Implementation Guide:
Endocrine Society
Measure Set For Older Adults with Type 2 Diabetes at Risk for Hypoglycemia

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1. Endocrine Society Contact Information

For questions on the implementation guide including (a) data dictionary/ technical specifications, (b)measure specifications, (c) algorithms and measure flows, please contact Stephanie Kutler, Director of Advocacy & Policy at:

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2. Purpose of Implementation Guide

This implementation guide is intended to assist interested stakeholders in integrating into existing registries or quality improvement activities the three measures included in the Endocrine Society's (The Society) Measure Set for Older Adults with Type 2 Diabetes at Risk for Hypoglycemia. Specifically, the goal is for the implementation guide to provide details regarding the data dictionary/technical specifications, measure specifications, and the reporting criteria (algorithms/flows).

The Society may refine this implementation guide over time based on feedback received by implementers of these measures and may be expanded to include additional measures in the future. Any updates to this implementation guide will include a version number to ensure that users are aware of any changes made.

3. Overview of the Measure Set

3.1. Problem Addressed by the Measure Set

Hypoglycemia has been identified as a serious problem for individuals with Type 2 Diabetes Mellitus (T2DM). Based on self-reporting, nearly 50% of individuals with T2DM experienced any episodes of hypoglycemia and 9% experienced severe hypoglycemia (with neurological symptoms requiring assistance of another person to treat the low blood glucose) within a month of monitoring in a recent global study (1). The risk and severity of adverse drug event-related hypoglycemia is greatest in older adults who use insulin and/or insulin secretagogues (i.e., sulfonylurea and glinides) to manage glucose levels. Additionally, other factors that further increase the risk in this population include cognitive impairment or dementia, polypharmacy, food insufficiency, hypoglycemia unawareness, and certain comorbidities such as chronic kidney disease (2).

At the start of 2019 there was a limited number of measures that sought to address hypoglycemia in the United States. As such, the Society decided to assemble a technical expert panel (TEP) to assist in the identification of potential measures on this topic. The measures that were developed by the TEP specifically address hypoglycemia in older adults (age 65 and older) with T2DM who have specific risk factors that place patients at greater risk for hypoglycemia. The measures were vetted through public comment, and changes were made to the measures to reflect the feedback that was received.

3.2. Content of Measure Set

On December 11, 2019 the Society published a manuscript that included 3 measures which are reflected in Table 1.

Table 1: Measures Developed by the Endocrine Society Technical Expert Panel

#	Measure Title	Measure Description	Measure Type	Attribution
1	Proportion of Patients Who Were Assessed to be at Greater Risk for Hypoglycemia	The proportion of patients age 65 years or older diagnosed with T2DM who underwent an assessment by an eligible clinician and were found to be at greater risk for hypoglycemia which is documented in the medical record during the past 12 months.	Process	Practice Level, Eligible Clinician Level
2	Educational Intervention for Patients at Greater Risk for Hypoglycemia	The percentage of patients age 65 years or older diagnosed with T2DM identified as being at greater risk for hypoglycemia AND either the patient or their caregiver received appropriate educational intervention during the encounter visit OR who had a re-evaluation of previously provided education provided to the patient or caregiver during the past 12 months documented in the medical record.	Process	Practice Level, Eligible Clinician Level
3	Patient Reported Level 3 Hypoglycemic Event Requiring Assistance	The percentage of patients age 65 and older with a diagnosis of T2DM identified as being at greater risk for hypoglycemia who report symptoms associated with a Level 3 hypoglycemic event that required assistance from another person or medical professional documented in the medical record during the past 12 months.	Patient Reported Outcome	Practice Level, Eligible Clinician Level

* Practice Level: Score is an aggregate of performance scores of all eligible providers under one tax identification number
* Eligible Clinician Level: Measurement of performance of an eligible clinician as defined by CMS (3)

The Society would like to note that Measure 2,which focuses on educational intervention, was intentionally left broad in terms of what could constitute the intervention. This was intentionally done by the TEP to allow the clinician flexibility in determining which educational intervention may be most appropriate for that specific patient. Despite leaving the language broad, the TEP did include in the measure specifications examples of what types of interventions could meet the measure: (1) hypoglycemia directed or targeted education which includes discussion on signs, symptoms, and treatment recommendations (2) hypoglycemia awareness and management (3)diabetes self-management education and support (4) blood glucose awareness training and (5) medication management, which includes glucagon use and administration. The TEP felt that this list represented the most likely type of educational interventions to occur in these patients. Over time, the Society may modify this measure to provide additional guidance or specificity.

4. Introduction to the Data Dictionary / Technical Specifications

This section of the implementation guide is intended to provide implementers of the Endocrine Society's hypoglycemia measure set with a data dictionary and technical specifications associated with generating the data needed for each of the three measures.

Table 2 provides a definition for each of the common term definitions.

Table 2: Common Term Definitions

Term	Definition
Coding Instructions	Guidance provided to the abstractor regarding the data element and potential selection options to be reported
Data Source	A source used for obtaining the data element of interest such as registries, patient-reported data, medical records
Default Value	The value originally ascribed to the data element in the registry until populated by the user (e.g., null)
Format	Manner in which data is formatted and displayed (e.g., text, date, etc.)
Missing Data	Describes if it is illegal for the data elements to be missing from the data set reported to the registry, or if the data elements should be reported even if missing to the registry
Name	Unique name assigned to each data element
Parent Name	Provides guidance on the hierarchal parent associated with a given data element
Parent Seq #	Provides guidance on the hierarchal parent data element's sequence # associated with a given data element which bears a child relationship
Parent Value	Provides guidance on the value of the parent data element associated with a given child data element
Selections	Potential variable answers for the data element of interest (e.g., yes or no)
Seq #	The unique identifier for a data element
Short Name	A short or common name or designation by which the form is known and might be identified
Supporting Definitions	A statement that expresses the essential nature of the data element
Target Value	The value ascribed to the data element (e.g., current encounter or visit to the physician office, etc.)
Usual Range	Defines the range usually ascribed to a variable associated with a lab test or procedure
Valid Range	Describes the lowest and highest value for the results associated with a data element

It is important to note that the data dictionary does not reference specific code sets (e.g., ICD-10, CPT, SNOMED, LOINC, etc). This was done intentionallygiven that a registry may decide to use structured fields within the registry instead of using claims codes, or electronic health record codes. The Society would also note that the current measures include data elements may not have standardized codes (as referenced in the original manuscript). For example, currently there are no existing codes that capture whether an education intervention took place for a patients at risk for hypoglycemia.

Additionally, the data dictionary/technical specifications represent those discrete data elements that are necessary to generate the measure denominator, numerator, and exclusions. The data dictionary/technical specifications does not provide supplemental data elements (e.g., race, gender, insurance status, employment status, etc.).

The one exception is related to the "date" field associated with each comorbidity. Dates are not required for the co-morbidity data elements, as noted in the technical specifications if the data element "missing data" has no corresponding "action" taken for "date" elements. The "date" field was included to provide the clinician with data to assess if the relevant comorbidity is pertinent to the applicable measure. The Society acknowledges that existing registries already collect these variables and seeks to limit any need for harmonization in these data elements.

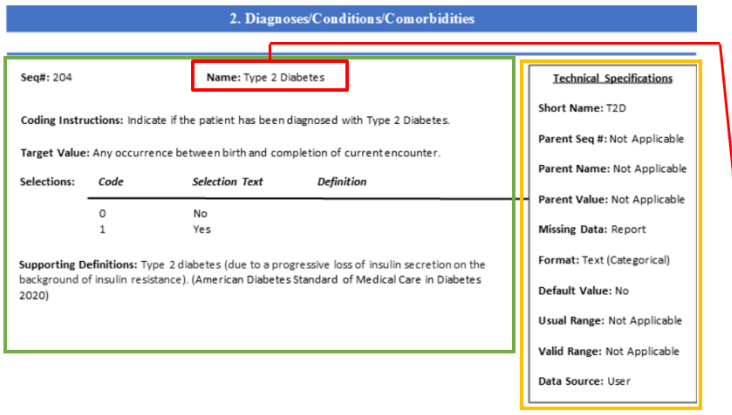
In developing this resource, The Society acknowledges that there may be data elements that are included in this data dictionary/technical specifications section of the implementation guide that are already included in the implementer's registry. If there are differences in coding instructions for data elements, The Society would encourage potential users to include within their existing coding instructions a note as to what data may be needed to meet the measure.

For example, an existing registry may be capturing Hypoglycemia as the "parent value," with each severity level serving as a child variable (i.e., Level 1, Level 2, Level 3). In this case, The Society would encourage the implementer to include a note for registry users that clearly delineates that the Endocrine measures specifically address Level 2 and Level 3 hypoglycemia only.

The Society acknowledges that as these measures are implemented, feedback will be provided that may require updates to this data dictionary/technical specifications documents. We will periodically update this document as necessary to reflect feedback received and refinements made to the measure specifications.

In this section, we have defined each term that is included in the data dictionary or technical specifications. Asnoted in the screen shot below the data dictionary is represented in the first column of the screen shot, while the second column delineates the technical specifications. The Society has defined each term included in either the data dictionary or technical specifications. For example, thefor the illustration below the "Name" for the data element is Type 2 Diabetes. The definition is a "unique name assigned to each data element." Each item in bold that appears in the data element has a definition provided in the third column which is entitled "common term definitions."

Example of Format and Content of Each Data Element



Common Term Definitions

Term	Definition
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Valid Range	Describes the lowest and highest value for the results associated with a data element

5. Data Dictionary / Technical Specifications

This section is the complete data dictionary/technical specifications for the data elements related to the hypoglycemia measures. Please refer to Table 2 for the common definitions of each term as needed.

1.Demographics

Seq#:100 **Name:** Age

Coding Instructions: Calculate patient age as of the encounter visit.

Note: The patient must be 65 and older as of the encounter visit for purposes of the measures referenced in the implementationguide.

Target Value: The value on current encounter is age 65 and older.

Selections: (none)

Supporting Definitions: (none)

Technical Specifications

Short Name: Age

Parent Seq #: Not Applicable

Parent Name: Not Applicable

Parent Value: Not Applicable

Missing Data: Illegal

Format: YYY

Default Value: NULL

Usual Range: Not Applicable

Valid Range: Not Applicable

Data Source: User

2. Diagnoses/Conditions/Comorbidities

Seq#: 200 **Name:** Level 2 Hypoglycemia (within 12 months)

Coding Instructions: Indicate if the patient has documentation of at least one level 2 hypoglycemic event during the past 12 months.

Target Value: Any occurrence between 12 months prior to current encounter and completion of current.

Selections:

Code	*Selection Text*	*Definition*
0	No	
1	Yes	

Supporting Definitions: Level 2 hypoglycemia is defined as a glucose <54 mg/dL (3.0 mmol/L) that needs immediate action. (American Diabetes Association Standard of Medical Care in Diabetes 2020)

Technical Specifications

Short Name: Lev2Hypo

Parent Seq #: Not Applicable

Parent Name: Not Applicable

Parent Value: Not Applicable

Missing Data: Report

Format: Text (Categorical)

Default Value: No

Usual Range: Not Applicable

Valid Range: Not Applicable

Data Source: User

2. Diagnoses/Conditions/Comorbidities

Seq#: 201 **Name:** Level 3 Hypoglycemia(within 12 months)

Coding Instructions: Indicate if the patient has documentation of at least one level 3 hypoglycemic event during the past 12 months.

Target Value: Any occurrence between 12 months prior to current encounter and completion of current encounter.

Selections:

Code	*Selection Text*	*Definition*
0	No	
1	Yes	

Supporting Definitions: Level 3 hypoglycemia is defined as a severe event characterized by altered mental and/or physical status requiring assistance. (American Diabetes Association Standard of Medical Care in Diabetes 2020)

Technical Specifications

Short Name: Lev3Hypo

Parent Seq #: Not Applicable

Parent Name: Not Applicable

Parent Value: Not Applicable

Missing Data: Report

Format: Text (Categorical)

Default Value: No

Usual Range: Not Applicable

Valid Range: Not Applicable

Data Source: User

Seq#: 203 **Name:** Hypoglycemia Unawareness (within 12 months)

Coding Instructions: Indicate if the patient has documentation of hypoglycemia unawareness during the past 12 months.

Target Value: Any occurrence between 12 months prior to current encounter and completion of current encounter.

Selections:

Code	*Selection Text*	*Definition*
0	No	
1	Yes	

Supporting Definitions: Hypoglycemia unawareness is defined as a complication of diabetes in which the patient is unaware of a deep drop in blood sugar because the body fails to produce signs and symptoms to warn the patient of hypoglycemia, such as palpitations, sweating, and anxiety.Having hypoglycemia unawareness puts patients with diabetes at an increased risk for severe hypoglycemic episodes, which may require immediate action or emergency care. (American Diabetes Association)

Technical Specifications

Short Name: HypoUnaware

Parent Seq #: Not Applicable

Parent Name: Not Applicable

Parent Value: Not Applicable

Missing Data: Report

Format: Text (Categorical)

Default Value: No

Usual Range: Not Applicable

Valid Range: Not Applicable

Data Source: User

2. Diagnoses/Conditions/Comorbidities

Seq#: 204 **Name:** Type 2 Diabetes

Coding Instructions: Indicate if the patient has been diagnosed with Type 2 Diabetes.

Target Value: Any occurrence between birth and completion of current encounter.

Selections:

Code	*Selection Text*	*Definition*
0	No	
1	Yes	

Supporting Definitions: Type 2 diabetes (due to a progressive loss of insulin secretion on the background of insulin resistance).(American Diabetes Association Standard of Medical Care in Diabetes 2020)

Technical Specifications

Short Name: T2D

Parent Seq #: Not Applicable

Parent Name: Not Applicable

Parent Value: Not Applicable

Missing Data: Report

Format: Text (Categorical)

Default Value: No

Usual Range: Not Applicable

Valid Range: Not Applicable

Data Source: User

Seq#: 205 **Name:** Type 2 Diabetes Date

Coding Instructions: Indicate the documented date of diagnosis of Type 2 Diabetes. If, no diagnosis date recorded, indicate the first encounter date where Type 2 Diabetes was recorded.

If multiple diagnosis dates exist indicate the earliest value.

Target Value: The first value on current encounter.

Selections: (none)

Supporting Definitions: (none)

Technical Specifications

Short Name: T2D_Date

Parent Seq #: 204

Parent Name: Type 2 Diabetes

Parent Value: Yes

Missing Data: No Action

Format: Date (mm/dd/yyyy)

Default Value: NULL

Usual Range: Not Applicable

Valid Range: Not Applicable

Data Source: User

2. Diagnoses/Conditions/Comorbidities

Seq#: 206 **Name:** Adrenal Insufficiency

Coding Instructions: Indicate if the patient has been diagnosed with adrenal insufficiency.

Target Value: Any occurrence between birth and completion of current encounter.

Selections:

Code	*Selection Text*	*Definition*
0	No	
1	Yes	

Supporting Definitions: Adrenal insufficiency, including Addison's disease, is a disorder that occurs when the adrenal glands don't make enough of certain hormones. These include cortisol, sometimes called the "stress hormone," which is essential for life. (National Institute of Diabetes and Digestive and Kidney Diseases)

Technical Specifications

Short Name: AdrenInsuf

Parent Seq #: Not Applicable

Parent Name: Not Applicable

Parent Value: Not Applicable

Missing Data: Report

Format: Text (Categorical)

Default Value: No

Usual Range: Not Applicable

Valid Range: Not Applicable

Data Source: User

Seq#: 207 **Name:** Adrenal Insufficiency Date

Coding Instructions: Indicate the earliestdocumented patient diagnosis of adrenal insufficiency. If, no diagnosis date recorded, indicate the first encounter date where adrenal insufficiency was recorded.

If multiple diagnosis dates exist indicate the earliest value.

Target Value: The first value on current encounter.

Selections: (none)

Supporting Definitions: (none)

Technical Specifications

Short Name: AdrenInsuf_Date

Parent Seq #: 206

Parent Name: Adrenal Insufficiency

Parent Value: Yes

Missing Data: No Action

Format: Date (mm/dd/yyyy)

Default Value: NULL

Usual Range: Not Applicable

Valid Range: Not Applicable

Data Source: User

2. Diagnoses/Conditions/Comorbidities

Seq#:208 **Name:** Chronic Kidney Disease

Coding Instructions: Indicate if the patient has been diagnosed with chronic kidney disease.

Target Value: Any occurrence between birth and completion of current encounter.

Selections:

Code	*Selection Text*	*Definition*
0	No	
1	Yes	

Supporting Definitions: Chronic kidney disease (CKD) refers to all five stages of kidney damage, from very mild damage in stage 1 to complete kidney failure in stage 5. The stages of kidney disease are based on how well the kidneys can filter waste and extra fluid out of the blood. (National Kidney Foundation)

Technical Specifications

Short Name: CKD

Parent Seq #: Not Applicable

Parent Name: Not Applicable

Parent Value: Not Applicable

Missing Data: Report

Format: Text (Categorical)

Default Value: No

Usual Range: Not Applicable

Valid Range: Not Applicable

Data Source: User

Seq#: 209 **Name:** Chronic Kidney Disease Date

Coding Instructions: Indicate the first documented instance of each chronic kidney disease.If multiple diagnosis dates indicate the most current chronic kidney disease stage date.

Target Value: The value on current encounter.

Selections: (none)

Supporting Definitions: (none)

Technical Specifications

Short Name: CKD_Date

Parent Seq #: 208

Parent Name: Chronic Kidney Disease

Parent Value: Yes

Missing Data: No Action

Format: Date (mm/dd/yyyy)

Default Value: No

Usual Range: Not Applicable

Valid Range: Not Applicable

Data Source: User

2. Diagnoses/Conditions/Comorbidities

Seq#: 210 **Name:** Chronic Kidney Disease Stages

Coding Instructions: Indicate the stage of chronic kidney disease present in the patient. If the chronic kidney stage is unspecified then document as CKD-Unspecified.

Target Value: Any occurrence between birth and completion of current encounter.

Selections:

Code	*Selection Text*	*Definition*
1	Stage 1	Kidney damage with normal or high - GFR =>90 mL/min/1.73 m22
2	Stage 2	Kidney damage with mildly decreased - GFR 60-89 mL/min/1.73 m2
3	Stage 3a	Moderately decreased- GFR 45-59 mL/min/1.73 m2
4	Stage 3b	Moderately decreased: GFR 30-44 mL/min/1.73 m2
5	Stage 4	Severely decreased - GFR 15-29 mL/min/1.73 m2
6	Stage 5	Kidney failure - GFR <15 mL/min/1.73 m2 or on dialysis.Also known as End Stage Renal Disease
7	CKD-Unspecified	Stage of Kidney Disease is not specified

Supporting Definitions: (refer to supporting definition for Seq# 208)

Technical Specifications

Short Name: CKD_Stages

Parent Seq #: 208

Parent Name: Chronic Kidney Disease

Parent Value: Not Applicable

Missing Data: Report

Format: Text (Categorical)

Default Value: NULL

Usual Range: Not Applicable

Valid Range: Not Applicable

Data Source: User

2. Diagnoses/Conditions/Comorbidities

Seq#: 211 **Name:** Chronic Liver Disease

Coding Instructions: Indicate the patient has been diagnosed with chronic liver disease.

Target Value: Any occurrence between birth and completion of current encounter.

Selections:

Code	*Selection Text*	*Definition*
0	No	
1	Yes	

Supporting Definitions: Chronic liver disease is the progressive destruction of the liver parenchyma over a period greater than 6 months leading to fibrosis and cirrhosis (National Institute of Aging).

Chronic liver disease is often classified using the Child-Pugh Score, which utilizes 5 clinical measures (total bilirubin, serum albumin, prothrombin time, degree of ascites, and presence of hepatic encephalopathy) to stratify patients into 3 categories:

- Class A (mild liver impairment)
- Class B (moderate-severe liver impairment)
- Class C (severe liver impairment)(UpToDate)

Technical Specifications

Short Name: CLD

Parent Seq #: Not Applicable

Parent Name: Not Applicable

Parent Value: Not Applicable

Missing Data: Report

Format: Text (Categorical)

Default Value: No

Usual Range: Not Applicable

Valid Range: Not Applicable

Data Source: User

Seq#: 212 **Name:**Chronic Liver Disease Date

Coding Instructions: Indicate the earliest documented patient diagnosisdate of chronic liver disease.If, no diagnosis date recorded, indicate the first encounter date where chronic liver disease was recorded.

If multiple diagnosis dates exist indicate the earliest value.

Target Value: The first value on current encounter.

Selections: (none)

Supporting Definitions: (none)

Technical Specifications

Short Name: CLD_Date

Parent Seq #: 211

Parent Name: Chronic Liver Disease

Parent Value: Yes

Missing Data: No Action

Format: Date (mm/dd/yyyy)

Default Value: NULL

Usual Range: Not Applicable

Valid Range: Not Applicable

Data Source: User

2. Diagnoses/Conditions/Comorbidities

Seq#: 213 **Name:**Cognitive Impairment

Coding Instructions: Indicate the patient has been diagnosed withcognitive impairment.

Target Value: Any occurrence between birth and completion of current encounter.

Selections:	***Code***	***Selection Text***	***Definition***
	0	No	
	1	Yes	

Supporting Definitions: Cognitive impairment is when a person has trouble remembering, learning new things, concentrating, or making decisions that affect their everyday life. Cognitive impairment ranges from mild to severe. (Centers for Disease Control and Prevention)

Technical Specifications

Short Name: CogImpair

Parent Seq #: Not Applicable

Parent Name: Not Applicable

Parent Value: Not Applicable

Missing Data: Report

Format: Text (Categorical)

Default Value: No

Usual Range: Not Applicable

Valid Range: Not Applicable

Data Source: User

Seq#: 214 **Name:** Cognitive Impairment Date

Coding Instructions: Indicate the earliest documented patient diagnosis date of cognitive impairment.If, no diagnosis date recorded, indicate the first encounter date where cognitive impairment was recorded.

If multiple diagnosis dates exist indicate the earliest value.

Target Value: The first value on current encounter.

Selections: (none)

Supporting Definitions: (none)

Technical Specifications

Short Name: CogImpair_Date

Parent Seq #: 213

Parent Name: Cognitive Impairment

Parent Value: Yes

Missing Data: No Action

Format: Date (mm/dd/yyyy)

Default Value: NULL

Usual Range: Not Applicable

Valid Range: Not Applicable

Data Source: User

2. Diagnoses/Conditions/Comorbidities

Seq#: 215 **Name:** Dementia

Coding Instructions: Indicate if the patient has been diagnosed with dementia.

Target Value: Any occurrence between birth and completion of current encounter.

Selections:

Code	*Selection Text*	*Definition*
0	No	
1	Yes	

Supporting Definitions: Dementia is the loss of cognitive functioning—thinking, remembering, and reasoning—and behavioral abilities to such an extent that it interferes with a person's daily life and activities. These functions include memory, language skills, visual perception, problem solving, self-management, and the ability to focus and pay attention. Some people with dementia cannot control their emotions, and their personalities may change. (National Institute of Aging)

Technical Specifications

Short Name: Dementia

Parent Seq #: Not Applicable

Parent Name: Not Applicable

Parent Value: Not Applicable

Missing Data: Report

Format: Text (Categorical)

Default Value: No

Usual Range: Not Applicable

Valid Range: Not Applicable

Data Source: User

Seq#: 216 **Name:** Dementia Date

Coding Instructions: Indicate the earliest documented patient diagnosis date of dementia.
If, no diagnosis date recorded, indicate the first encounter date where dementia was recorded.

If multiple diagnosis dates exist indicate the earliest value.

Target Value: The value on current encounter.

Selections: (none)

Supporting Definitions: (none)

Technical Specifications

Short Name: Dementia_Date

Parent Seq #: 215

Parent Name: Dementia

Parent Value: Yes

Missing Data: No Action

Format: Date (mm/dd/yyyy)

Default Value: NULL

Usual Range: Not Applicable

Valid Range: Not Applicable

Data Source: User

2. Diagnoses/Conditions/Comorbidities

Seq#: 217 **Name:** Hepatic Impairment

Coding Instructions: Indicate the first documented instance of hepatic impairment for the patient.

Target Value: Any occurrence between birth and completion of current encounter.

Selections:

Code	*Selection Text*	*Definition*
0	No	
1	Yes	

Supporting Definitions: Hepaticimpairment (also referred to asliver impairment) is a type of damage to or disease of the liver. Hepatic impairment is a broad term that can refer to both acute and chronic injuries, leading to decreased liver function. (Science Direct, Hepatic Dysfunction)

Technical Specifications

Short Name: HepImp

Parent Seq #: Not Applicable

Parent Name: Not Applicable

Parent Value: Not Applicable

Missing Data: Report

Format: Text (Categorical)

Default Value: No

Usual Range: Not Applicable

Valid Range: Not Applicable

Data Source: User

Seq#: 218 **Name:** Hepatic Impairment Date

Coding Instructions: Indicate the first documented date of hepatic impairment. If, no diagnosis date recorded, indicate the first encounter date where hepatic impairment was recorded.

If multiple diagnosis dates exist indicate the earliest value.

Target Value: The first value on current encounter.

Selections: (none)

Supporting Definitions: (none)

Technical Specifications

Short Name: HepImp_Date

Parent Seq #: 217

Parent Name: Hepatic Impairement

Parent Value: Yes

Missing Data: No Action

Format: Date (mm/dd/yyyy)

Default Value: NULL

Usual Range: Not Applicable

Valid Range: Not Applicable

Data Source: User

2. Diagnoses/Conditions/Comorbidities

Seq#: 219 **Name:**Hypopituitarism

Coding Instructions: Indicate the patient has been diagnosed withhypopituitarism.

Target Value: Any occurrence between birthand completion of current encounter.

Selections:

Code	*Selection Text*	*Definition*
0	No	
1	Yes	

Supporting Definitions: Hypopituitarism is defined as the deficiency of one or more of the anterior pituitary hormones: growth hormone, thyroid stimulating hormone, lutenizing hormone, follicle stimulating hormone, prolactin, and adrenocorticotrophic hormone.(Genetic Diagnosis of Endocrine Disorders-Second Edition)

Technical Specifications

Short Name: Hypopit

Parent Seq #: Not Applicable

Parent Name: Not Applicable

Parent Value: Not Applicable

Missing Data: Report

Format: Text (Categorical)

Default Value: No

Usual Range: Not Applicable

Valid Range: Not Applicable

Data Source: User

Seq#:220 **Name:** Hypopituitarism Date

Coding Instructions: Indicate the earliest documented patient diagnosis date of hypopituitarism. If, no diagnosis date recorded, indicate the first encounter date where hypopituitarism was recorded.

If multiple diagnosis dates exist indicate the earliest value.

Target Value: The value on current encounter.

Selections: (none)

Supporting Definitions: (none)

Technical Specifications

Short Name: Hypopit _Date

Parent Seq #: 219

Parent Name: Hypopit

Parent Value: Yes

Missing Data: No Action

Format: Date (mm/dd/yyyy)

Default Value: NULL

Usual Range: Not Applicable

Valid Range: Not Applicable

Data Source: User

2. Diagnoses/Conditions/Comorbidities

Seq#: 221 **Name:** Psychiatric Disorders

Coding Instructions: Indicate if the patient has a diagnosis of a psychiatric disorder that may impact the patient's ability to comply with the medication regimen prescribed by the physician.

Note:Psychiatric disorders can be a barrier to educating individuals about methods to mitigate the risk of hypoglycemia. In general, most people with conditions such as mild-moderate depression, bipolar disease, anxiety disorders, and mild dementia would not be excluded from the educational intervention from Measure #2. If in the clinician's judgment, an individual's psychiatric disorder is severe enough and no caregiver is available to receive and act on education provided, the patient can be removed from the denominator.

Target Value: Any occurrence between age 65 and completion of current encounter.

Selections:

Code	*Selection Text*	*Definition*
0	No	
1	Yes	

Supporting Definitions: Psychiatric disorders are defined a syndrome characterized by clinically significant disturbance in an individual's cognition, emotion regulation, or behavior that reflects a dysfunction in the psychological biological, or developmental process underlying mental dysfunction. (American Psychiatric AssociationDiagnostic and Statistical Manual of Mental Disorders (DSM–5))

Technical Specifications

Short Name: PyschDisord

Parent Seq #: Not Applicable

Parent Name: Not Applicable

Parent Value: Not Applicable

Missing Data: Report

Format: Text (Categorical)

Default Value: No

Usual Range: Not Applicable

Valid Range: Not Applicable

Data Source: User

Seq#:222 **Name:**Psychiatric Disorder Date

Coding Instructions: Indicate if the last date where a psychiatric disorder was referenced. If, no diagnosis date recorded, indicate the first encounter date where psychiatric disorder was recorded.

If multiple diagnosis dates exist indicate the earliest value.

Target Value: The value on current encounter.

Selections: (none)

Supporting Definitions: (none)

Technical Specifications

Short Name: PsychDisord _Date

Parent Seq #: 221

Parent Name: Psychiatric Disorder

Parent Value: Yes

Missing Data: No Action

Format: Date (mm/dd/yyyy)

Default Value: NULL

Usual Range: Not Applicable

Valid Range: Not Applicable

Data Source: User

3. Lab Results

Seq#:300 **Name:** HbA1c<7(within 6 months)

Coding Instructions: Indicate if the patient has a Hemoglobin A1c (HbA1c) percentage less than 7 recorded within the past 6 months prior to the visit.

Target Value: Any occurrence betweenthe past 6 months and thestart of encounter.

Selections:	*Code*	*Selection Text*	*Definition*
	0	No	
	1	Yes	

Supporting Definitions: A reasonable A1C goal for many nonpregnant adults is <7% (53 mmol/mol) [A]. However glycemic targets may need to be reassessed over time based on criteria included in the ADA Standard of Medical Care in Diabetes Table 12.1 (American Diabetes Standard of Medical Care in Diabetes 2020)

Technical Specifications

Short Name: HbA1c<7

Parent Seq #: Not Applicable

Parent Name: Not Applicable

Parent Value: Not Applicable

Missing Data: Report

Format: Text (Categorical)

Default Value: No

Usual Range: Not Applicable

Valid Range: Not Applicable

Data Source: User

4. Medications

Seq#:400 **Name:** Insulin

Coding Instructions: Indicate if the patient is currently on insulin.

Target Value: The value on current encounter.

Selections:	*Code*	*Selection Text*	*Definition*
	0	No	
	1	Yes	

Supporting Definitions: Insulin is an injectable hormone used in patients with insulin deficiency or resistance (type 1 and type 2 diabetes). Insulin can be classified based on their duration of action (rapid-acting, regular, intermediate-acting, long-acting, ultra long-acting). (ADA, Insulin Basics)

Note: A resource for insulin medications can be accessed at: https://dailymed.nlm.nih.gov/dailymed/search.cfm?query=Insulin&searchdb=class

Technical Specifications

Short Name: Insu

Parent Seq #: Not Applicable

Parent Name: Not Applicable

Parent Value: Not Applicable

Missing Data: Report

Format: Text (Categorical)

Default Value: No

Usual Range: Not Applicable

Valid Range: Not Applicable

Data Source: User

4. Medications

Seq#:401 **Name:** Sulfonylureas

Coding Instructions: Indicate if the patient is currently on a sulfonylurea.

Target Value: The value on current encounter.

Selections:

Code	*Selection Text*	*Definition*
0	No	
1	Yes	

Supporting Definitions: Sulfonylureas are a class of oral medications used to help manage type 2 diabetes. Second-generation sulfonylureas, such as glipizide and glimepiride, are commonly used. They work by increasing the plasma insulin concentrations from residual beta-cells in the pancreas. (AMS, Sulfonylureas and their use in clinical practice)

Note: A resource for sulfonylurea medications can be accessed at: https://dailymed.nlm.nih.gov/dailymed/search.cfm?labeltype=all&query=sulfonylurea

Technical Specifications

Short Name: Sulf

Parent Seq #: Not Applicable

Parent Name: Not Applicable

Parent Value: Not Applicable

Missing Data: Report

Format: Text (Categorical)

Default Value: No

Usual Range: Not Applicable

Valid Range: Not Applicable

Data Source: User

Seq#:402 **Name:** Glinides

Coding Instructions: Indicate if the patient is currently on a glinide.

Target Value: The value on current encounter.

Selections:

Code	*Selection Text*	*Definition*
0	No	
1	Yes	

Supporting Definitions: Meglitinides, or glinides for short, are a class of oral medications used to help manage type 2 diabetes. Similar to sulfonylureas, these medications increase the plasma insulin concentrations from residual beta-cells in the pancreas but have a much shorter duration of action. (AMS, The role of nateglinide and repaglinide, derivatives of meglitinide, in the treatment of type 2 diabetes mellitus)

Note: A resource for insulin medications can be accessed at: https://dailymed.nlm.nih.gov/dailymed/search.cfm?labeltype=all&query=GLINIDE+%5BESTABLISHED+PHARMACOLOGIC+CLASS%5D

Technical Specifications

Short Name: Glin

Parent Seq #: Not Applicable

Parent Name: Not Applicable

Parent Value: Not Applicable

Missing Data: Report

Format: Text (Categorical)

Default Value: No

Usual Range: Not Applicable

Valid Range: Not Applicable

Data Source: User

5. Encounter Information

Seq#:500 **Name:** Encounter Type

Coding Instructions: Indicate the type of encounter the patient had during the measurement period.

Technical Specifications

Short Name: EncounterDate

Parent Seq #: Not Applicable

Code	*Selection Text*	*Definition*
1	Routine	
2	Urgent	
3	New Patient	
4	Unknown	

5. Encounter Information

Seq#:502 **Name:** Limited Life Expectancy

Technical Specifications

Short Name: LLE

Parent Seq #: Not Applicable

Parent Name: Not Applicable

Coding Instructions: Indicate if the patient has a limited life expectancy of 6 or less months.

Target Value: The value on current encounter.

5. Encounter Information

Seq#:504 **Name:** Level 3Patient Reporting Outcome

Technical Specifications

Short Name: Lev3PRO

Coding Instructions: Indicate if patient reported experiencing symptoms associated with a level 3 hypoglycemia requiring the assistance of another person or medical professional intervention

6. Measure Specifications

Measure Narrative Specifications:
This section of the implementation guide includes the narrative specifications for all three measures referenced in Table 1.For the following measures, we have updated the guideline recommendations and rationale section to reflect the 2020 update to the American Diabetes Association Standards of Medical Care in Diabetes guidelines, which differs from the 2019 measure set. This was done to provide the most current guideline information for the implementer. The Society will periodically update the measure specifications to reflect these changes in guidelines or to include additional support for the rationale section.

Each of the three narrative specification includes the following:

Term	Definition
Measure Title	A title of the measure
Measure Type	Indicates whether the measure is used to examine a process or an outcome over time (e.g., Structure, Process, Outcome)
Measure Description	A general description of the measure intent
Denominator	[B]rief text description of the target population being measured.
Denominator Exclusions	Denominator exceptions are those conditions that should remove a patient, procedure or unit of measurement from the denominator only if the numerator criteria are not met.
Denominator Exceptions	Denominator exceptions allow for adjustment of the calculated score for those providers with higher risk populations
Numerator	The numerator criteria are the processes or outcomes expected for each patient, procedure, or other unit of measurement defined in the denominator
Data Elements	The data points that are needed to calculate the numerator, denominator, exclusions or exceptionsthat includes the sequence number referenced in the data dictionary/technical specifications document
Guidelines	The guidelines that are cited in support of the measure construct
Rationale	Succinct statement of the need for the measure. Usually includes statements pertaining to Importance criterion: impact, gap in care and evidence
Data Source	Indicate the source for the data elements included in the measure specifications
Attribution	A process that aims to assign accountability for a patient's outcomes to a clinician, groups of clinicians, or a facility
Setting	The setting of care for which the measure is specified
Reporting Period	The time period for which the measure applies (e.g. calendar year)

Measure #1: Proportion of Patients Who Were Assessed to be at Greater Risk for Hypoglycemia

Measure Type: Process

Description: The proportion of patients age 65 years or older diagnosed with T2DM who underwent an assessment by an eligible clinician and were found to be at greater risk for hypoglycemia which is documented in the medical record during the past 12 months.

Denominator: All patients age 65 years or older with a diagnosis of T2DM.

Data Elements:

- Age (Seq# 100)
- Type 2 Diabetes (Seq# 204)
- Encounter Type (Seq# 500)
- Encounter Date (Seq# 501)

Denominator Exclusions: Patients should be excluded if they have documentation in the medical record of:

- limited life expectancy of 6 or less months

Data Elements:

- Limited Life Expectancy (Seq# 502)

Numerator: Patients in the denominator that underwent an assessment and were found to be at greater risk for hypoglycemia* as being performed by an eligible clinician during the encounter visit at least once during the 12-month period which is documented in the medical record.
*Risk for hypoglycemia is defined as a patient with:

- a prior history within the past year of Level 2 or Level 3 Hypoglycemia** **OR**
- [a prescription for insulin and/or insulin secretagogues (i.e., sulfonylurea and glinides) *AND*
    - an A1c <7.0% recorded within the 6 months prior to the visit *OR* presence of relevant comorbidities which includes hypoglycemia unawareness, stages 3b or higher chronic kidney disease, end stage renal disease, dementia or cognitive impairment, chronic liver disease, adrenal insufficiency, hypopituitarism, and hepatic impairment]

** Level 2 Hypoglycemia is defined as having a glucose <54 mg/dL (3.0 mmol/L) and Level 3 Hypoglycemia is defined as a severe event characterized by altered mental and/or physical status requiring assistance.

Data Elements:

- Level 2 Hypoglycemia (Seq# 200)
- Level 3 Hypoglycemia (Seq# 201)
- Medications
    - Insulin (Seq# 400)
    - Sulfonylureas (Seq# 401)
    - Glinides (Seq# 402)
- HbA1c<7 (Seq# 300)
- Relevant Comorbidities
    - Adrenal Insufficiency (Seq# 206)
    - Chronic Kidney Disease Stage 3b-4 (Seq# 210)
    - Chronic Liver Disease (Seq# 211)
    - Cognitive Impairment (Seq# 213)
    - Dementia (Seq# 215)
    - End Stage Renal Disease (Seq# 210)
    - Hepatic Impairment (Seq# 217)
    - Hypoglycemia Unawareness (Seq# 203)
    - Hypopituitarism (Seq# 219)

Guidelines:

2015American Association of Clinical Endocrinologists and American College of Endocrinology – Clinical Practice Guidelines for Developing a Diabetes Mellitus Comprehensive Care Plan(4)

Clinicians and educators must assess the risk of hypoglycemia at every visit with patients treated with insulin and insulin secretagogues.

Sulfonylureas and glinides are considered the least desirable alternatives due to the risk of hypoglycemia. Grade B; Best Evidence Level 2.

American Diabetes AssociationStandards of Medical Care in Diabetes—2020(2)

6.10 Individuals at risk for hypoglycemia should be asked about symptomatic and asymptomatic hypoglycemia at each encounter. Level of Evidence C.

6.14 Hypoglycemia unawareness or one or more episodes of level 3 hypoglycemia should trigger hypoglycemia avoidance education and reevaluation of the treatment regimen. Level of Evidence: E.

6.15 Insulin-treated patients with hypoglycemia unawareness, one level 3 hypoglycemic event, or a pattern of unexplained level 2 hypoglycemia should be advised to raise their glycemic targets to strictly avoid hypoglycemia for at least several weeks in order to partially reverse hypoglycemia unawareness and reduce risk of future episodes. Level of Evidence: A.

6.16 Ongoing assessment of cognitive function is suggested with increased vigilance for hypoglycemia by the clinician, patient, and caregivers if low cognition or declining cognition is found. Level of Evidence: B.

2017 U.S. Department of Veterans Affairs/U.S. Department of Defense Clinical Practice Guideline: Management of Type 2 Diabetes Mellitus(5)

Recommendation 7. We recommend an individualized target range for HbA1c taking into account individual

preferences, presence or absence of microvascular complications, and presence or severity of comorbid conditions (See Table 2). (Strong for | Reviewed, New-replaced)

Hypoglycemia and Diabetes: A Report of a Workgroup of the American Diabetes Association and Endocrine Society 2013(6)
The glycemic target established for any given patient should depend on the patient's age, life expectancy, comorbidities, preferences, and an assessment of how hypoglycemia might impact his or her life. This patient-centered approach requires that clinicians spend time developing an individualized treatment plan with each patient.

Rationale: Clinicians should address risk of hypoglycemia at every visit in patients with Type 2 Diabetes. Moreover, the risk of treatment-associated hypoglycemia should be used to set out individualized glycemic targets. As noted in the 2020 American Diabetes Association's Standard of Care Table 4.3 there are a number of factors that increase hypoglycemic risk(2).This measure examines a subset of the risk factors included in the American Diabetes Association Standard of Care. By identifying the risk factors, it is then feasible to assess if the glycemic target may need to be relaxed for certain patients.

Data Source: Medical Record

Attribution: Practice Group Level, Eligible Clinician Level

Setting: Outpatient

Reporting Period: Calendar Year

Measure #2: Educational Intervention for Patients at Greater Risk for Hypoglycemia

Measure Type: Process

Description: The percentage of patients age 65 years or older diagnosed with T2DM identified as being at a greater risk for hypoglycemia AND either the patient or their caregiver received appropriate educational intervention during the encounter visit OR who had a re-evaluation of previously provided education provided to the patient or caregiver during the past 12 months documented in the medical record.

Denominator: All patients age 65 years or older with a diagnosis of T2DM that have been identified as being at risk for hypoglycemia.*
*Risk for hypoglycemia is defined as a patient with:

- a prior history within the past year of Level 2 or Level 3 Hypoglycemia** **OR**
- [a prescription for insulin and/or insulin secretagogues (i.e., sulfonylurea and glinides) *AND*
    - an A1c <7.0% recorded within the 6 months prior to the visit *OR*
    - presence of relevant comorbidities which includes hypoglycemia unawareness, stages 3b or higher chronic kidney disease, end stage renal disease, dementia or cognitive impairment, chronic liver disease, adrenal insufficiency, hypopituitarism, and hepatic impairment]

** Level 2 Hypoglycemia is defined as having a glucose <54 mg/dL (3.0 mmol/L) and Level 3 Hypoglycemia is defined as a severe event characterized by altered mental and/or physical status requiring assistance.

Data Elements:

- Age (Seq# 100)
- Type 2 Diabetes (Seq# 204)
- Encounter Type (Seq# 500)
- Encounter Date (Seq# 501)
- Level 2 Hypoglycemia (Seq# 200)
- Level 3 Hypoglycemia (Seq# 201)
- Medications
    - Insulin (Seq# 400)
    - Sulfonylureas (Seq# 401)
    - Glinides (Seq# 402)
- HbA1c<7 (Seq# 300)
- Relevant Comorbidities
    - Adrenal Insufficiency (Seq# 206)
    - Chronic Kidney Disease Stage 3b-4 (Seq# 210)
    - Chronic Liver Disease (Seq# 211)
    - Cognitive Impairment (Seq# 213)
    - Dementia (Seq# 215)
    - End Stage Renal Disease (Seq# 210-5)
    - Hepatic Impairment (Seq# 217)
    - Hypoglycemia Unawareness (Seq# 203)
    - Hypopituitarism (Seq# 219)

Denominator Exclusions: Patients should be excluded if they have documentation in the medical record of:

- limited life expectancy of 6 or less months
- psychiatric disorders

Data Elements:

- Limited Life Expectancy (Seq# 502)
- Psychiatric Disorders (Seq# 221)

Numerator: Patients who received an educational intervention*** specific to their hypoglycemia risk profile during the encounter visit OR who had a re-evaluation of education previously provided to the patient or caregiver during the past 12 months documented in the medical record.

*** An educational intervention could include, but is not limited to, the following:

- Hypoglycemia directed or targeted education which includes discussion on signs, symptoms, and treatment recommendations
- Hypoglycemia awareness and management
- Diabetes self-management education and support
- Blood glucose awareness training
- Medication management, which includes glucagon use and administration

An educational intervention is not met by providing the patient with a written handout, but requires an opportunity for the patient to ask any questions of the eligible clinician based on the education provided.

Data Elements:

- Educational Intervention (Seq# 503)

Guidelines:

2015American Association of Clinical Endocrinologists and American College of Endocrinology – Clinical Practice Guidelines for Developing a Diabetes Mellitus Comprehensive Care Plan(4)

R56. Persons with DM should receive comprehensive diabetes self-management education (DSME) at the time of DM diagnosis and subsequently as appropriate (Grade D; Best Evidence Level 4). DSME improves clinical outcomes and quality of life in individuals with DM by providing the knowledge and skills necessary for DM self-care. Therapeutic lifestyle management must be discussed with all patients with DM or prediabetes at the time of diagnosis and throughout their lifetime (Grade D; Best Evidence Level 4). This includes MNT (with reduction and modification of caloric and fat intake to achieve weight loss in those who are overweight or obese), appropriately prescribed physical activity, avoidance of tobacco products, and adequate sleep quantity and quality. Additional topics commonly taught in DSME programs outline principles of glycemia treatment options; blood glucose monitoring; insulin dosage adjustments; acute complications of DM; and prevention, recognition, and treatment of hypoglycemia.

2017 U.S. Department of Veterans Affairs/U.S. Department of Defense Clinical Practice Guideline: Management of Type 2 Diabetes Mellitus(5)

Recommendation 2. We recommend that all patients with diabetes should be offered ongoing individualized diabetes self-management education via various modalities tailored to their preferences, learning needs and abilities based on available resources. (Strong for | Reviewed, New-replaced)

Rationale:
During visits, risk factors and remediation associated with hypoglycemia should be discussed routinely with patients receiving treatment with insulin or sulfonylurea/glinide drugs, in particular those patients with a history of recurrent hypoglycemia or impaired awareness of hypoglycemia. Clinicians should educate patient on how their medications work in order to reduce the risk of hypoglycemia.

Consistent with recent findings of a systematic review, one specific framework of diabetes education has not been found to be superior to others (7). Therefore, this measure is not intended to be prescriptive and therefore includes different types of patientor caregiver education as referenced in the numerator.

Data Source: Medical Record

Setting: Outpatient

Attribution: Practice Group Level, Eligible Clinician Level

Reporting Period: Calendar Year

Measure #3: Patient Reported Severe Hypoglycemic Event Requiring Assistance

Measure Type: Patient Reported Outcome

Description: The percentage of patients age 65 and older with a diagnosis of T2DM identified as being at greater risk for hypoglycemia who report symptoms associated with a Level 3 hypoglycemic event that required assistance from another person or medical professional documented in the medical record during the past 12 months.

Denominator: All patients age 65 years or older with a diagnosis of T2DM that have been identified as being at greater risk for hypoglycemia.*

*Risk for hypoglycemia is defined as a patient with:

- a prior history of level 2 or level 3 hypoglycemia** documented within the previous year **OR**
- [a prescription for insulin and/or insulin secretagogues (i.e., sulfonylurea and glinides) *AND*
    - an A1c <7.0% recorded within the 6 months prior to the visit *OR*
    - presence of relevant comorbidities which includes hypoglycemia unawareness, stages 3b or higher chronic kidney disease, end stage renal disease, dementia or cognitive impairment, chronic liver disease, adrenal insufficiency, hypopituitarism, and hepatic impairment]

** Level 2 Hypoglycemia is defined as having a glucose <54 mg/dL (3.0 mmol/L) and Level 3 Hypoglycemia is defined as a severe event characterized by altered mental and/or physical status requiring assistance.

Data Elements:

- Age (Seq# 100)
- Type 2 Diabetes (Seq# 204)
- Encounter Type (Seq# 500)
- Encounter Date (Seq# 501)
- Level 2 Hypoglycemia (Seq# 200)
- Level 3 Hypoglycemia (Seq# 201)
- Medications
    - Insulin (Seq# 400)
    - Sulfonylureas (Seq# 401)
    - Glinides (Seq# 402)
- HbA1c<7 (Seq# 300)
- Relevant Comorbidities
    - Adrenal Insufficiency (Seq# 206)
    - Chronic Kidney Disease Stage 3b-4 (Seq# 210)
    - Chronic Liver Disease (Seq# 211)
    - Cognitive Impairment (Seq# 213)
    - Dementia (Seq# 215)
    - End Stage Renal Disease (Seq# 210-5)
    - Hepatic Impairment (Seq# 217)
    - Hypoglycemia Unawareness (Seq# 203)
    - Hypopituitarism (Seq# 219)

Denominator Exclusions: Patients should be excluded if they have documentation in the medical record of:

- limited life expectancy of 6 or less months

Data Elements:

- Limited Life Expectancy (Seq# 502)

Numerator: Patient reported*** experiencing symptoms associated with a severe hypoglycemic event**** requiring the assistance of another person or medical professional intervention documented in the medical record. If the patient is suffering from cognitive impairment a caregiver could complete this information on behalf of the patient.

***The patient may report this measure through the use of a standardized instrument like the hypoglycemia patient questionnaire or through another mechanism available to the eligible clinician.

**** Level 3 Hypoglycemia is defined as a severe event characterized by altered mental and/or physical status requiring assistance.

Data Elements:

- Level 3 Patient Reported Outcome (Seq# 504)

Guidelines:

2020 American Diabetes Association Standards of Medical Care in Diabetes(2)
The ADA provide definitions for the three levels of hypoglycemia as follows:

- Level 1 hypoglycemia is defined as a glucose <70 mg/dL (3.9 mmol/L) but ≥54 mg/dL (3.0 mmol/L)
- Level 2 hypoglycemia is defined as a glucose <54 mg/dL (3.0 mmol/L) that needs immediate action
- Level 3 hypoglycemia is defined as severe event characterized by altered mental and/or physical functioning that requires assistance from another person for recovery.

According to the ADA "severe hypoglycemia captures events during which the symptoms associated with hypoglycemia impact a patient to such a degree that the patient requires assistance from others" and this is not "mutually exclusive from level 1 or level 2."

2015 American Association of Clinical Endocrinologists and American College of Endocrinology – Clinical Practice Guidelines for Developing a Diabetes Mellitus Comprehensive Care Plan(4)

Hypoglycemia manifests as neurogenic and/or neuroglycopenic symptoms that range in severity from mild to life threatening and include anxiety, palpitations, tremor, sweating, hunger, paresthesias, behavioral changes, cognitive dysfunction, seizures, and coma. Certain hypoglycemia- related responses (psychomotor function) are altered in the elderly compared with younger patients. Although severe hypoglycemia generally results in recognizable symptoms, mild-to-moderate hypoglycemia may remain asymptomatic and unreported in patients with T2D or with hypoglycemia unawareness. (179 [Evidence Level 4; No Evidence]).

Severe hypoglycemia is defined as any low blood glucose event that requires assistance from another person to administer carbohydrates or glucagon or take other corrective action (179 [Evidence Level 4; No Evidence]).

Rationale:
Level 3 hypoglycemia or severe hypoglycemia, level 3 hypoglycemia is defined as “a severe event characterized by altered mental and/or physical functioning that requires assistance from another person for recovery” (2). Severe or frequent hypoglycemia is an indication for the modification of a patient’s treatment regimens, including setting higher glycemic goals. Moreover, education is needed regarding the symptoms and treatment of hypoglycemia, to minimize the risk of hypoglycemia episodes (6). Therefore, in these patients who have level 3 hypoglycemia, once the glucose returns to normal, the patients should be counseled to eat a meal or snack to prevent recurrent hypoglycemia. Monitoring instances of level 3 hypoglycemia can be complicated by cognitive impairment. In such an instance, it may be appropriate to have the caregiver provide the clinician with information on whether the patient experienced a Level 3 hypoglycemic event. Patients with cognitive impairment and diabetes have poorer diabetes self-management and glycemic control, which increased the frequency of hospital admissions and occurrence of severe hypoglycemic episodes (8). Monitoring level 3 events is important to reduce preventable morbidity and healthcare utilization.

Data Source: Medical Record

Setting: Outpatient

Attribution: Practice Group Level, Eligible Clinician Level

Reporting Period: Calendar Year

7. Functional Requirements

The purpose of the functional requirements section of the implementation guide is to provide interested stakeholders that may seek to implement the measures with the measure flows for each of the three measures.[1]

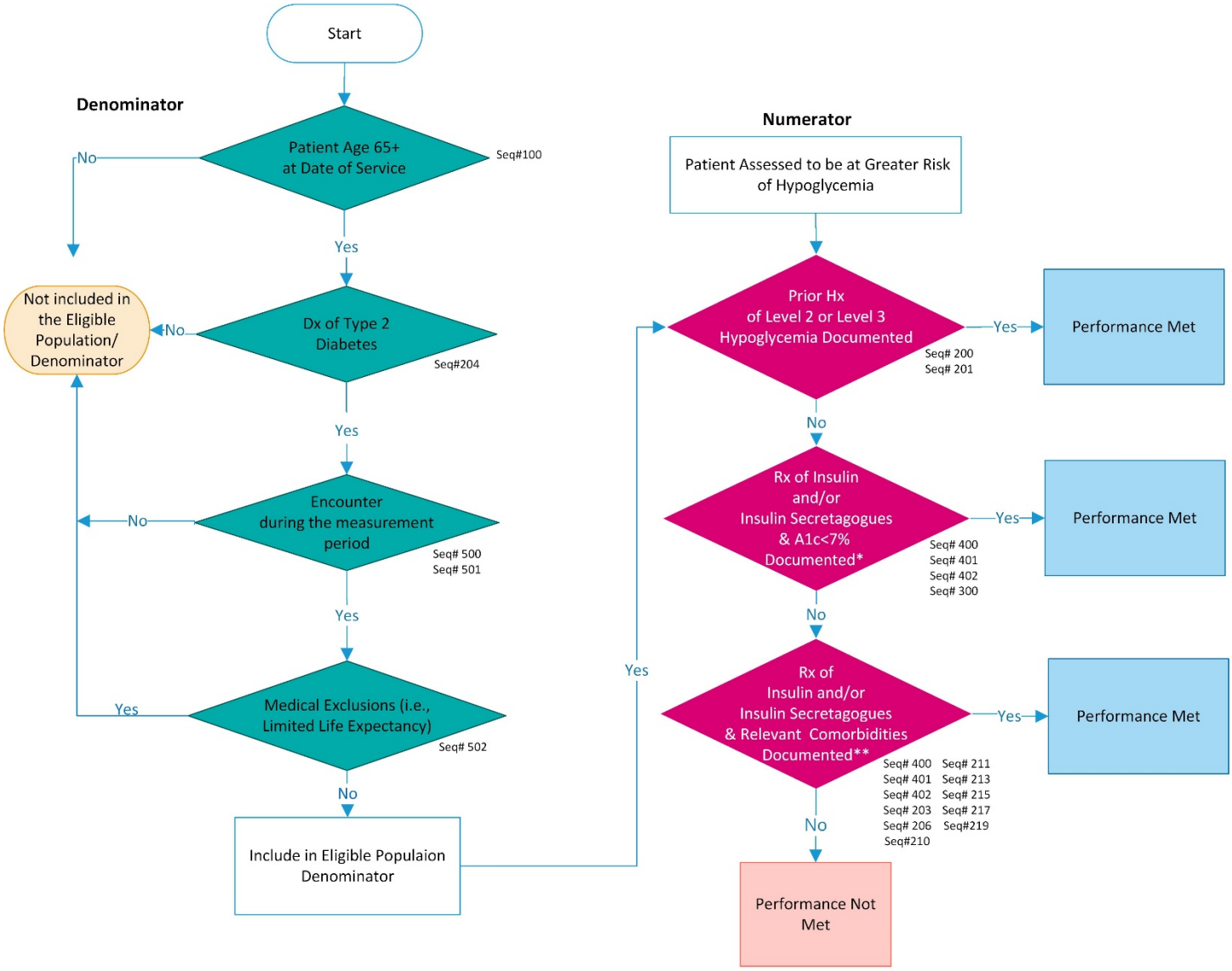
This section builds off the measure specifications and data dictionary/technical specifications that were provided earlier on in the implementation guide. Similar to the data dictionary/technical specifications section, the Society acknowledges that interested stakeholder may already have an existing functional requirements methodology that may be distinct or similar to the one illustrated in this section.

For this section of the manual we include the measure flow followed by the measure flow narrative.

Measure Flows
Measure 1: Proportion of Patients Who Were Assessed to Be At Greater Risk for Hypoglycemia
Measure 2: Educational Intervention for Patients at Greater Risk for Hypoglycemia
Measure 3: Patient Reported Severe Hypoglycemic Events Requiring Assistance

[1]Measure Flows are designed to provide interpretation of the measure logic and calculation methodology for data completeness and performance rates.

Measure 1: Proportion of Patients Who Were Assessed to Be At Greater Risk for Hypoglycemia



*The A1c<7.0% was recorded within the 6 months prior to the visit.

**Relevant comorbidities includes hypoglycemia unawareness, stages 3B or higher chronic kidney disease, end stage renal disease, dementia or cognitive impairment , chronic liver disease, adrenal insufficiency, hypopituitarism, and hepatic impairment.

Measure 1: Proportion of Patients Who Were Assessed to be at Greater Risk for Hypoglycemia

Please refer to the specific section of the Specification to identify the denominator and numerator information for more detail.

1. Start with Denominator

2. Check Patient Age:
   a. If **Patient Age (Seq# 100)** is less than 65 Years at Date of Service during the performance period do not include in Eligible Population. Stop Processing.
   b. If **Patient Age (Seq# 100)** is greater than or equal to 65 Years at Date of Service during the performance period, proceed to check Patient Diagnosis.

3. Check Patient Diagnosis:
   a. If **Type 2 Diabetes (Seq# 204)** equals **"0,"** do not include in Eligible Population. Stop Processing.
   b. If **Type 2 Diabetes (Seq# 204**) equals **"1,"** proceed to check Encounter Performed.

4. Check Encounter Performed:
   a. If **Encounter Date (Seq# 501)** is not in the performance period, do not include in Eligible Population. Stop Processing.
   b. If **Encounter Date (Seq# 501)** is within the performance period
   AND **Encounter Type (Seq#500)** equals **"1,2,3,4"** proceed to check Limited Life Expectancy.

5. Check Limited Life Expectancy:
   a. If **Limited Life Expectancy (Seq# 502)** equals **"1,"** do not include in Eligible Population. Stop Processing.
   b. If **Limited Life Expectancy (Seq# 502)** equals **"0,"** include in Eligible Population.

6. Start Numerator

7. Check Patient for Prior History Within the Past Year of Level 2 or Level 3 Hypoglycemia Documented:
   a. If **Level 2 Hypoglycemia (Seq# 200)** or **Level 3 Hypoglycemia (Seq# 201**) equals **"1,"** then then include in numerator.
   b. If **Level 2 Hypoglycemia (Seq# 200)** or **Level 3 Hypoglycemia (Seq# 201**) equals **"0,"** proceed to check Rx of Insulin and/or Insulin Secretagogues (Sulfonylurea or Glinide) & HbA1c<7% Documented.

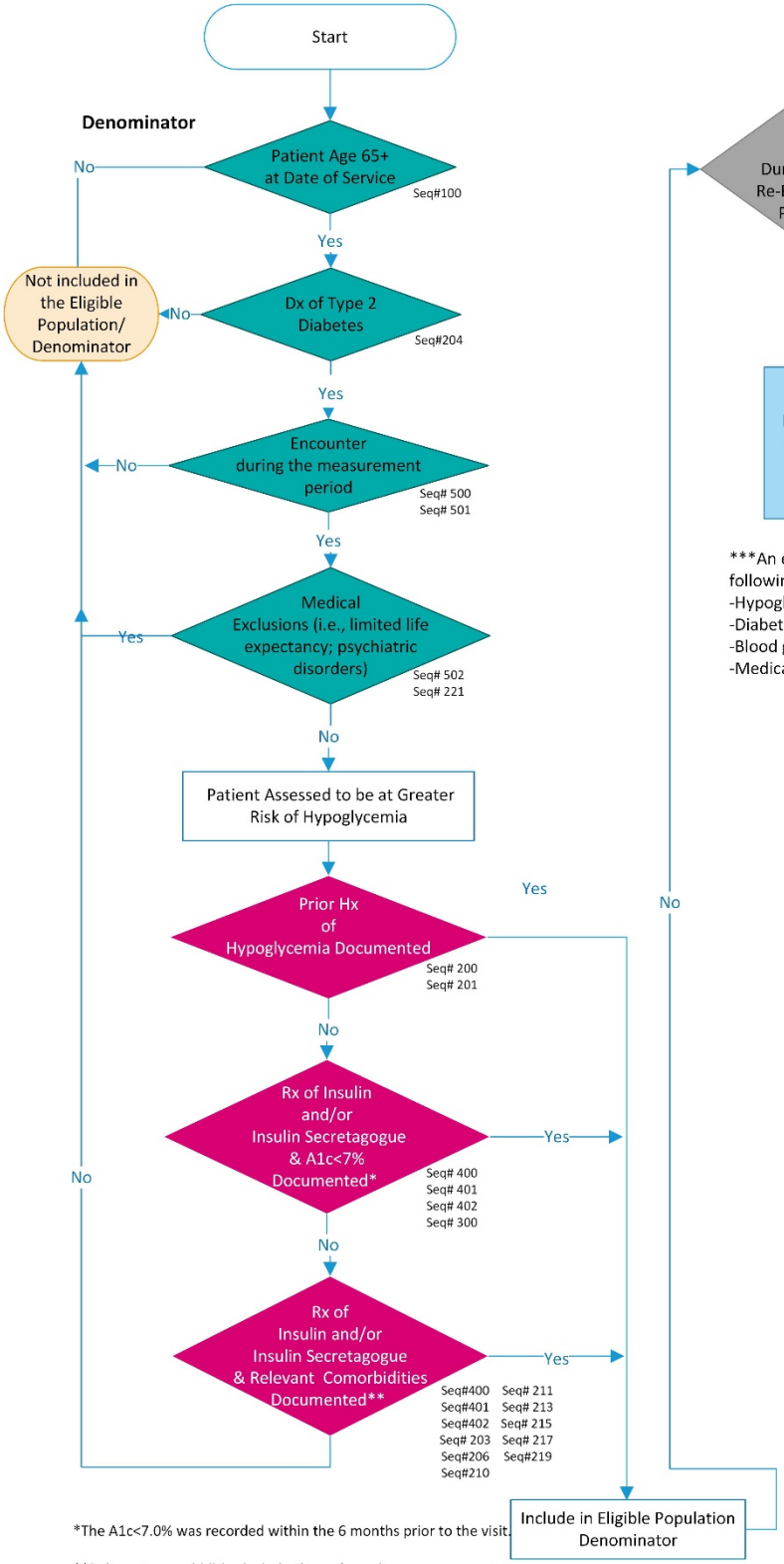
8. If Patient does not have a Prior History Within the Past Year of Level 2 or Level 3 Hypoglycemia THEN Check Patients who have a Rx of Insulin and/or Insulin Secretagogues (Sulfonylureas or Glinides) & HbA1c<7% Documented:
   a. If Rx of **Insulin, Sulfonylureas or Glinides (Seq #400,401,402)** equals **"1"**AND **HbA1c<7 (Seq# 300)** equals **"1,"**then include in numerator .
   b. If Rx of **Insulin, Sulfonylureas or Glinides (Seq# 400, 401,402)** equals **"1"** and **HbA1c<7 (Seq#300)** equals **"0,"** proceed to check Rx of Insulin and/or Insulin Secretagogues (Sulfonylureas or Glinides) & Relevant Comorbidities Documented.

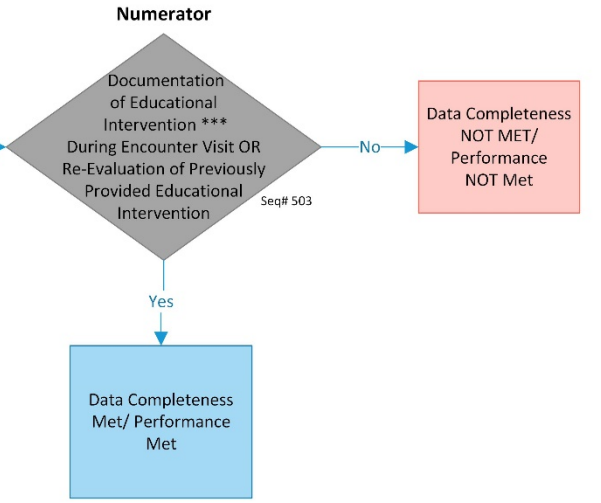
9. If Patient does have a Rx of Insulin and/or Insulin Secretagogues (Sulfonylureas or Glinides) AND does not have HbA1c<7% THEN check for Patients who have a Relevant Comorbidities Documented:
   a. If Rx for **Insulin, Sulfonylureas or Glinides (Seq# 400, 401,402)** equals **"1"**AND **Any Relevant Comorbidities (Seq# 203, 206, 211,213,215,217,219)** equals **"1"** or **(Seq# 210)** equals **"4, 5, 6,"** then include in numerator.

b. If Rx of **Insulin, Sulfonylureas or Glinides (Seq# 400, 401,402)** equals **"1"**AND **Relevant Comorbidities Documented** equals **"0,"** then remove from numerator.

10. Calculate Performance Score.
    a. Calculate the proportion of patients in the numerator out of all the patients in the denominator (i.e., All patients meeting 7a+8a+9a are in the measure numerator.)
    b. Report proportion of patients in the numerator who met criteria.

Measure 2: Educational Intervention for Patients at Greater Risk for Hypoglycemia





***An educational intervention could include, but is not limited to, the following:
-Hypoglycemia awareness and management
-Diabetes self-management education and support
-Blood glucose awareness training
-Medication management, which includes glucagon use and administration

*The A1c<7.0% was recorded within the 6 months prior to the visit.

**Relevant comorbidities includes hypoglycemia unawareness, stages 3B and higher chronic kidney disease, end stage renal disease, dementia or cognitive impairment, chronic liver disease, adrenal insufficiency, hypopituitarism, and hepatic impairment.

Measure 2: Educational Intervention for Patients at Risk for Hypoglycemia

Please refer to the specific section of the Specification to identify the denominator and numerator information for more detail.

1. Start with Denominator.

2. Check Patient Age:
   a. If **Patient Age (Seq# 100)** is less than 65 Years at Date of Service during the performance period do not include in the Eligible Population. Stop Processing.
   b. If **Patient Age (Seq# 100)** is greater than or equal to 65 Years at Date of Service during the performance period, proceed to check Patient Diagnosis.

3. Check Patient Diagnosis:
   a. If **Type 2 Diabetes (Seq# 204)** equals **"0,"** do not include in Eligible Population. Stop Processing.
   b. If **Type 2 Diabetes (Seq# 204)** equals **"1,"** proceed to check Encounter Performed.

4. Check Encounter Performed:
   a. If **Encounter Date (Seq# 501)** is not in the performance period, do not include in Eligible Population. Stop Processing.
   b. If **Encounter Date (Seq# 501)** is within the performance period
   AND **Encounter Type (Seq#500)** equals **"1,2,3,4"** proceed to check Limited Life Expectancy.

5. Check for Limited Life Expectancy
   a. If **Limited Life Expectancy (Seq# 502)** equals **"1,"** do not include in Eligible Population. Stop Processing.
   b. If **Limited Life Expectancy (Seq# 502)** equals **"0,"** proceed to check Psychiatric Disorders.

6. Check for Psychiatric Disorders
   a. If **Psychiatric Disorders (Seq# 221)** equals **"1,"** do not include in Eligible Population. Stop Processing.
   b. If **Psychiatric Disorders (Seq# 221)** equals **"0,"** proceed to check Patients for Prior History Within the Past Year of Level 2 or Level 3 Hypoglycemia.

7. Check Patient for Prior History Within the Past Year of Level 2 or Level 3 Hypoglycemia Documented:
   a. If **Level 2 Hypoglycemia (Seq# 200)** or a **Level 3 Hypoglycemia (Seq# 201**) equals **"1"**, then include in Eligible Population.
   b. If **Level 2 Hypoglycemia (Seq# 200)** or a **Level 3 Hypoglycemia (Seq# 201**) equals **"0,"** proceed to check Rx of Insulin and/or Insulin Secretagogues (Sulfonylurea or Glinide) & A1c<7% Documented.

8. If Patient does not have a Prior History Within the Past Year of Level 2 or Level 3 Hypoglycemia THEN Check Patients who have a Rx of Insulin and/or Insulin Secretagogues (Sulfonylureas or Glinides) & HbA1c<7% Documented:
   a. If Rx of **Insulin, Sulfonylureas or Glinides (Seq# 400,401,402)** equals **"1"**AND **HbA1c<7 (Seq# 300)** equals **"1"** include in Eligible Population.
   b. If Rx of **Insulin, Sulfonylureas or Glinides (Seq# 400, 401,402)** equals **"1"**and **HbA1c<7 (Seq# 300)** equals **"0"**then proceed to check Rx of Insulin and/or Insulin Secretagogues (Sulfonylureas or Glinides) & Relevant Comorbidities Documented.

9. If Patient has a Rx of Insulin and/or Insulin Secretagogues (Sulfonylureas or Glinides) AND does not have HbA1c<7% THEN check for Patients who have a Relevant Comorbidities Documented:

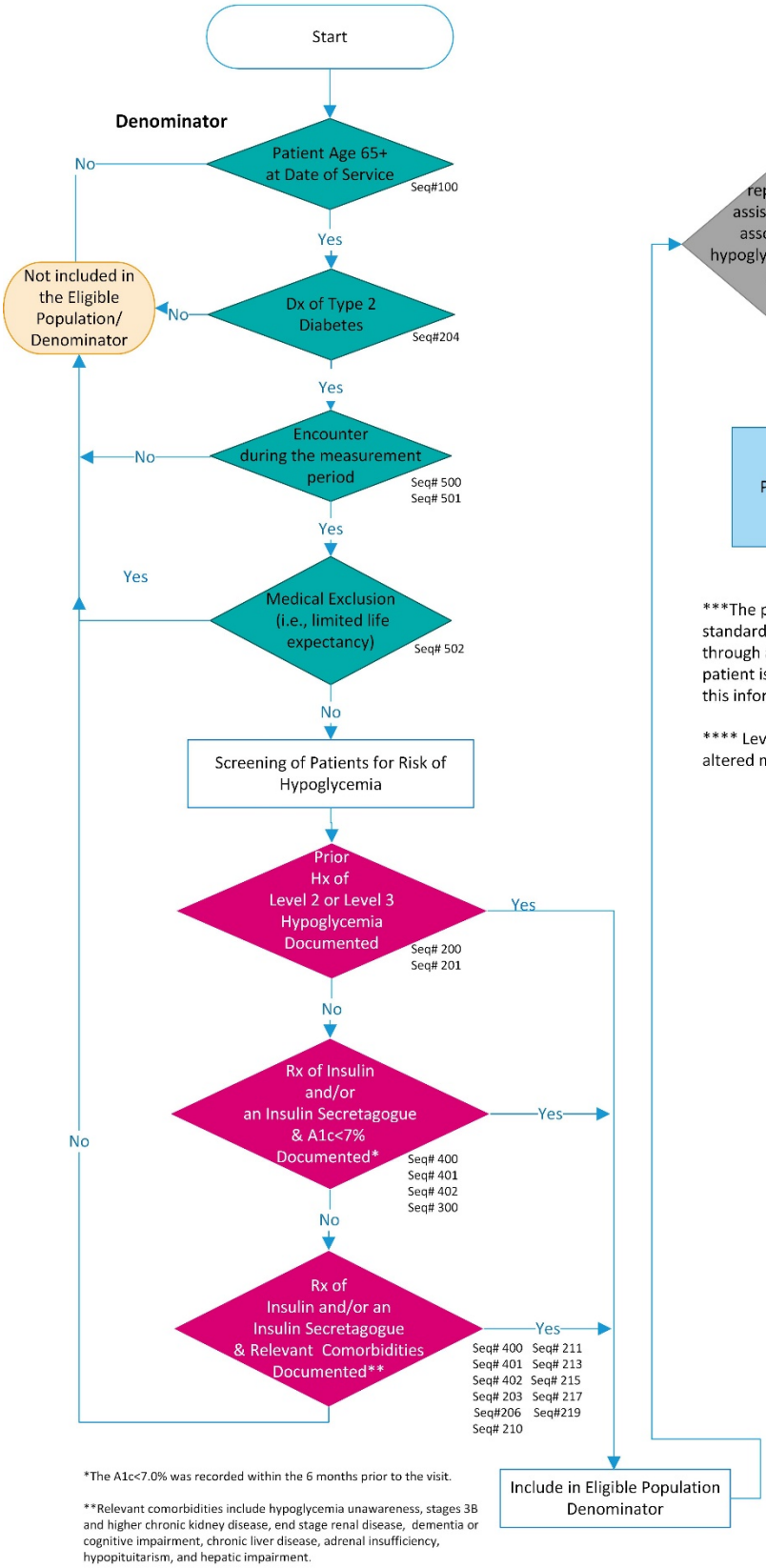
a. If Rx for **Insulin, Sulfonylureas or Glinides (Seq# 400, 401,402)** equals **"1"**AND **Relevant Comorbidities (Seq# 203, 206, 211,213,215,217,219)** equal **"1"** or **(Seq# 210)** equals **"4, 5, 6,"** include in Eligible Population.
b. If Rx of **Insulin, Sulfonylureas or Glinides (Seq# 400, 401,402)** equals **"1"**AND **Relevant Comorbidities Documented** equals **"0,"** Stop Processing.

10. Start Numerator.

11. Check Documentation of Educational Intervention
    a. If **Educational Intervention (Seq# 503)** equals **"1,"** then Data Completeness Met and Performance Met.
    b. If **Educational Intervention (Seq# 503)** equals **"0,"** then Data Completeness Not Met and Performance Not Met.

12. Calculate Performance Score.
    a. Calculate the percentage of patients in the numerator out of all the patients in the denominator (i.e., all patients meeting 11are in the measure numerator).
    b. Report percentage of patients in the numerator who met criteria.

Measure 3: Patient Reported Severe Hypoglycemic Events Requiring Assistance



*The A1c<7.0% was recorded within the 6 months prior to the visit.

**Relevant comorbidities include hypoglycemia unawareness, stages 3B and higher chronic kidney disease, end stage renal disease, dementia or cognitive impairment, chronic liver disease, adrenal insufficiency, hypopituitarism, and hepatic impairment.

***The patient or caregiver may report this measure through the use of a standardized instrument like the hypoglycemia patient questionnaire or through another mechanism available to the eligible clinician. If the patient is suffering from cognitive impairment then a caregiver could complete this information on behalf of the patient.

**** Level 3 Hypoglycemia is defined as a severe event characterized by altered mental and/or physical status requiring assistance.

Measure 3: Patient Reported Severe Hypoglycemic Events Requiring Assistance

Please refer to the specific section of the Specification to identify the denominator and numerator information for more detail.

1. Start with the Denominator.

2. Check Patient Age:
   a. If **Patient Age (Seq# 100)** is less than 65 Years at Date of Service during the performance period do not include in the Eligible Population. Stop Processing.
   b. If **Patient Age (Seq# 100)** is greater than or equal to 65 Years at Date of Service during the performance period, proceed to check Patient Diagnosis.

3. Check Patient Diagnosis:
   a. If **Type 2 Diabetes (Seq# 204)** equals **"0,"** do not include in Eligible Population. Stop Processing.
   b. If **Type 2 Diabetes (Seq# 204)** equals **"1,"** proceed to check Encounter Performed.

4. Check Encounter Performed:
   a. If **Encounter Date (Seq# 501)** is not in the performance period, do not include in Eligible Population. Stop Processing.
   b. If **Encounter Date (Seq# 501)** is within the performance period
   AND **Encounter Type (Seq#500)** equals **"1,2,3,4"** proceed to check Limited Life Expectancy.

5. Check for Limited Life Expectancy
   a. If **Limited Life Expectancy (Seq# 502)** equals **"1,"** do not include in Eligible Population. Stop Processing.
   b. If **Limited Life Expectancy (Seq# 502)** equals **"0,"** proceed to check Patients for Prior History Within the Past Year of Level 2 or Level 3 Hypoglycemia Documented.

6. Check Patient for Prior History Within the Past Year of Level 2 or Level 3 Hypoglycemia Documented:
   a. If **Level 2 Hypoglycemia (Seq# 200)** or a **Level 3 Hypoglycemia (Seq# 201**) equals **"1"**, then include in Eligible Population.
   b. If **Level 2 Hypoglycemia (Seq# 200)** and a **Level 3 Hypoglycemia (Seq# 201**) equals **"0,"** proceed to check Rx of Insulin and/or Insulin Secretagogues (Sulfonylurea or Glinide) & A1c<7% Documented.

7. If Patient does not have a Prior History Within the Past Year of Level 2 or Level 3 Hypoglycemia THEN Check Patients who have a Rx of Insulin and/or Insulin Secretagogues (Sulfonylureas or Glinides) & HbA1c<7% Documented:
   a. If Rx of **Insulin, Sulfonylureas or Glinides (Seq# 400, 401,402)** equals **"1"**AND **HbA1c<7 (Seq#300)** equals **"1"** include in Eligible Population.
   b. If Rx of **Insulin, Sulfonylureas or Glinides(Seq# 400,401,402)** equals **"1" HbA1c<7 (Seq# 300) "0,"** then proceed to check Rx of Insulin and/or Insulin Secretagogues (Sulfonylureas or Glinides) & Relevant Comorbidities Documented.

8. If Patient has a Rx of Insulin and/or Insulin Secretagogues (Sulfonylureas or Glinides) AND does not have HbA1c<7% THEN check for Patients who have a Relevant Comorbidities Documented:
   a. If Rx for **Insulin, Sulfonylureas or Glinides (Seq# 400, 401,402)** equals **"1"**AND **Any Relevant Comorbidities (Seq# 203, 206, 211,213,215,217,219)** equals **"1"** or **(Seq# 210)** equals **"4, 5, 6,"** then include in
   b. If Rx of **Insulin, Sulfonylureas or Glinides (Seq#400, 401,402)** equals **"1"**AND **Relevant Comorbidities Documented** equals **"0,"** Stop Processing.

9. Start Numerator.

10. Check Patient Reports Requiring Assistance for Symptoms Associated with Severe Hypoglycemic Events:
    a. If **Level 3 Patient Reported Outcome (Seq# 504)** equals **"1,"** then Data Completeness Met and Performance Met.
    b. If **Level 3 Patient Reported Outcome (Seq# 504)** equals **"0,"** then Data Completeness Not Met and Performance Not Met.

11. Calculate Performance Score.
    a. Calculate the percentage of patients in the numerator out of all the patients in the denominator (i.e all patients who are in 10a are in the numerator).
    b. Report percentage of patients in the numerator who met criteria.

9. Conclusion

This implementation guide will be updated periodically based on any changes that are made to the measure specifications included in the measure set.Any further questions can be directed to The Endocrine Society.

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