diabetes mellitus in remission	Clinical Finding	Condition	SNOMED
Type II Diabetes	45757499	157141000119108	Proteinuria due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	45763584	60971000119101	Proliferative retinopathy due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	45769873	82571000119107	Traction retinal detachment due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	45771533	82581000119105	Rubeosis iridis due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	376114	312905005	Severe nonproliferative diabetic retinopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	4099217	190390000	Type 2 diabetes mellitus with gangrene	Clinical Finding	Condition	SNOMED
Type II Diabetes	4137220	425455002	Diabetic glomerulonephritis	Clinical Finding	Condition	SNOMED
Type II Diabetes	4215961	414894003	O/E - left eye stable treated proliferative diabetic retinopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	4222553	420514000	Persistent proteinuria associated with type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	4222687	421305000	Persistent microalbuminuria associated with type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	4223463	421779007	Exudative maculopathy associated with type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	4252356	408414006	O/E - left eye proliferative diabetic retinopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	40386755	190363009	Type I diabetes mellitus with renal complications	Clinical Finding	Condition	SNOMED
Type II Diabetes	40602159	55692006	Diabetes with hyperosmolar coma	Clinical Finding	Condition	SNOMED
Type II Diabetes	43531577	721000119107	Chronic kidney disease stage 4 due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	43531653	731000119105	Chronic kidney disease stage 3 due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	45763583	60961000119107	Nonproliferative diabetic retinopathy due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	45769872	82551000119103	Rubeosis iridis due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	45770928	28331000119107	Retinal edema due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	4027121	197605007	Nephrotic syndrome due to diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	4096036	190342007	Diabetes mellitis with nephropathy NOS	Clinical Finding	Condition	SNOMED
Type II Diabetes	4161670	399866003	Diabetic retinal venous beading	Clinical Finding	Condition	SNOMED
Type II Diabetes	4195045	312910009	Diabetic vitreous hemorrhage	Clinical Finding	Condition	SNOMED
Type II Diabetes	4218499	417677008	O/E - sight threatening diabetic retinopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	4222415	420436000	Mononeuropathy associated with type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	4226791	421707005	Polyneuropathy associated with type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	4235261	408415007	O/E - right eye diabetic maculopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	40275342	111557001	Diabetes with coma	Clinical Finding	Condition	SNOMED
Type II Diabetes	40384716	193351000	Diabetic maculopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	40386735	190345009	Diabetes mellitus, juvenile type, with ophthalmic manifestation	Clinical Finding	Condition	SNOMED
Type II Diabetes	40386779	190385003	Type 2 diabetes mellitus with renal complications	Clinical Finding	Condition	SNOMED
Type II Diabetes	40420183	21858001	Diabetes with renal manifestations	Clinical Finding	Condition	SNOMED
Type II Diabetes	40436206	232019003	Visually threatening diabetic retinopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	40562984	391178000	High risk non proliferative diabetic retinopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	43531566	741000119101	Chronic kidney disease stage 2 due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	45757435	138911000119106	Mild nonproliferative retinopathy due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	45772060	119831000119106	Hypoglycemia unawareness in type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	201530	190331003	Type 2 diabetes mellitus with hyperosmolar coma	Clinical Finding	Condition	SNOMED
Type II Diabetes	380096	59276001	Proliferative diabetic retinopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	4128221	236499007	Microalbuminuric diabetic nephropathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	37016349	368051000119109	Hyperglycemia due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	40321145	154682007	Diabetic maculopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	40350834	267470000	Diabetes + nephropathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	40352353	267722005	Diabetic cataract	Clinical Finding	Condition	SNOMED
Type II Diabetes	40386778	190384004	Type II diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	43530685	1501000119109	Proliferative diabetic retinopathy due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	45757255	108781000119105	Neuropathic ulcer of midfoot AND/OR heel due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	443729	422166005	Peripheral circulatory disorder associated with type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	4102176	193489006	Diabetic iritis	Clinical Finding	Condition	SNOMED
Type II Diabetes	4151282	314772004	Type 2 diabetes mellitus with hypoglycemic coma	Clinical Finding	Condition	SNOMED
Type II Diabetes	4151946	311366001	Kimmelstiel-Wilson syndrome	Clinical Finding	Condition	SNOMED
Type II Diabetes	4195043	312907002	Proliferative diabetic retinopathy - high risk	Clinical Finding	Condition	SNOMED
Type II Diabetes	4210874	314014002	Ischemic diabetic maculopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	4227210	420789003	Diabetic retinopathy associated with type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	4228443	421847006	Ketoacidotic coma in type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	4255399	408411003	O/E - right eye preproliferative diabetic retinopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	4255401	408413000	O/E - right eye proliferative diabetic retinopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	4336000	232022001	Proliferative diabetic retinopathy with new vessels elsewhere than on disc	Clinical Finding	Condition	SNOMED
Type II Diabetes	37018912	368591000119109	Cheiropathy due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	40322832	155107006	Diabetic retinopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	40322840	155114008	Advanced diabetic retinal disease	Clinical Finding	Condition	SNOMED
Type II Diabetes	40602086	55626003	Diabetes mellitus type 2 in nonobese	Clinical Finding	Condition	SNOMED
Type II Diabetes	40612660	60009009	Diabetic intracapillary glomerulosclerosis	Clinical Finding	Condition	SNOMED
Type II Diabetes	43531651	701000119103	Mixed hyperlipidemia due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	45769894	87921000119104	Cranial nerve palsy due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	377552	312904009	Moderate nonproliferative diabetic retinopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	443731	420279001	Renal disorder due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	443735	420662003	Coma associated with diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	4096037	190347001	Other specified diabetes mellitus with ophthalmic complications	Clinical Finding	Condition	SNOMED
Type II Diabetes	4099648	190341000	Other specified diabetes mellitus with renal complications	Clinical Finding	Condition	SNOMED
Type II Diabetes	4174977	4855003	Diabetic retinopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	4222410	420414003	Multiple complications of type II diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	4312009	424989000	Diabetic gastroparesis associated with type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	40386357	190326000	Diabetes mellitus, adult onset, with ketoacidosis	Clinical Finding	Condition	SNOMED
Type II Diabetes	40386762	190370009	Type I diabetes mellitus with retinopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	40386786	190391001	Type 2 diabetes mellitus with retinopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	40514201	309595004	Retinal abnormality - diabetes-related	Clinical Finding	Condition	SNOMED
Type II Diabetes	40560649	390719000	Proliferative diabetic retinopathy - high risk	Clinical Finding	Condition	SNOMED
Type II Diabetes	40575585	401088000	Diabetes mellitus with persistent proteinuria	Clinical Finding	Condition	SNOMED
Type II Diabetes	45757278	110181000119105	Peripheral sensory neuropathy due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	45769875	84361000119102	Insulin reactive hypoglycemia in type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	4063043	199230006	Pre-existing type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	4096666	190329007	Diabetes mellitus with hyperosmolar coma	Clinical Finding	Condition	SNOMED
Type II Diabetes	4212441	414910007	O/E - right eye stable treated proliferative diabetic retinopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	4266042	399874002	Proliferative diabetic retinopathy - high risk with clinically significant macular edema	Clinical Finding	Condition	SNOMED
Type II Diabetes	4321756	9859006	Type 2 diabetes mellitus with acanthosis nigricans	Clinical Finding	Condition	SNOMED
Type II Diabetes	37016354	368581000119106	Neuropathy due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	40518525	314377008	Type I diabetes mellitus with nephropathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	40575609	401109007	Type 1 diabetes mellitus with persistent proteinuria	Clinical Finding	Condition	SNOMED
Type II Diabetes	45757266	109171000119104	Retinal edema due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	45757280	111231000119109	Dyslipidemia with high density lipoprotein below reference range and triglyceride above reference range due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type II Diabetes	373999	421165007	Diabetic oculopathy associated with type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	4007943	110996009	Armanni-Ebstein kidney	Clinical Finding	Condition	SNOMED
Type II Diabetes	4255402	408416008	O/E - left eye diabetic maculopathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	4338901	232023006	Diabetic traction retinal detachment	Clinical Finding	Condition	SNOMED
Type II Diabetes	37016163	12811000119100	Complication due to diabetes mellitus type 2	Clinical Finding	Condition	SNOMED
Type II Diabetes	40321151	154688006	Insulin-treated non-insulin-dependent diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	40386800	190403008	Type II diabetes mellitus with neuropathic arthropathy	Clinical Finding	Condition	SNOMED
Type II Diabetes	45757445	140111000119107	Hypertension in chronic kidney disease stage 4 due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	45757447	140131000119102	Hypertension in chronic kidney disease stage 2 due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type II Diabetes	45763582	60951000119105	Blindness due to type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	45913934	119452	Type I Diabetes Mellitus with Neurological Manifestations	Diagnosis	Condition	CIEL
Type I Diabetes	45922038	159186	type 1 diabetes mellitus with coma	Diagnosis	Condition	CIEL
Type I Diabetes	45924319	119450	Diabetic Ophtho Manifestation Juven	Diagnosis	Condition	CIEL
Type I Diabetes	45924980	111754	Type 1 Diabetes Mellitus with Hypoglycemic Coma	Diagnosis	Condition	CIEL
Type I Diabetes	45913241	111755	Type I Diabetes Mellitus with Complication, Uncontrolled	Diagnosis	Condition	CIEL
Type I Diabetes	45938946	119453	Type I Diabetes Mellitus with Hyperosmolarity, Uncontrolled	Diagnosis	Condition	CIEL
Type I Diabetes	45926344	152431	Type 1 Diabetes Mellitus with Peripheral Angiopathy	Diagnosis	Condition	CIEL
Type I Diabetes	45939080	136780	Insulin Dependent Diabetes Mellitus Type IA	Diagnosis	Condition	CIEL

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type I Diabetes	45948882	154231	controlled type 1 diabetes with renal manifestation	Diagnosis	Condition	CIEL
Type I Diabetes	45922039	159191	type I diabetes mellitus with multiple complications	Diagnosis	Condition	CIEL
Type I Diabetes	45926454	142463	Diabetes Mellitus, Juvenile Type, with Ketoacidosis	Diagnosis	Condition	CIEL
Type I Diabetes	45945410	136779	Insulin Dependent Diabetes Mellitus Type IB	Diagnosis	Condition	CIEL
Type I Diabetes	45947750	119455	Type I Diabetes Mellitus with Hyperosmolarity	Diagnosis	Condition	CIEL
Type I Diabetes	45931224	123945	Type I Diabetes Mellitus with Ophthalmic Complications	Diagnosis	Condition	CIEL
Type I Diabetes	45917083	154239	controlled type 1 diabetes with neuropathy	Diagnosis	Condition	CIEL
Type I Diabetes	45951720	159187	type 1 diabetes mellitus with persistent microalbuminuria	Diagnosis	Condition	CIEL
Type I Diabetes	45937829	158473	pre-existing diabetes mellitus, insulin-dependent	Diagnosis	Condition	CIEL
Type I Diabetes	45951722	159192	type I diabetes mellitus with ulcer	Diagnosis	Condition	CIEL
Type I Diabetes	45951721	159188	type 1 diabetes mellitus without complication	Diagnosis	Condition	CIEL
Type I Diabetes	45913240	111750	Type I Diabetes Mellitus with Nephropathy	Diagnosis	Condition	CIEL
Type I Diabetes	45936643	137941	Insulin-dependent diabetes mellitus with peripheral circulatory complication	Diagnosis	Condition	CIEL
Type I Diabetes	45950729	142474	Insulin dependent diabetes	Diagnosis	Condition	CIEL
Type I Diabetes	45956391	152430	Type 1 Diabetes Mellitus with Mononeuropathy	Diagnosis	Condition	CIEL
Type I Diabetes	45953138	111752	Type I Diabetes Mellitus with Ketoacidosis	Diagnosis	Condition	CIEL
Type I Diabetes	45552384	E10.8	Insulin-dependent diabetes mellitus with unspecified complications	ICD10 code	Condition	ICD10
Type I Diabetes	45581351	E10.9	Insulin-dependent diabetes mellitus without complications	ICD10 code	Condition	ICD10

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type I Diabetes	45576436	E10	Insulin-dependent diabetes mellitus	ICD10 Hierarchy	Condition	ICD10
Type I Diabetes	45533016	E10.4	Insulin-dependent diabetes mellitus with neurological complications	ICD10 code	Condition	ICD10
Type I Diabetes	45542735	E10.1	Insulin-dependent diabetes mellitus with ketoacidosis	ICD10 code	Condition	ICD10
Type I Diabetes	45595796	E10.5	Insulin-dependent diabetes mellitus with peripheral circulatory complications	ICD10 code	Condition	ICD10
Type I Diabetes	45552380	E10.3	Insulin-dependent diabetes mellitus with ophthalmic complications	ICD10 code	Condition	ICD10
Type I Diabetes	45558213	O24.0	Pre-existing diabetes mellitus, insulin-dependent	ICD10 code	Condition	ICD10
Type I Diabetes	45571655	E10.7	Insulin-dependent diabetes mellitus with multiple complications	ICD10 code	Condition	ICD10
Type I Diabetes	45586137	E10.2	Insulin-dependent diabetes mellitus with renal complications	ICD10 code	Condition	ICD10
Type I Diabetes	45755355	E10.0	Insulin-dependent diabetes mellitus with coma	ICD10 code	Condition	ICD10
Type I Diabetes	45537959	E10.6	Insulin-dependent diabetes mellitus with other specified complications	ICD10 code	Condition	ICD10
Type I Diabetes	1567945	E10.32	Type 1 diabetes mellitus with mild nonproliferative diabetic retinopathy	5-char nonbill code	Condition	ICD10CM
Type I Diabetes	1567949	E10.4	Type 1 diabetes mellitus with neurological complications	4-char nonbill code	Condition	ICD10CM
Type I Diabetes	45547622	E10.51	Type 1 diabetes mellitus with diabetic peripheral angiopathy without gangrene	5-char billing code	Condition	ICD10CM
Type I Diabetes	45566729	E10.628	Type 1 diabetes mellitus with other skin complications	6-char billing code	Condition	ICD10CM
Type I Diabetes	45571654	E10.359	Type 1 diabetes mellitus with proliferative diabetic retinopathy without macular edema	6-char billing code	Condition	ICD10CM
Type I Diabetes	1567943	E10.3	Type 1 diabetes mellitus with ophthalmic complications	4-char nonbill code	Condition	ICD10CM
Type I Diabetes	35206878	E10.8	Type 1 diabetes mellitus with unspecified complications	4-char billing code	Condition	ICD10CM
Type I Diabetes	45576440	E10.610	Type 1 diabetes mellitus with diabetic neuropathic arthropathy	6-char billing code	Condition	ICD10CM

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type I Diabetes	1571684	O24.0	Pre-existing diabetes mellitus, type 1, in pregnancy, childbirth and the puerperium	4-char nonbill code	Condition	ICD10CM
Type I Diabetes	45605397	E10.339	Type 1 diabetes mellitus with moderate nonproliferative diabetic retinopathy without macular edema	6-char billing code	Condition	ICD10CM
Type I Diabetes	45547623	E10.638	Type 1 diabetes mellitus with other oral complications	6-char billing code	Condition	ICD10CM
Type I Diabetes	45552383	E10.641	Type 1 diabetes mellitus with hypoglycemia with coma	6-char billing code	Condition	ICD10CM
Type I Diabetes	1567954	E10.63	Type 1 diabetes mellitus with oral complications	5-char nonbill code	Condition	ICD10CM
Type I Diabetes	45542737	E10.52	Type 1 diabetes mellitus with diabetic peripheral angiopathy with gangrene	5-char billing code	Condition	ICD10CM
Type I Diabetes	45576438	E10.39	Type 1 diabetes mellitus with other diabetic ophthalmic complication	5-char billing code	Condition	ICD10CM
Type I Diabetes	45577566	O24.03	Pre-existing diabetes mellitus, type 1, in the puerperium	5-char billing code	Condition	ICD10CM
Type I Diabetes	45595794	E10.341	Type 1 diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema	6-char billing code	Condition	ICD10CM
Type I Diabetes	45595795	E10.42	Type 1 diabetes mellitus with diabetic polyneuropathy	5-char billing code	Condition	ICD10CM
Type I Diabetes	1567940	E10	Type 1 diabetes mellitus	3-char nonbill code	Condition	ICD10CM
Type I Diabetes	45561947	E10.331	Type 1 diabetes mellitus with moderate nonproliferative diabetic retinopathy with macular edema	6-char billing code	Condition	ICD10CM
Type I Diabetes	45561948	E10.44	Type 1 diabetes mellitus with diabetic amyotrophy	5-char billing code	Condition	ICD10CM
Type I Diabetes	45581349	E10.59	Type 1 diabetes mellitus with other circulatory complications	5-char billing code	Condition	ICD10CM
Type I Diabetes	45587291	O24.012	Pre-existing diabetes mellitus, type 1, in pregnancy, second trimester	6-char billing code	Condition	ICD10CM
Type I Diabetes	1571685	O24.01	Pre-existing diabetes mellitus, type 1, in pregnancy	5-char nonbill code	Condition	ICD10CM
Type I Diabetes	45543921	O24.019	Pre-existing diabetes mellitus, type 1, in pregnancy, unspecified trimester	6-char billing code	Condition	ICD10CM

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type I Diabetes	45600637	E10.29	Type 1 diabetes mellitus with other diabetic kidney complication	5-char billing code	Condition	ICD10CM
Type I Diabetes	45600638	E10.40	Type 1 diabetes mellitus with diabetic neuropathy, unspecified	5-char billing code	Condition	ICD10CM
Type I Diabetes	1567953	E10.62	Type 1 diabetes mellitus with skin complications	5-char nonbill code	Condition	ICD10CM
Type I Diabetes	45595793	E10.321	Type 1 diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema	6-char billing code	Condition	ICD10CM
Type I Diabetes	45600640	E10.649	Type 1 diabetes mellitus with hypoglycemia without coma	6-char billing code	Condition	ICD10CM
Type I Diabetes	45576439	E10.41	Type 1 diabetes mellitus with diabetic mononeuropathy	5-char billing code	Condition	ICD10CM
Type I Diabetes	1567951	E10.6	Type 1 diabetes mellitus with other specified complications	4-char nonbill code	Condition	ICD10CM
Type I Diabetes	45600636	E10.10	Type 1 diabetes mellitus with ketoacidosis without coma	5-char billing code	Condition	ICD10CM
Type I Diabetes	45547624	E10.69	Type 1 diabetes mellitus with other specified complication	5-char billing code	Condition	ICD10CM
Type I Diabetes	45591026	E10.329	Type 1 diabetes mellitus with mild nonproliferative diabetic retinopathy without macular edema	6-char billing code	Condition	ICD10CM
Type I Diabetes	45576437	E10.351	Type 1 diabetes mellitus with proliferative diabetic retinopathy with macular edema	6-char billing code	Condition	ICD10CM
Type I Diabetes	45581350	E10.622	Type 1 diabetes mellitus with other skin ulcer	6-char billing code	Condition	ICD10CM
Type I Diabetes	45586138	E10.49	Type 1 diabetes mellitus with other diabetic neurological complication	5-char billing code	Condition	ICD10CM
Type I Diabetes	1567947	E10.34	Type 1 diabetes mellitus with severe nonproliferative diabetic retinopathy	5-char nonbill code	Condition	ICD10CM
Type I Diabetes	45537958	E10.349	Type 1 diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema	6-char billing code	Condition	ICD10CM
Type I Diabetes	35206879	E10.9	Type 1 diabetes mellitus without complications	4-char billing code	Condition	ICD10CM
Type I Diabetes	45557111	E10.630	Type 1 diabetes mellitus with periodontal disease	6-char billing code	Condition	ICD10CM

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type I Diabetes	1567942	E10.2	Type 1 diabetes mellitus with kidney complications	4-char nonbill code	Condition	ICD10CM
Type I Diabetes	1567944	E10.31	Type 1 diabetes mellitus with unspecified diabetic retinopathy	5-char nonbill code	Condition	ICD10CM
Type I Diabetes	45533017	E10.43	Type 1 diabetes mellitus with diabetic autonomic (poly)neuropathy	5-char billing code	Condition	ICD10CM
Type I Diabetes	45533018	E10.65	Type 1 diabetes mellitus with hyperglycemia	5-char billing code	Condition	ICD10CM
Type I Diabetes	45537960	E10.618	Type 1 diabetes mellitus with other diabetic arthropathy	6-char billing code	Condition	ICD10CM
Type I Diabetes	45552379	E10.21	Type 1 diabetes mellitus with diabetic nephropathy	5-char billing code	Condition	ICD10CM
Type I Diabetes	45600639	E10.620	Type 1 diabetes mellitus with diabetic dermatitis	6-char billing code	Condition	ICD10CM
Type I Diabetes	1567952	E10.61	Type 1 diabetes mellitus with diabetic arthropathy	5-char nonbill code	Condition	ICD10CM
Type I Diabetes	45547621	E10.22	Type 1 diabetes mellitus with diabetic chronic kidney disease	5-char billing code	Condition	ICD10CM
Type I Diabetes	45557110	E10.11	Type 1 diabetes mellitus with ketoacidosis with coma	5-char billing code	Condition	ICD10CM
Type I Diabetes	45605398	E10.621	Type 1 diabetes mellitus with foot ulcer	6-char billing code	Condition	ICD10CM
Type I Diabetes	1567941	E10.1	Type 1 diabetes mellitus with ketoacidosis	4-char nonbill code	Condition	ICD10CM
Type I Diabetes	1567946	E10.33	Type 1 diabetes mellitus with moderate nonproliferative diabetic retinopathy	5-char nonbill code	Condition	ICD10CM
Type I Diabetes	1567950	E10.5	Type 1 diabetes mellitus with circulatory complications	4-char nonbill code	Condition	ICD10CM
Type I Diabetes	45539105	O24.013	Pre-existing diabetes mellitus, type 1, in pregnancy, third trimester	6-char billing code	Condition	ICD10CM
Type I Diabetes	45548715	O24.011	Pre-existing diabetes mellitus, type 1, in pregnancy, first trimester	6-char billing code	Condition	ICD10CM
Type I Diabetes	44833368	250.83	Diabetes with other specified manifestations, type I [juvenile type], uncontrolled	5-dig billing code	Condition	ICD9CM
Type I Diabetes	44822936	250.51	Diabetes with ophthalmic manifestations, type I [juvenile type], not stated as uncontrolled	5-dig billing code	Condition	ICD9CM

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type I Diabetes	44832190	250.21	Diabetes with hyperosmolarity, type I [juvenile type], not stated as uncontrolled	5-dig billing code	Condition	ICD9CM
Type I Diabetes	44832191	250.23	Diabetes with hyperosmolarity, type I [juvenile type], uncontrolled	5-dig billing code	Condition	ICD9CM
Type I Diabetes	44819501	250.63	Diabetes with neurological manifestations, type I [juvenile type], uncontrolled	5-dig billing code	Condition	ICD9CM
Type I Diabetes	44822934	250.13	Diabetes with ketoacidosis, type I [juvenile type], uncontrolled	5-dig billing code	Condition	ICD9CM
Type I Diabetes	44825264	250.71	Diabetes with peripheral circulatory disorders, type I [juvenile type], not stated as uncontrolled	5-dig billing code	Condition	ICD9CM
Type I Diabetes	44821787	250.03	Diabetes mellitus without mention of complication, type I [juvenile type], uncontrolled	5-dig billing code	Condition	ICD9CM
Type I Diabetes	44829881	250.91	Diabetes with unspecified complication, type I [juvenile type], not stated as uncontrolled	5-dig billing code	Condition	ICD9CM
Type I Diabetes	44820684	250.53	Diabetes with ophthalmic manifestations, type I [juvenile type], uncontrolled	5-dig billing code	Condition	ICD9CM
Type I Diabetes	44836918	250.81	Diabetes with other specified manifestations, type I [juvenile type], not stated as uncontrolled	5-dig billing code	Condition	ICD9CM
Type I Diabetes	44819504	250.93	Diabetes with unspecified complication, type I [juvenile type], uncontrolled	5-dig billing code	Condition	ICD9CM
Type I Diabetes	44822935	250.41	Diabetes with renal manifestations, type I [juvenile type], not stated as uncontrolled	5-dig billing code	Condition	ICD9CM
Type I Diabetes	44831046	250.61	Diabetes with neurological manifestations, type I [juvenile type], not stated as uncontrolled	5-dig billing code	Condition	ICD9CM
Type I Diabetes	44834549	250.43	Diabetes with renal manifestations, type I [juvenile type], uncontrolled	5-dig billing code	Condition	ICD9CM
Type I Diabetes	44820682	250.01	Diabetes mellitus without mention of complication, type I [juvenile type], not stated as uncontrolled	5-dig billing code	Condition	ICD9CM
Type I Diabetes	44820683	250.33	Diabetes with other coma, type I [juvenile type], uncontrolled	5-dig billing code	Condition	ICD9CM
Type I Diabetes	44819502	250.73	Diabetes with peripheral circulatory disorders, type I [juvenile type], uncontrolled	5-dig billing code	Condition	ICD9CM

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type I Diabetes	44824071	250.11	Diabetes with ketoacidosis, type I [juvenile type], not stated as uncontrolled	5-dig billing code	Condition	ICD9CM
Type I Diabetes	45618960	D003922	Diabetes Mellitus, Type 1	Main Heading	Condition	MeSH
Type I Diabetes	45530822	250 AD	DIABETES MELLITUS INSULIN DEPENDANT	OXMIS	Condition	OXMIS
Type I Diabetes	45429913	C10E500	Type 1 diabetes mellitus with ulcer	Read	Condition	Read
Type I Diabetes	45433193	C103000	Diabetes mellitus, juvenile type, with ketoacidotic coma	Read	Condition	Read
Type I Diabetes	45433200	C10EH12	Insulin dependent diabetes mellitus with arthropathy	Read	Condition	Read
Type I Diabetes	45436524	C108B11	Type I diabetes mellitus with mononeuropathy	Read	Condition	Read
Type I Diabetes	45453117	C10EN11	Type I diabetes mellitus with ketoacidotic coma	Read	Condition	Read
Type I Diabetes	45509825	C10E312	Insulin dependent diabetes mellitus with multiple complications	Read	Condition	Read
Type I Diabetes	45420565	L180500	Pre-existing diabetes mellitus, insulin-dependent	Read	Condition	Read
Type I Diabetes	45443099	C108D12	Type 1 diabetes mellitus with nephropathy	Read	Condition	Read
Type I Diabetes	45420118	C10EQ00	Type 1 diabetes mellitus with gastroparesis	Read	Condition	Read
Type I Diabetes	45436534	C10P011	Type 1 diabetes mellitus in remission	Read	Condition	Read
Type I Diabetes	45463263	C10EB00	Type 1 diabetes mellitus with mononeuropathy	Read	Condition	Read
Type I Diabetes	45466589	C108E00	Insulin dependent diabetes mellitus with hypoglycaemic coma	Read	Condition	Read
Type I Diabetes	45493242	C10EG00	Type 1 diabetes mellitus with peripheral angiopathy	Read	Condition	Read
Type I Diabetes	45496537	C108600	Insulin dependent diabetes mellitus with gangrene	Read	Condition	Read
Type I Diabetes	45433195	C108900	Insulin dependent diabetes maturity onset	Read	Condition	Read

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type I Diabetes	45439819	C10EL11	Type I diabetes mellitus with persistent microalbuminuria	Read	Condition	Read
Type I Diabetes	45453115	C10EC00	Type 1 diabetes mellitus with polyneuropathy	Read	Condition	Read
Type I Diabetes	45459824	C10EB12	Insulin dependent diabetes mellitus with mononeuropathy	Read	Condition	Read
Type I Diabetes	45459825	C10EJ12	Insulin dependent diabetes mellitus with neuropathic arthropathy	Read	Condition	Read
Type I Diabetes	45473340	C10E.00	Type 1 diabetes mellitus	Read	Condition	Read
Type I Diabetes	45489964	C10E012	Insulin-dependent diabetes mellitus with renal complications	Read	Condition	Read
Type I Diabetes	45493239	C10E612	Insulin dependent diabetes mellitus with gangrene	Read	Condition	Read
Type I Diabetes	45496544	C10ED00	Type 1 diabetes mellitus with nephropathy	Read	Condition	Read
Type I Diabetes	45499869	C10EA12	Insulin-dependent diabetes without complication	Read	Condition	Read
Type I Diabetes	45426563	C108H00	Insulin dependent diabetes mellitus with arthropathy	Read	Condition	Read
Type I Diabetes	45446447	C101000	Diabetes mellitus, juvenile type, with ketoacidosis	Read	Condition	Read
Type I Diabetes	45466588	C108611	Type I diabetes mellitus with gangrene	Read	Condition	Read
Type I Diabetes	45493230	C102000	Diabetes mellitus, juvenile type, with hyperosmolar coma	Read	Condition	Read
Type I Diabetes	45509820	C105000	Diabetes mellitus, juvenile type, with ophthalmic manifestation	Read	Condition	Read
Type I Diabetes	45516608	C108E11	Type I diabetes mellitus with hypoglycaemic coma	Read	Condition	Read
Type I Diabetes	45516612	C10E611	Type I diabetes mellitus with gangrene	Read	Condition	Read
Type I Diabetes	45420113	C108211	Type I diabetes mellitus with neurological complications	Read	Condition	Read
Type I Diabetes	45436523	C108612	Type 1 diabetes mellitus with gangrene	Read	Condition	Read

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type I Diabetes	45436529	C10E900	Type 1 diabetes mellitus maturity onset	Read	Condition	Read
Type I Diabetes	45453109	C108J12	Type 1 diabetes mellitus with neuropathic arthropathy	Read	Condition	Read
Type I Diabetes	45463261	C108J11	Type I diabetes mellitus with neuropathic arthropathy	Read	Condition	Read
Type I Diabetes	45483326	C10E000	Type 1 diabetes mellitus with renal complications	Read	Condition	Read
Type I Diabetes	45499871	C10EJ11	Type I diabetes mellitus with neuropathic arthropathy	Read	Condition	Read
Type I Diabetes	45509826	C10E912	Insulin dependent diabetes maturity onset	Read	Condition	Read
Type I Diabetes	45516617	C10P000	Type I diabetes mellitus in remission	Read	Condition	Read
Type I Diabetes	45523157	C10EH00	Type 1 diabetes mellitus with arthropathy	Read	Condition	Read
Type I Diabetes	45433198	C108H11	Type I diabetes mellitus with arthropathy	Read	Condition	Read
Type I Diabetes	45433199	C10EC11	Type I diabetes mellitus with polyneuropathy	Read	Condition	Read
Type I Diabetes	45436522	C108311	Type I diabetes mellitus with multiple complications	Read	Condition	Read
Type I Diabetes	45436530	C10EA11	Type I diabetes mellitus without complication	Read	Condition	Read
Type I Diabetes	45449777	C107000	Diabetes mellitus, juvenile type, with peripheral circulatory disorder	Read	Condition	Read
Type I Diabetes	45489960	C108C11	Type I diabetes mellitus with polyneuropathy	Read	Condition	Read
Type I Diabetes	45503178	C10ED12	Insulin dependent diabetes mellitus with nephropathy	Read	Condition	Read
Type I Diabetes	45506459	C10ED11	Type I diabetes mellitus with nephropathy	Read	Condition	Read
Type I Diabetes	45519839	C108512	Type 1 diabetes mellitus with ulcer	Read	Condition	Read
Type I Diabetes	45453114	C10E512	Insulin dependent diabetes mellitus with ulcer	Read	Condition	Read

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type I Diabetes	45459818	C107300	IDDM with peripheral circulatory disorder	Read	Condition	Read
Type I Diabetes	45499870	C10EC12	Insulin dependent diabetes mellitus with polyneuropathy	Read	Condition	Read
Type I Diabetes	45523153	C10E300	Type 1 diabetes mellitus with multiple complications	Read	Condition	Read
Type I Diabetes	45436521	C108300	Insulin dependent diabetes mellitus with multiple complications	Read	Condition	Read
Type I Diabetes	45470049	C108012	Type 1 diabetes mellitus with renal complications	Read	Condition	Read
Type I Diabetes	45470050	C108A00	Insulin-dependent diabetes without complication	Read	Condition	Read
Type I Diabetes	45493233	C108G12	Type 1 diabetes mellitus with peripheral angiopathy	Read	Condition	Read
Type I Diabetes	45499867	C10E311	Type I diabetes mellitus with multiple complications	Read	Condition	Read
Type I Diabetes	45506456	C108212	Type 1 diabetes mellitus with neurological complications	Read	Condition	Read
Type I Diabetes	45506457	C108E12	Type 1 diabetes mellitus with hypoglycaemic coma	Read	Condition	Read
Type I Diabetes	45516615	C10ER00	Latent autoimmune diabetes mellitus in adult	Read	Condition	Read
Type I Diabetes	45523154	C10EE11	Type I diabetes mellitus with hypoglycaemic coma	Read	Condition	Read
Type I Diabetes	45429914	C10EN00	Type 1 diabetes mellitus with ketoacidotic coma	Read	Condition	Read
Type I Diabetes	45436520	C108.13	Type I diabetes mellitus	Read	Condition	Read
Type I Diabetes	45453107	C108B12	Type 1 diabetes mellitus with mononeuropathy	Read	Condition	Read
Type I Diabetes	45466594	C10E211	Type I diabetes mellitus with neurological complications	Read	Condition	Read
Type I Diabetes	45483327	C10E212	Insulin-dependent diabetes mellitus with neurological complications	Read	Condition	Read
Type I Diabetes	45503177	C10E011	Type I diabetes mellitus with renal complications	Read	Condition	Read

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type I Diabetes	45516607	C108500	Insulin dependent diabetes mellitus with ulcer	Read	Condition	Read
Type I Diabetes	45433196	C108912	Type 1 diabetes mellitus maturity onset	Read	Condition	Read
Type I Diabetes	45436531	C10EM00	Type 1 diabetes mellitus with ketoacidosis	Read	Condition	Read
Type I Diabetes	45439818	C10EG11	Type I diabetes mellitus with peripheral angiopathy	Read	Condition	Read
Type I Diabetes	45473332	C108200	Insulin-dependent diabetes mellitus with neurological complications	Read	Condition	Read
Type I Diabetes	45486690	C10EK00	Type 1 diabetes mellitus with persistent proteinuria	Read	Condition	Read
Type I Diabetes	45493241	C10EE00	Type 1 diabetes mellitus with hypoglycaemic coma	Read	Condition	Read
Type I Diabetes	45513200	C100000	Diabetes mellitus, juvenile type, with no mention of complication	Read	Condition	Read
Type I Diabetes	45496538	C108A12	Type 1 diabetes mellitus without complication	Read	Condition	Read
Type I Diabetes	45496540	C108D11	Type I diabetes mellitus with nephropathy	Read	Condition	Read
Type I Diabetes	45499860	C108H12	Type 1 diabetes mellitus with arthropathy	Read	Condition	Read
Type I Diabetes	45446450	C10EH11	Type I diabetes mellitus with arthropathy	Read	Condition	Read
Type I Diabetes	45476731	C108B00	Insulin dependent diabetes mellitus with mononeuropathy	Read	Condition	Read
Type I Diabetes	45496539	C108D00	Insulin dependent diabetes mellitus with nephropathy	Read	Condition	Read
Type I Diabetes	45496545	C10EG12	Insulin dependent diabetes mellitus with peripheral angiopathy	Read	Condition	Read
Type I Diabetes	45426565	C10E.12	Insulin dependent diabetes mellitus	Read	Condition	Read
Type I Diabetes	45453113	C10E.11	Type I diabetes mellitus	Read	Condition	Read
Type I Diabetes	45453116	C10EM11	Type I diabetes mellitus with ketoacidosis	Read	Condition	Read

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type I Diabetes	45466587	C108312	Type 1 diabetes mellitus with multiple complications	Read	Condition	Read
Type I Diabetes	45496543	C10EA00	Type 1 diabetes mellitus without complication	Read	Condition	Read
Type I Diabetes	45420111	C104000	Diabetes mellitus, juvenile type, with renal manifestation	Read	Condition	Read
Type I Diabetes	45426566	C10EJ00	Type 1 diabetes mellitus with neuropathic arthropathy	Read	Condition	Read
Type I Diabetes	45453108	C108C00	Insulin dependent diabetes mellitus with polyneuropathy	Read	Condition	Read
Type I Diabetes	45466595	C10EL00	Type 1 diabetes mellitus with persistent microalbuminuria	Read	Condition	Read
Type I Diabetes	45509827	C10EQ11	Type I diabetes mellitus with gastroparesis	Read	Condition	Read
Type I Diabetes	45439816	C10E200	Type 1 diabetes mellitus with neurological complications	Read	Condition	Read
Type I Diabetes	45463259	C108A11	Type I diabetes mellitus without complication	Read	Condition	Read
Type I Diabetes	45463260	C108G00	Insulin dependent diabetes mellitus with peripheral angiopathy	Read	Condition	Read
Type I Diabetes	45473331	C108.11	IDDM-Insulin dependent diabetes mellitus	Read	Condition	Read
Type I Diabetes	45486687	C108011	Type I diabetes mellitus with renal complications	Read	Condition	Read
Type I Diabetes	45499857	C108.00	Insulin dependent diabetes mellitus	Read	Condition	Read
Type I Diabetes	45499868	C10E911	Type I diabetes mellitus maturity onset	Read	Condition	Read
Type I Diabetes	45439812	C108000	Insulin-dependent diabetes mellitus with renal complications	Read	Condition	Read
Type I Diabetes	45523146	C100011	Insulin dependent diabetes mellitus	Read	Condition	Read
Type I Diabetes	45420112	C108.12	Type 1 diabetes mellitus	Read	Condition	Read
Type I Diabetes	45443097	C106000	Diabetes mellitus, juvenile type, with neurological manifestation	Read	Condition	Read

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type I Diabetes	45453106	C108911	Type I diabetes mellitus maturity onset	Read	Condition	Read
Type I Diabetes	45456476	C10E600	Type 1 diabetes mellitus with gangrene	Read	Condition	Read
Type I Diabetes	45480046	C108J00	Insulin dependent diabetes mellitus with neuropathic arthropathy	Read	Condition	Read
Type I Diabetes	45489965	C10E511	Type I diabetes mellitus with ulcer	Read	Condition	Read
Type I Diabetes	45516613	C10EB11	Type I diabetes mellitus with mononeuropathy	Read	Condition	Read
Type I Diabetes	45519841	C108G11	Type I diabetes mellitus with peripheral angiopathy	Read	Condition	Read
Type I Diabetes	45423315	C10EK11	Type I diabetes mellitus with persistent proteinuria	Read	Condition	Read
Type I Diabetes	45456474	C108511	Type I diabetes mellitus with ulcer	Read	Condition	Read
Type I Diabetes	45493232	C108C12	Type 1 diabetes mellitus with polyneuropathy	Read	Condition	Read
Type I Diabetes	45516614	C10EE12	Insulin dependent diabetes mellitus with hypoglycaemic coma	Read	Condition	Read
Type I Diabetes	318712	421365002	Peripheral circulatory disorder associated with type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	40386356	190325001	Diabetes mellitus, juvenile type, with ketoacidosis	Clinical Finding	Condition	SNOMED
Type I Diabetes	40386366	190334006	Diabetes mellitus, juvenile type, with ketoacidotic coma	Clinical Finding	Condition	SNOMED
Type I Diabetes	40386757	190365002	Type 1 diabetes mellitus with neurological complications	Clinical Finding	Condition	SNOMED
Type I Diabetes	45769876	84371000119108	Hypoglycemia due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	4200873	314894004	Type 1 diabetes mellitus with neuropathic arthropathy	Clinical Finding	Condition	SNOMED
Type I Diabetes	45766051	703137001	Type I diabetes mellitus in remission	Clinical Finding	Condition	SNOMED
Type I Diabetes	45771075	90741000119107	Chronic kidney disease stage 3 due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type I Diabetes	46269764	10656231000119100	Skin ulcer of toe due to diabetes mellitis type 1	Clinical Finding	Condition	SNOMED
Type I Diabetes	200687	421893009	Renal disorder associated with type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	43531008	609564002	Pre-existing type 1 diabetes mellitus in pregnancy	Clinical Finding	Condition	SNOMED
Type I Diabetes	45769830	71771000119100	Neuropathic arthropathy due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	4102018	28032008	Insulin dependent diabetes mellitus type 1B	Clinical Finding	Condition	SNOMED
Type I Diabetes	37018566	71791000119104	Peripheral neuropathy due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	40386768	190375004	Type I diabetes mellitus with polyneuropathy	Clinical Finding	Condition	SNOMED
Type I Diabetes	45757073	104941000119109	Retinal ischemia due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	45763585	60991000119100	Blindness due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	377821	421468001	Neurological disorder associated with type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	4099215	190372001	Type 1 diabetes mellitus maturity onset	Clinical Finding	Condition	SNOMED
Type I Diabetes	40350833	267469001	Insulin dependent diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	40543500	371054002	Type I diabetes mellitus with complication	Clinical Finding	Condition	SNOMED
Type I Diabetes	40543501	371055001	Type I diabetes mellitus with ketoacidosis	Clinical Finding	Condition	SNOMED
Type I Diabetes	45757604	243421000119104	Proteinuria due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	45769891	87471000119106	Ankle ulcer due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	201531	190330002	Type 1 diabetes mellitus with hyperosmolar coma	Clinical Finding	Condition	SNOMED
Type I Diabetes	439770	420270002	Ketoacidosis in type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type I Diabetes	4096668	190369008	Type 1 diabetes mellitus with gangrene	Clinical Finding	Condition	SNOMED
Type I Diabetes	37017431	713705003	Polyneuropathy due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	40386758	190366001	Type I diabetes mellitus with multiple complications	Clinical Finding	Condition	SNOMED
Type I Diabetes	40518515	314368001	Type I diabetes mellitus with mononeuropathy	Clinical Finding	Condition	SNOMED
Type I Diabetes	4047906	23045005	Insulin dependent diabetes mellitus type 1A	Clinical Finding	Condition	SNOMED
Type I Diabetes	4224709	422228004	Multiple complications of type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	4312138	425159004	Diabetic gastroparesis associated with type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	37016348	367991000119101	Hyperglycemia due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	40386775	190381007	Type I diabetes mellitus with neuropathic arthropathy	Clinical Finding	Condition	SNOMED
Type I Diabetes	44810563	888191000000107	Type I diabetes mellitus in remission	Clinical Finding	Condition	SNOMED
Type I Diabetes	45757074	104951000119106	Diabetic vitreous hemorrhage due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	45773576	90721000119101	Chronic kidney disease stage 1 due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	4152858	314893005	Type 1 diabetes mellitus with arthropathy	Clinical Finding	Condition	SNOMED
Type I Diabetes	4225055	420918009	Mononeuropathy associated with type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	40386746	190355008	Diabetes mellitus, juvenile type, with peripheral circulatory disorder	Clinical Finding	Condition	SNOMED
Type I Diabetes	45769829	71721000119101	Nephrotic syndrome due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	45769901	90731000119103	Chronic kidney disease stage 2 due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	4137214	425442003	Diabetic autonomic neuropathy associated with type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type I Diabetes	4143857	427571000	Amyotrophy due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	4295011	401110002	Type 1 diabetes mellitus with persistent microalbuminuria	Clinical Finding	Condition	SNOMED
Type I Diabetes	37016767	712882000	Diabetic autonomic neuropathy due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	40386749	190358005	IDDM with peripheral circulatory disorder	Clinical Finding	Condition	SNOMED
Type I Diabetes	45757393	128001000119105	Hypertension concurrent and due to end stage renal disease on dialysis due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	45769892	87491000119107	Forefoot ulcer due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	45770902	110141000119100	Ulcer of lower limb due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	45773688	96441000119101	Chronic kidney disease due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	37016180	138891000119109	Moderate nonproliferative retinopathy due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	40386773	190380008	Type I diabetes mellitus with arthropathy	Clinical Finding	Condition	SNOMED
Type I Diabetes	45757432	137941000119106	Hyperlipidemia due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	45769904	90771000119100	End stage renal disease on dialysis due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	45773567	102781000119107	Sensory neuropathy due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	4224254	421075007	Ketoacidotic coma in type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	37016179	138881000119106	Mild nonproliferative retinopathy due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	37017429	713702000	Gastroparesis due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	40386754	190362004	Type I diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	45757507	164881000119109	Foot ulcer due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type I Diabetes	45757535	18521000119106	Microalbuminuria due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	45769837	72141000119104	Chronic ulcer of skin due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	443592	428896009	Hyperosmolality due to uncontrolled type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	4063042	199229001	Pre-existing type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	4228112	421437000	Hypoglycemic coma in type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	37396268	716020005	Diabetic embryopathy	Clinical Finding	Condition	SNOMED
Type I Diabetes	40386770	190377007	Type I diabetes mellitus with hypoglycemic coma	Clinical Finding	Condition	SNOMED
Type I Diabetes	40520436	314892000	Type I diabetes mellitus with peripheral angiopathy	Clinical Finding	Condition	SNOMED
Type I Diabetes	45757674	31321000119102	Diabetes mellitus type 1 without retinopathy	Clinical Finding	Condition	SNOMED
Type I Diabetes	45769832	72021000119109	Diabetic dermopathy due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	45769833	72031000119107	Severe malnutrition due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	45771068	87481000119109	Heel AND/OR midfoot ulcer due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	40386767	190374000	Type I diabetes mellitus with mononeuropathy	Clinical Finding	Condition	SNOMED
Type I Diabetes	40321135	154673001	Diabetes mellitus: [juvenile] or [insulin dependent]	Clinical Finding	Condition	SNOMED
Type I Diabetes	40518525	314377008	Type I diabetes mellitus with nephropathy	Clinical Finding	Condition	SNOMED
Type I Diabetes	40575609	401109007	Type 1 diabetes mellitus with persistent proteinuria	Clinical Finding	Condition	SNOMED
Type I Diabetes	45757266	109171000119104	Retinal edema due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	45757362	120711000119108	Hypoglycemic unawareness in type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type I Diabetes	45769834	72041000119103	Osteomyelitis due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	373999	421165007	Diabetic oculopathy associated with type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	4099214	190368000	Type 1 diabetes mellitus with ulcer	Clinical Finding	Condition	SNOMED
Type I Diabetes	4129518	237626009	Pregnancy and insulin-dependent diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	40386772	190379005	Type I diabetes mellitus with peripheral angiopathy	Clinical Finding	Condition	SNOMED
Type I Diabetes	43531565	691000119103	Diabetic erectile dysfunction associated with type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	201254	46635009	Type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	435216	420868002	Disorder due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	443412	313435000	Type 1 diabetes mellitus without complication	Clinical Finding	Condition	SNOMED
Type I Diabetes	40386728	190339001	Diabetes mellitus, juvenile type, with renal manifestation	Clinical Finding	Condition	SNOMED
Type I Diabetes	45763584	60971000119101	Proliferative retinopathy due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	45769873	82571000119107	Traction retinal detachment due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	45769902	90751000119109	Chronic kidney disease stage 4 due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	45771533	82581000119105	Rubeosis iridis due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	4145827	426875007	Latent autoimmune diabetes mellitus in adult	Clinical Finding	Condition	SNOMED
Type I Diabetes	4222553	420514000	Persistent proteinuria associated with type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	4222687	421305000	Persistent microalbuminuria associated with type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	40386755	190363009	Type I diabetes mellitus with renal complications	Clinical Finding	Condition	SNOMED

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Type I Diabetes	45763583	60961000119107	Nonproliferative diabetic retinopathy due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	45769903	90761000119106	Chronic kidney disease stage 5 due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	40386735	190345009	Diabetes mellitus, juvenile type, with ophthalmic manifestation	Clinical Finding	Condition	SNOMED
Type I Diabetes	40386766	190373006	Type I diabetes mellitus without complication	Clinical Finding	Condition	SNOMED
Type I Diabetes	43530660	1571000119104	Mixed hyperlipidemia due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	43531009	609566000	Pregnancy and type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	45771067	71701000119105	Hypertension in chronic kidney disease due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	4143689	426907004	Small vessel disease due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	4151281	314771006	Type 1 diabetes mellitus with hypoglycemic coma	Clinical Finding	Condition	SNOMED
Type I Diabetes	4224723	422297002	Polyneuropathy associated with type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	37016353	368551000119104	Dyslipidemia due to type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Type I Diabetes	40386741	190350003	Diabetes mellitus, juvenile type, with neurological manifestation	Clinical Finding	Condition	SNOMED
Type I Diabetes	40518516	314369009	Type 1 diabetes mellitus with polyneuropathy	Clinical Finding	Condition	SNOMED
Diabetic Ketoacidosis	45907664	111740	Type II Diabetes Mellitus with Ketoacidosis	Diagnosis	Condition	CIEL
Diabetic Ketoacidosis	45919814	119441	Type II (Non-Insulin Dependent Type) or Unspecified Type Diabetes Mellitus with ketoacidosis, not stated as uncontrolled	Diagnosis	Condition	CIEL
Diabetic Ketoacidosis	45926454	142463	Diabetes Mellitus, Juvenile Type, with Ketoacidosis	Diagnosis	Condition	CIEL
Diabetic Ketoacidosis	45953138	111752	Type I Diabetes Mellitus with Ketoacidosis	Diagnosis	Condition	CIEL
Diabetic Ketoacidosis	45953342	122714	Diabetic Ketoacidosis without Coma	Diagnosis	Condition	CIEL

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Diabetic Ketoacidosis	45542735	E10.1	Insulin-dependent diabetes mellitus with ketoacidosis	ICD10 code	Condition	ICD10
Diabetic Ketoacidosis	45542739	E11.1	Non-insulin-dependent diabetes mellitus with ketoacidosis	ICD10 code	Condition	ICD10
Diabetic Ketoacidosis	45591035	E14.1	Unspecified diabetes mellitus with ketoacidosis	ICD10 code	Condition	ICD10
Diabetic Ketoacidosis	1567908	E08.1	Diabetes mellitus due to underlying condition with ketoacidosis	4-char nonbill code	Condition	ICD10CM
Diabetic Ketoacidosis	1567925	E09.1	Drug or chemical induced diabetes mellitus with ketoacidosis	4-char nonbill code	Condition	ICD10CM
Diabetic Ketoacidosis	1567941	E10.1	Type 1 diabetes mellitus with ketoacidosis	4-char nonbill code	Condition	ICD10CM
Diabetic Ketoacidosis	1567974	E13.1	Other specified diabetes mellitus with ketoacidosis	4-char nonbill code	Condition	ICD10CM
Diabetic Ketoacidosis	45537955	E09.10	Drug or chemical induced diabetes mellitus with ketoacidosis without coma	5-char billing code	Condition	ICD10CM
Diabetic Ketoacidosis	45566733	E13.10	Other specified diabetes mellitus with ketoacidosis without coma	5-char billing code	Condition	ICD10CM
Diabetic Ketoacidosis	45571649	E08.10	Diabetes mellitus due to underlying condition with ketoacidosis without coma	5-char billing code	Condition	ICD10CM
Diabetic Ketoacidosis	45586133	E09.11	Drug or chemical induced diabetes mellitus with ketoacidosis with coma	5-char billing code	Condition	ICD10CM
Diabetic Ketoacidosis	45600636	E10.10	Type 1 diabetes mellitus with ketoacidosis without coma	5-char billing code	Condition	ICD10CM
Diabetic Ketoacidosis	44820681	249.11	Secondary diabetes mellitus with ketoacidosis, uncontrolled	5-dig billing code	Condition	ICD9CM
Diabetic Ketoacidosis	44822934	250.13	Diabetes with ketoacidosis, type I [juvenile type], uncontrolled	5-dig billing code	Condition	ICD9CM
Diabetic Ketoacidosis	44824071	250.11	Diabetes with ketoacidosis, type I [juvenile type], not stated as uncontrolled	5-dig billing code	Condition	ICD9CM
Diabetic Ketoacidosis	44824072	250.12	Diabetes with ketoacidosis, type II or unspecified type, uncontrolled	5-dig billing code	Condition	ICD9CM
Diabetic Ketoacidosis	44828793	250.1	Diabetes with ketoacidosis	4-dig nonbill code	Condition	ICD9CM
Diabetic Ketoacidosis	44829878	250.10	Diabetes with ketoacidosis, type II or unspecified type, not stated as uncontrolled	5-dig billing code	Condition	ICD9CM

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Diabetic Ketoacidosis	44835747	249.1	Secondary diabetes mellitus with ketoacidosis	4-dig nonbill code	Condition	ICD9CM
Diabetic Ketoacidosis	44835748	249.10	Secondary diabetes mellitus with ketoacidosis, not stated as uncontrolled, or unspecified	5-dig billing code	Condition	ICD9CM
Diabetic Ketoacidosis	45617081	D016883	Diabetic Ketoacidosis	Main Heading	Condition	MeSH
Diabetic Ketoacidosis	45527841	250 JA	DIABETIC ACIDOSIS	OXMIS	Condition	OXMIS
Diabetic Ketoacidosis	45423317	C10FN11	Type II diabetes mellitus with ketoacidosis	Read	Condition	Read
Diabetic Ketoacidosis	45426562	C101100	Diabetes mellitus, adult onset, with ketoacidosis	Read	Condition	Read
Diabetic Ketoacidosis	45433192	C101y00	Other specified diabetes mellitus with ketoacidosis	Read	Condition	Read
Diabetic Ketoacidosis	45436531	C10EM00	Type 1 diabetes mellitus with ketoacidosis	Read	Condition	Read
Diabetic Ketoacidosis	45446447	C101000	Diabetes mellitus, juvenile type, with ketoacidosis	Read	Condition	Read
Diabetic Ketoacidosis	45453116	C10EM11	Type I diabetes mellitus with ketoacidosis	Read	Condition	Read
Diabetic Ketoacidosis	45459817	C101z00	Diabetes mellitus NOS with ketoacidosis	Read	Condition	Read
Diabetic Ketoacidosis	45489956	C101.00	Diabetes mellitus with ketoacidosis	Read	Condition	Read
Diabetic Ketoacidosis	45489957	C103z00	Diabetes mellitus NOS with ketoacidotic coma	Read	Condition	Read
Diabetic Ketoacidosis	45509828	C10FN00	Type 2 diabetes mellitus with ketoacidosis	Read	Condition	Read
Diabetic Ketoacidosis	439770	420270002	Ketoacidosis in type 1 diabetes mellitus	Clinical Finding	Condition	SNOMED
Diabetic Ketoacidosis	443727	420422005	Diabetic ketoacidosis	Clinical Finding	Condition	SNOMED
Diabetic Ketoacidosis	443734	421750000	Ketoacidosis in type 2 diabetes mellitus	Clinical Finding	Condition	SNOMED
Diabetic Ketoacidosis	4009303	111556005	Diabetic ketoacidosis without coma	Clinical Finding	Condition	SNOMED

Name	Concept ID	Concept Code	Concept Name	Concept Class ID	Domain	Vocabulary
Diabetic Ketoacidosis	4096034	190327009	Other specified diabetes mellitus with ketoacidosis	Clinical Finding	Condition	SNOMED
Diabetic Ketoacidosis	4096035	190337004	Diabetes mellitus NOS with ketoacidotic coma	Clinical Finding	Condition	SNOMED
Diabetic Ketoacidosis	4099209	190328004	Diabetes mellitus NOS with ketoacidosis	Clinical Finding	Condition	SNOMED
Diabetic Ketoacidosis	40320748	154671004	Diabetic ketoacidosis	Clinical Finding	Condition	SNOMED
Diabetic Ketoacidosis	40321137	154675008	Diabetes with ketoacidosis - no coma	Clinical Finding	Condition	SNOMED
Diabetic Ketoacidosis	40350831	267467004	Ketoacidosis - diabetic	Clinical Finding	Condition	SNOMED
Diabetic Ketoacidosis	40373476	286912007	Diabetes with ketoacidosis - no coma	Clinical Finding	Condition	SNOMED
Diabetic Ketoacidosis	40386356	190325001	Diabetes mellitus, juvenile type, with ketoacidosis	Clinical Finding	Condition	SNOMED
Diabetic Ketoacidosis	40386357	190326000	Diabetes mellitus, adult onset, with ketoacidosis	Clinical Finding	Condition	SNOMED
Diabetic Ketoacidosis	40447465	24927004	Diabetes with ketoacidosis	Clinical Finding	Condition	SNOMED
Diabetic Ketoacidosis	40543501	371055001	Type I diabetes mellitus with ketoacidosis	Clinical Finding	Condition	SNOMED
Diabetic Ketoacidosis	40585980	408660003	Type II diabetes mellitus with ketoacidosis	Clinical Finding	Condition	SNOMED

Annex 2: List of Antihyperglycemic Drug Ingredients*

- METFORMIN, INSULIN, canagliflozin, DAPAGLIFLOZIN, EMPAGLIFLOZIN
- Sulfonylureas (SU)
  - ACETOHEXAMIDE
  - CARBUTAMIDE
  - CHLORPROPAMIDE
  - GLIBORNURIDE
  - GLICLAZIDE
  - GLIMEPIRIDE
  - GLIPIZIDE
  - GLIQUIDONE
  - GLYBURIDE
  - GLYMIDINE
  - TOLAZAMIDE
  - TOLBUTAMIDE
- DPP-4 inhibitors
  - ALOGLIPTIN
  - LINAGLIPTIN
  - SAXAGLIPTIN
  - SITAGLIPTIN
  - VILDAGLIPTIN
- GLP-1 agonists
  - ALBIGLUTIDE
  - DULAGLUTIDE
  - EXENATIDE
  - LIRAGLUTIDE
  - LIXISENATIDE
- TZD
  - PIOGLITAZONE
  - ROSIGLITAZONE
  - TROGLITAZONE
- Other AHA
  - ARCABOSE
  - BROMOCRIPTINE (0.8MG, CYCLOSET®)
  - MIGLITOL
  - NATEGLINIDE
  - REPAGLINIDE

*Complete set of NDC codes for antihyperglycemic agents and any other drugs available on request from Global Epidemiology

Annex 3: Incidence of Inpatient Diabetic Ketoacidosis Diagnosis Among Patients with Type 2 Diabetes Mellitus in 4 Large Insurance Claims Databases in the US, 2012

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Background

There is a lack of data for diabetic ketoacidosis (DKA) incidence among type 2 diabetes mellitus (T2DM) from the literature, with most reports either combining T2DM with type 1 diabetes (T1D), or combining DKA with other short-term complications for diabetes (and combining both T1D and T2DM). The incidence also depends on age, sex, underlying study populations/country, race/ethnicity, case definitions, calendar time periods, etc. DKA incidence has been reported roughly in the range of about 0.05 to 1.7 per 100 person-years (1-7), including cases from T1D.

In this brief report, we used Janssen licensed large US commercial claims databases and estimated incidence of DKA among patients with T2DM in the calendar year 2012, which is the most recent year before the introduction of canagliflozin products in the US.

Methods

Overview of databases

Four observational healthcare databases were used for this descriptive analysis: the Truven MarketScan Commercial Claims and Encounters (CCAE), MarketScan Medicare Supplemental Beneficiaries (MDCR), the MarketScan Multi-state Medicaid Database (MDCD), and the Optum ClinFormatics (Optum) database.

Truven MarketScan Commercial Claims and Encounters (CCAE)

Truven MarketScan Commercial Claims and Encounters (CCAE) is a longitudinal claims-based database that includes active employees, early retirees, COBRA continuers, and dependents insured by employer-sponsored plans. Data available include integrated enrollment, medical and prescription claims data. We used the Observational Medical Outcomes Partnership (OMOP) Common Data Model (CDM) with data covering more than 109 million lives from January 2000 through 2013.

The following limitations of Truven CCAE should be noted:

- The commercially insured patients represent a higher socioeconomic status than the overall U.S. population.
- Some members are enrolled in plans with only medical coverage.
- Exact birth date is not available, only year of birth.
- Data based on financial claims filed for reimbursement, disease coding may reflect financial incentives for reimbursement rather than clinically and systemically verified definitions.
- Prescriptions are those filled, not those prescribed. We do not know the universe of prescribed records that went unfulfilled.

There is data lag, Truven only sends records that are 100% paid, which can take about 6 months after year end.

Truven MarketScan Medicare Supplemental (MDCR)

Truven MarketScan MDCR is an administrative health claims database for Medicare-eligible active and retired employees and their Medicare-eligible dependents from employer-sponsored supplemental plans (predominantly fee-for-service plans). Only plans where both the Medicare-paid amounts and the employer-paid amounts were available and evident on the claims were selected for this database.

The database captures person-specific clinical utilization, expenditures, and enrollment across inpatient, outpatient, prescription drug, and carve-out services. It also includes results for outpatient lab tests processed by large national lab vendors.

The following limitations of Truven MDCR should be noted:

- The commercially insured patients represent a higher socioeconomic status than the overall Medicare population.
- Some members were enrolled in plans with only medical coverage.
- Exact birth date is not available, only year of birth.
- Data based on financial claims filed for reimbursement, disease coding my reflect financial incentives for reimbursement rather than clinically and systemically verified definitions.
- Prescriptions are those filled, not those prescribed. We do not know the universe of prescribed records that went unfulfilled.
- There is data lag, MarketScan only sends records that are 100% paid, which can take about 6 months after year end.

Truven MarketScan Multi-state Medicaid (MDCD)

Truven MarketScan MDCD contains administrative claims data for Medicaid enrollees from multiple states, including inpatient, outpatient, and pharmacy services. The MDCD population covers 16 m lives with coverage from 2006 to 2012. The database captures person-specific clinical utilization, expenditures, and enrollment across inpatient, outpatient, prescription drug, and carve-out services.

The following limitations of Truven MDCD should be noted:

- No state information is available.
- Exact birth date is not available, only year of birth.
- Some members were enrolled in plans with only medical coverage.
- Lab tests processed by large national lab vendors are not available for MDCD patients.
- Members eligible for Medicare may have incomplete data.
- Data based on financial claims filed for reimbursement, disease coding may reflect financial incentives for reimbursement rather than clinically and systemically verified definitions.
- Prescriptions are those filled, not those prescribed. We do not know the universe of prescribed records that went unfulfilled.
- There is data lag, MarketScan only sends records that are 100% paid, which can take about 6 months after year end.

Optum ClinFormatics

Optum ClinFormatics (Optum) is a longitudinal claims-based database comprised of United Healthcare (UHC) fully insured patients, UHC administrative services only, Medicaid, and legacy Medicare Choice membership and claims. Data available include integrated enrollment, medical and prescription claims

data. We used the OMOP common data model with data from October 2005 through 2013 covering more than 36 million lives.

The following limitations of the Optum database should be noted:

- Family enrollment, death, capitated plan information and exact birth date are not available.
- Incomplete cost data: net pay from insurer as well as total allowed pay are not available.
- Definition of inpatient encounters is not consistent over the years.
- Limited members from Medicaid and Medicare population.
- Data based on financial claims filed for reimbursement, disease coding may reflect financial incentives for reimbursement rather than clinically and systemically verified definitions.
- Prescriptions are those filled, not those prescribed. We do not know the universe of prescribed records that went unfulfilled.

Algorithm for T2DM

Patients with T2DM in the databases were identified if all conditions below were met:

- Had at least one diagnosis code from any inpatient or outpatient medical claims (based on International Classification of Disease ICD-9 codes 250.xx, 357.2x, 362.0x, 366.41, 648.0x) OR had at least one pharmacy dispensing record indicating treatment for T2DM (RxNorm concepts for active ingredients with FDA-approved indication in FDB of 'Type 2 Diabetes Mellitus', 'Treatment Refractory Type 2 Diabetes Mellitus', 'Type 2 Diabetes Mellitus Treatment Adjunct')
- Age at index date >= 18 years old, where index date is defined as the first date of diagnosis or treatment
- Must not have insulin monotherapy (i.e., no other antihyperglycemic agents in their record)
- Has 365 days or more of baseline period prior to first diagnosis
- Has 365 days or more of follow-up period following the first diagnosis

Algorithm for DKA

Diabetic ketoacidosis was defined by ICD-9 codes

- 250.10 Diabetes mellitus with ketoacidosis, type II or unspecified type, not stated as uncontrolled
- 250.12 Diabetes mellitus with ketoacidosis, type II or unspecified type, uncontrolled

Qualifying events were identified as distinct inpatient visits with the associated diagnosis in the primary or first position of the medical claim. The outcome date was defined by the visit start date.

Analysis

Qualifying patients had to have their T2DM diagnosis in 2011 or earlier and needed to have an observation period that covered both the date of T2DM cohort entry and had an observation period end date later than 1Jan2012. For these patients, we defined the time-at-risk as the duration of time covered by the observation period during that calendar year, where the span of time starts at 1Jan and the end date is the minimum of 31Dec and the observation period end date. As an example, if a qualifying person in 2012 had an observation period from 1/1/2010 through 12/31/2013, then their time-at-risk in 2012 would be 365 days (1/1/2012 through 12/31/2012) because the person has observation throughout the full year; if another person an observation period from 1/1/2010 through 1/30/2012, then she would have 30 days of time-at-risk (1/1/2012 through 1/31/2012).

Within the time-at-risk in each year, we identified patients who had at least one outcome of an inpatient visit with DKA. Only one incident event is counted for each person, if observed.

We estimated incidence proportions and incidence rates. Incidence proportions are reported as the number of persons with an incident event, divided by the number of persons with observed time in that year, displayed in case/100 persons. Incidence rates are reported as the number of persons with an incidence event, divided by the time-at-risk in that year, displayed in cases/100 person-years. 95% confidence intervals were estimated assuming binomial distribution for the estimated incidence proportions and Poisson distribution for the estimated incidence rates.

Data:

Truven (formerly MarketScan) Commercial Claims and Encounters (CCAE), Truven (formerly MarketScan) Medicare Supplemental Beneficiaries (MDCR), the Truven (formerly MarketScan) Multi-state Medicaid Database (MDCD), and the Optum ClinFormatics (Optum) database.

Method:

DKA among T2DM is identified by inpatient ICD-9 codes 250.10, 250.12; T2DM is identified by ICD-9 codes 250.xx, 357.2x, 362.0x, 366.41, 648.0x, or >=1 pharmacy dispensing record indicating treatment for T2DM, age at T2DM diagnosis >= 18 years, not on insulin monotherapy.

Results

Table 1 summarizes the results across all 4 databases in 2012. In the large databases, the CCAE, among the 895,015 patients with T2DM before 2012 with at least 1 day of observation in 2012, there were 394 patients who had at least one diabetic ketoacidosis inpatient event in 2012. The incidence proportion was 0.044 persons with event per 100 eligible persons. The incidence rate was 0.046 incident events per 100 person-years. This is closest to the incident rate of 0.039 per 100 person-years in the Optum Clinformatic database, with corresponding confidence intervals overlapping. The incidence rate estimated from the Medicare Supplemental database appeared lowest, although confidence interval overlaps with that from Optum. This population tends to have higher socioeconomic status, in contrast to the Medicaid population, which gave the highest incidence rate estimate of 0.200 per 100 patient-years.

Table 1: Incidence estimates for DKA* among patients with T2DM in 4 large US claims databases, 2012**

Database	# of patients at-risk	# of DKA cases	Time at risk	Incidence proportion, %	Incidence rate per 100 person-years
CCAE	895,015	394	847,469.33	0.044 (95% CI 0.040-0.049)	0.046 (95% CI 0.042-0.051)
MDCD	61,248	117	58,534.36	0.191 (95% CI 0.158-0.229)	0.200 (95% CI 0.165-0.240)
MDCR	251,214	77	243,326.42	0.031 (95% CI 0.024-0.038)	0.032 (95% CI 0.025-0.040)
Optum	266,066	98	250,679.76	0.037 (95% CI 0.030 -0.045)	0.039 (95% CI 0.032-0.048)

*DKA only includes diagnosis codes that specifies diabetic ketoacidosis in type 2 diabetes, not including metabolic acidosis, ketoacidosis, or acidosis
**Patients in the general populations have different characteristics than clinical trial participants
CI=confidence interval
DKA=diabetic ketoacidosis
T2DM=type 2 diabetes mellitus
CCAE=Commercial Claims & Encounters
MDCD=Medicaid
MDCR=Medicare supplemental
Optum=Optum Clinformatics

Strengths

Large insurance claims databases enabled estimation of uncommon events in the most recent calendar year before approval of Canagliflozin and other canagliflozin products

Observational databases provide background estimates in more general populations compared with clinical trials

Limitations

- No lab data to confirm DKA diagnosis, although inpatient diagnosis by the specific ICD-9 codes may improve the specificity, which on the other hand, may have missed some cases and therefore underestimated the incidence
- Type 2 diabetes may not be completely accurate using the algorithm

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