

# EJADA Program

DIABETES

KPIs and  
Recommendations

2023



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## Introduction

Diabetes mellitus, is a global health epidemic that has reached alarming proportions. This chronic metabolic disorder is characterized by elevated blood sugar levels, which can lead to a myriad of complications affecting virtually every organ system in the body. Pre-diabetes, often regarded as the precursor to diabetes, is a condition in which blood glucose levels are higher than normal but not yet at the threshold for a diabetes diagnosis. Together, these conditions constitute a significant and growing public health concern .

Type 2 diabetes linked closely with lifestyle factors, accounts for the majority of cases of diabetes and is often associated with obesity. The risk factors for diabetes are multifaceted and interrelated. Genetics play a role, as a family history of diabetes can increase one's susceptibility. However, the rise in obesity rates worldwide, driven by sedentary lifestyles and poor dietary habits, has been a significant contributor to the surge in Type 2 diabetes cases. Other risk factors include age, ethnicity, and gestational history.

Pharmacotherapy has been a cornerstone in the management of diabetes. Medications such as metformin, sulfonylureas, insulin, and newer classes of drugs like sodium-glucose cotransporter type 2 (SGLT-2) inhibitors and glucagon-like peptide-1 (GLP-1) receptor agonists have revolutionized diabetes care, helping patients achieve better glycemic control and reducing the risk of complications. The pharmacological landscape continues to evolve as researchers explore novel approaches, including gene therapy and stem cell-based treatments.

Despite advancements, there remain substantial unmet needs in diabetes care. First and foremost, the prevention of diabetes and early intervention in pre-diabetes are critical areas of focus. Lifestyle modifications, such as diet and exercise, play a pivotal role, but more targeted interventions are needed to identify and support individuals at risk . Fortunately, the latest medication advancements in the treatment of diabetes and pre-diabetes with innovative classes of drugs such as SGLT-2 inhibitors and GLP-1 receptor agonists have transformed the therapeutic landscape by offering unique mechanisms of action with remarkable efficacy in improving glycemic control, often with the added benefit of weight loss and cardiovascular risk reduction . Their introduction into clinical practice has expanded the options available to healthcare providers, allowing for more tailored and effective treatment regimens. This has resulted in better outcomes and an overall enhancement of patient's well-being.

## Scope

The Ejada KPIs are quality indicators and ratings for physicians, facilities and insurance companies based on information collected by DHA systems from providers, payers and patients.

The Diabetes and Pre-diabetes KPIs and Recommendations are based on UAE Expert Consensus Statement and International guidelines on diabetes management. The KPIs are designed for healthcare practitioners and providers to follow international best practices in the management of Diabetes and Pre-diabetes patients.

The Diabetes and Pre-diabetes KPIs cover the following aspects of Diabetes and Pre-diabetes management:

- Screening, diagnosis and monitoring of diabetes and prediabetes patients
- Periodic screening for complications associated with diabetes and instituting appropriate interventions to manage long term morbidity and mortality associated with diabetes
- Pharmacological management and tailored treatment approaches for pre-diabetic individuals to prevent progression to diabetes.
- Non-pharmacological interventions for managing diabetes
- Referrals to an endocrinologist and long-term follow up of diabetes patients, along with seeking dietary and psychological consultations

The KPIs and recommendations have been reviewed by leading experts in the UAE.

## List of Abbreviations

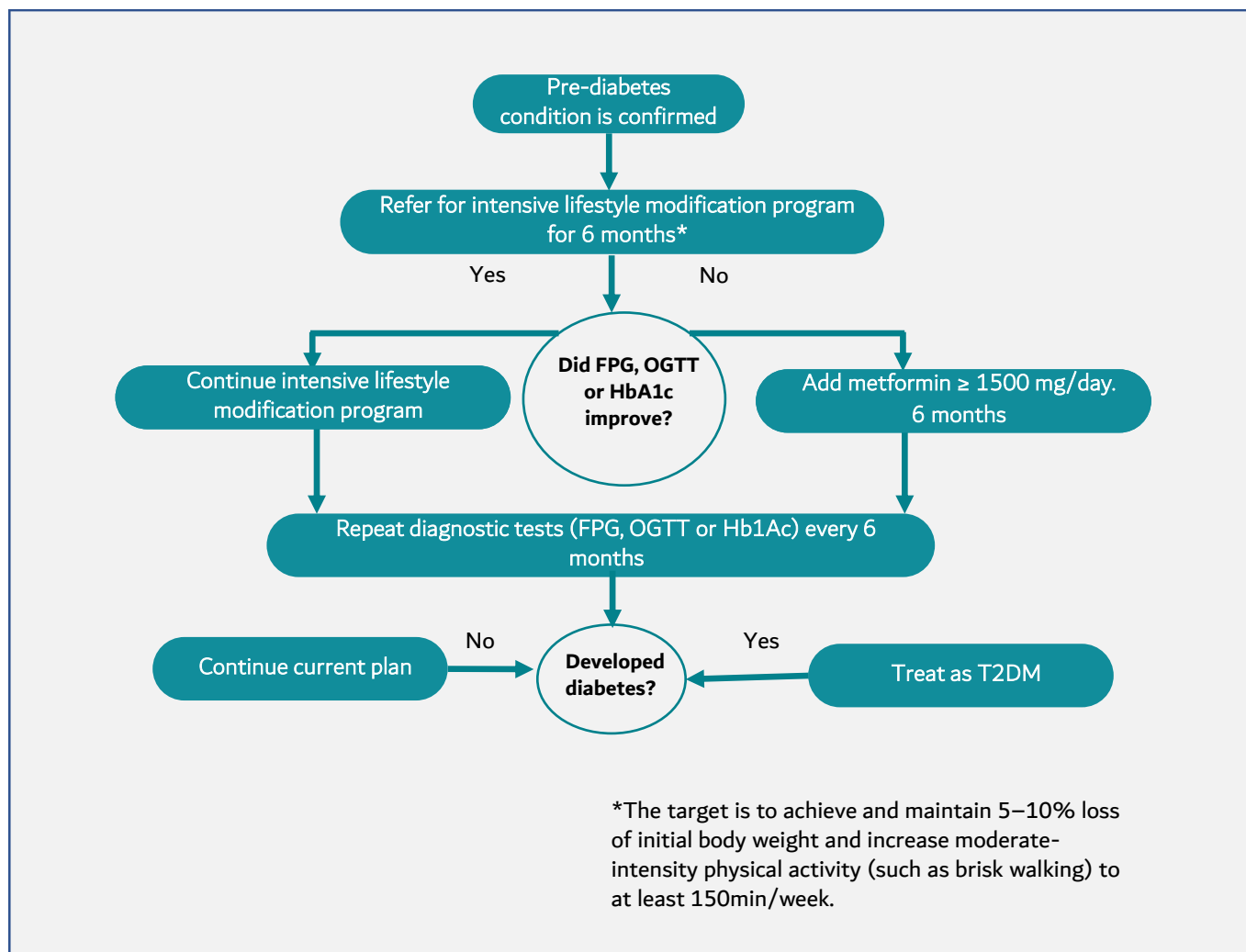
S.No.	Abbreviation	Full form
	ASCVD	Atherosclerotic Cardiovascular Disease
	ACE	Angiotensin-converting enzyme
	ARB	Angiotensin receptor blockers
	BP	Blood pressure
	BMI	Body mass index
	CVD	Cardiovascular diseases
	CKD	Chronic kidney disease
	DKA	Diabetic Ketoacidosis
	DDC	Dubai Drug Code
	DPP	Diabetes Prevention Program
	DPP-4i	Dipeptidyl peptidase 4 inhibitors
	DM	Diabetes Mellitus
	ESRD	End-stage renal disease
	FPG	Fasting plasma glucose
	GLP-1	Glucagon-like peptide-1
	GLP-1-RA	Glucagon-like peptide-1 receptor analogues
	HbA1c	Glycosylated Hemoglobin
	HF	Heart failure
	HFrEF	Heart failure with reduced ejection fraction
	HFpEF	Heart failure with preserved ejection fraction
	HHS	Hyperglycemic hyperosmolar state
	KOL	Key Opinion Leader
	KPI	Key Performance Indicators
	LDL-C	Low-density lipoproteins-Cholesterol
	MI	Myocardial infarction
	OGTT	Oral glucose tolerance tests
	OECD	Organization for Economic Cooperation and Development
	PAD	Peripheral arterial disease
	PVD	Peripheral vascular disease
	SGLT-2i	Sodium-glucose cotransporter type 2 inhibitors
	SU	Sulfonylureas
	TCS	Topical Corticosteroids
	T2DM	Type-2 diabetes mellitus
	TZD	Thiazolidinediones

## KPIs and their Measuring Parameters

Reporting Frequency: Monthly

S.No.	KPIs	Measuring Parameters
1	Screening for Pre-diabetes in Asymptomatic Adults	BMI, FPG, OGTT, HbA1c
2	Retesting of Abnormal Blood Glucose in Patients with Prediabetes	FPG, OGTT, HbA1c
3	Percentage of Type 2 Diabetic Adults with Hypertension	Systolic/Diastolic BP
4	Glycosylated Hemoglobin (HbA1c) Assessment	HbA1c
5	HbA1c Control (Poor control)	HbA1c
6	HbA1c Control (Good control)	HbA1c
7	Lipid Profile Assessment	LDL-C
8	LDL-Cholesterol Control	LDL-C
9	BMI assessment	BMI
10	Dilated or Retinal Eye Examination	Dilated eye examinations
11	Foot Examination	Clinical examination of Foot
12	Kidney Health Evaluation for Patients with Diabetes	estimated Glomerular Filtration Rate (eGFR) Urine-albumin-creatinine ratio (uACR)
13	Prescription of GLP-1RA/SGLT-2 in T2DM Patients with Established ASCVD/ or Established CKD	Dispensed Medication
14	Prescription of SGLT-2 in T2DM Patients with Established HFrEF or HFREF	Dispensed Medication
15	Prescription of ACEi or ARB in Diabetes Patients with CAD	Dispensed Medication
16	Medication Adherence	Medication refills
17	Avoidable Hospital Admission Indicator	Hospital Admission (Diabetes)
18	Avoidable Hospital Admission Indicator – Lower Extremity Amputation	Hospital Admission for lower extremity amputation
19	Hospitalization Indicator- CKD and T2DM	Hospital admission with primary diagnosis of CKD
20	Hospitalization Indicator- Acute MI and T2DM	Hospital admission with primary diagnosis of acute MI
21	Emergency Department Visits for hypoglycemia and hyperglycemia	ED visit for Hypo and Hyperglycemia
22	The Percentage of T2DM patients who underwent ocular procedures (Vitrectomy/laser photocoagulation)	Ocular procedures (Vitrectomy/laser photocoagulation)
23	T2DM patients with anxiety/depression	T2DM with Anxiety/Depression
24	Referral to Registered Dietician	Referral to Registered Dietician
25	Referral to Smoking Cessation Clinics	Referral to Smoking cessation clinic
26	Referral for Mental Health Status Assessment	Referral for mental health assessment

## EDS Treatment algorithm for pre-diabetes

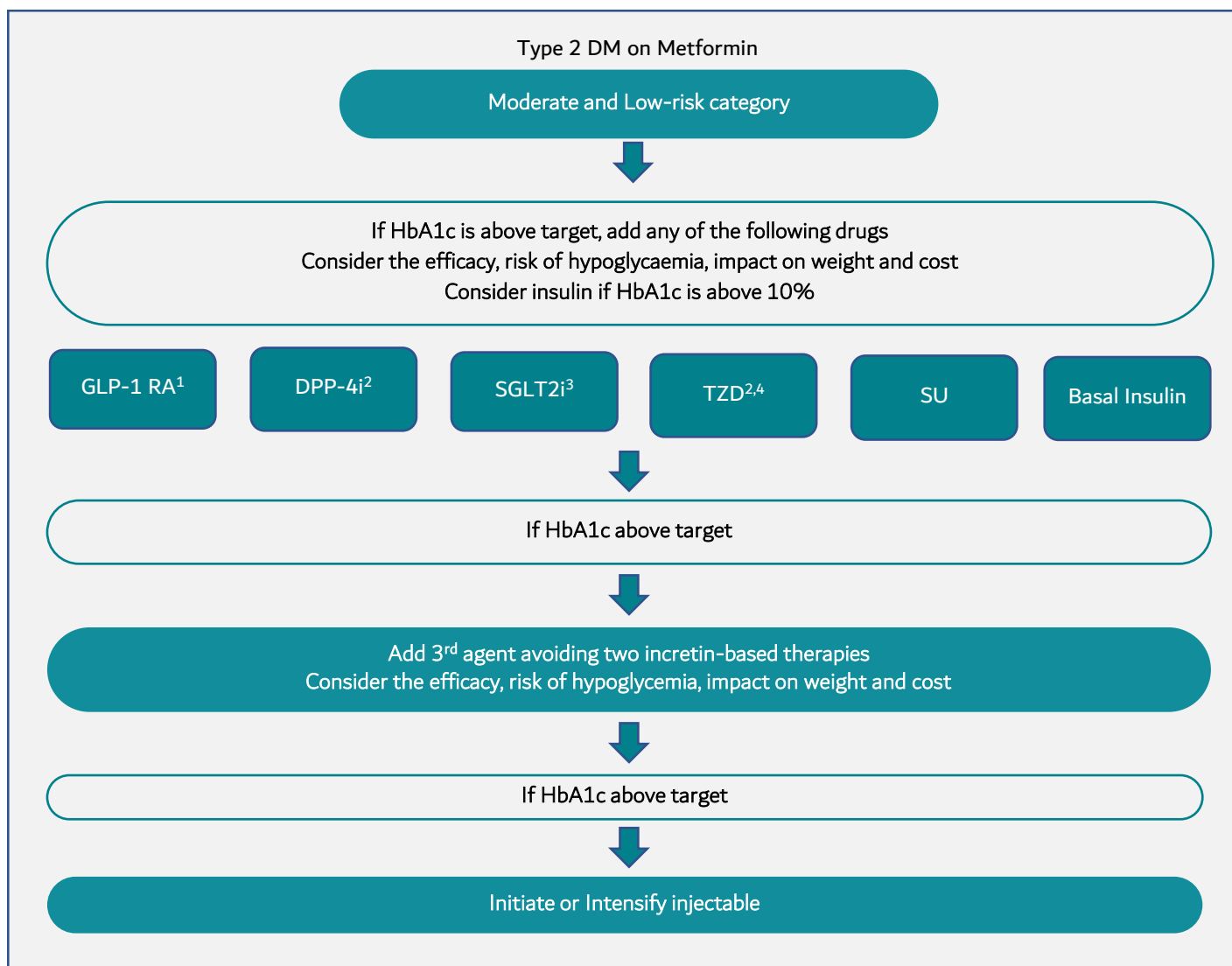


ADAPTED FROM:  
Emirates Diabetes Society  
Consensus Guidelines for Management of T2DM - 2020

### Treating pre-diabetes

Metformin therapy for prevention of type 2 diabetes should be considered in adults with pre-diabetes, as typified by the DPP, especially those aged 25–59 years with BMI  $\geq 35$  kg/m<sup>2</sup>, higher fasting plasma glucose (e.g.,  $\geq 110$  mg/dL), and higher HbA1C (e.g.,  $\geq 6.0\%$ ), and in women with prior gestational diabetes mellitus.

## Pharmacotherapy for patients with diabetes in the moderate and low-risk category



<sup>1</sup>GLP1-RA: refer to prescribing information with regard to renal function

<sup>2</sup>Avoid pioglitazone, saxagliptin and alogliptin in congestive heart failure

<sup>3</sup>SGLT2i is the preferred option in people with heart failure or impaired renal function (refer to prescribing information with regards to renal function)

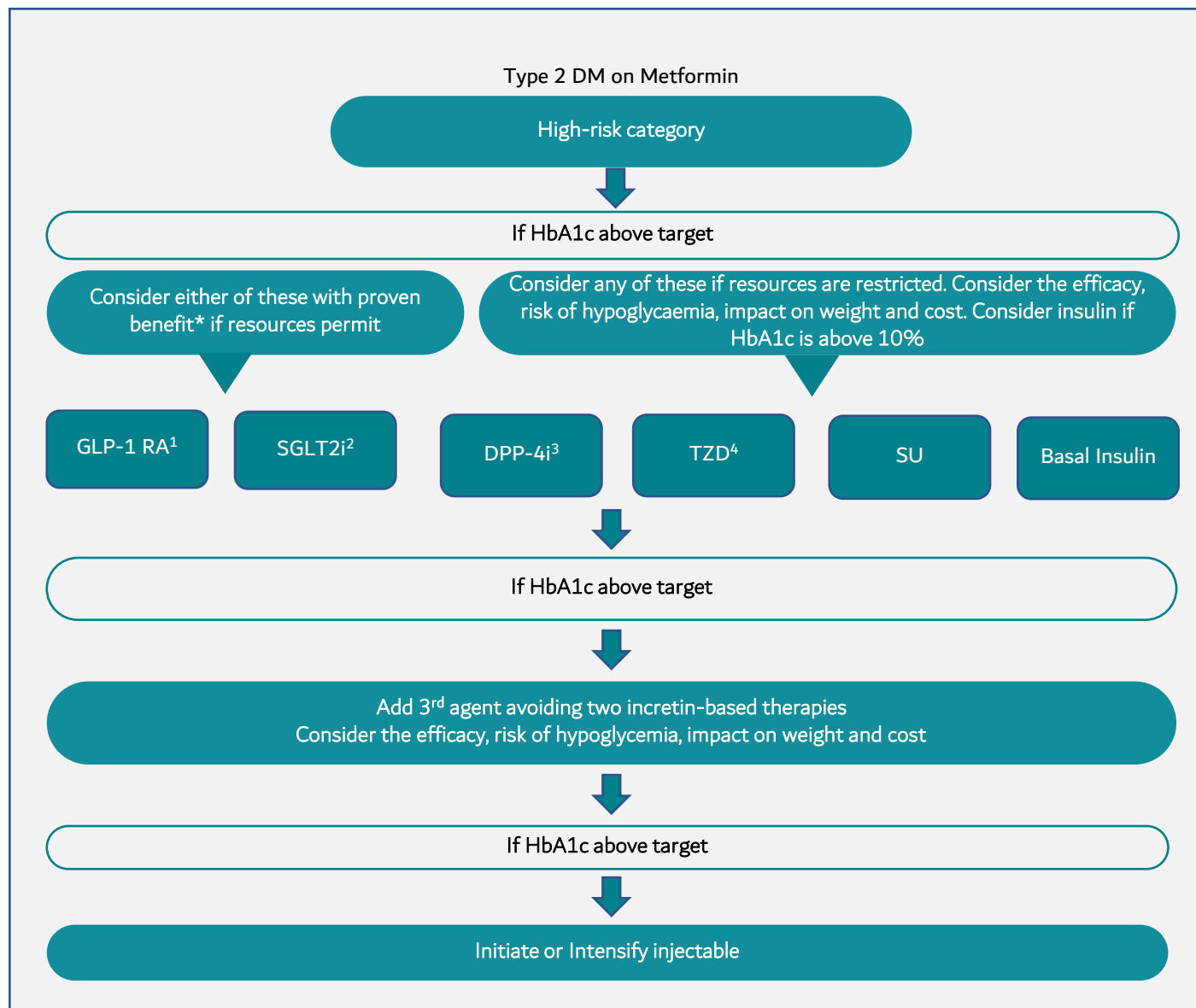
<sup>3</sup>Avoid pioglitazone, saxagliptin and alogliptin in congestive heart failure.

<sup>4</sup>Pioglitazone No dose adjustment is required

BMI, body mass index; DPP-4i, dipeptidyl peptidase 4 inhibitors; GLP-1 RAs, glucagon-like peptide 1 receptor analogues; SGLT2i, sodium-glucose cotransporter 2 inhibitors; SU, sulfonyleureas; TZD, thiazolidinediones.



## Pharmacotherapy for patients with diabetes in the high-risk category



\*Avoid pioglitazone, saxagliptin and alogliptin in congestive heart failure

<sup>1</sup>GLP1-RA: refer to prescribing information with regard to renal function

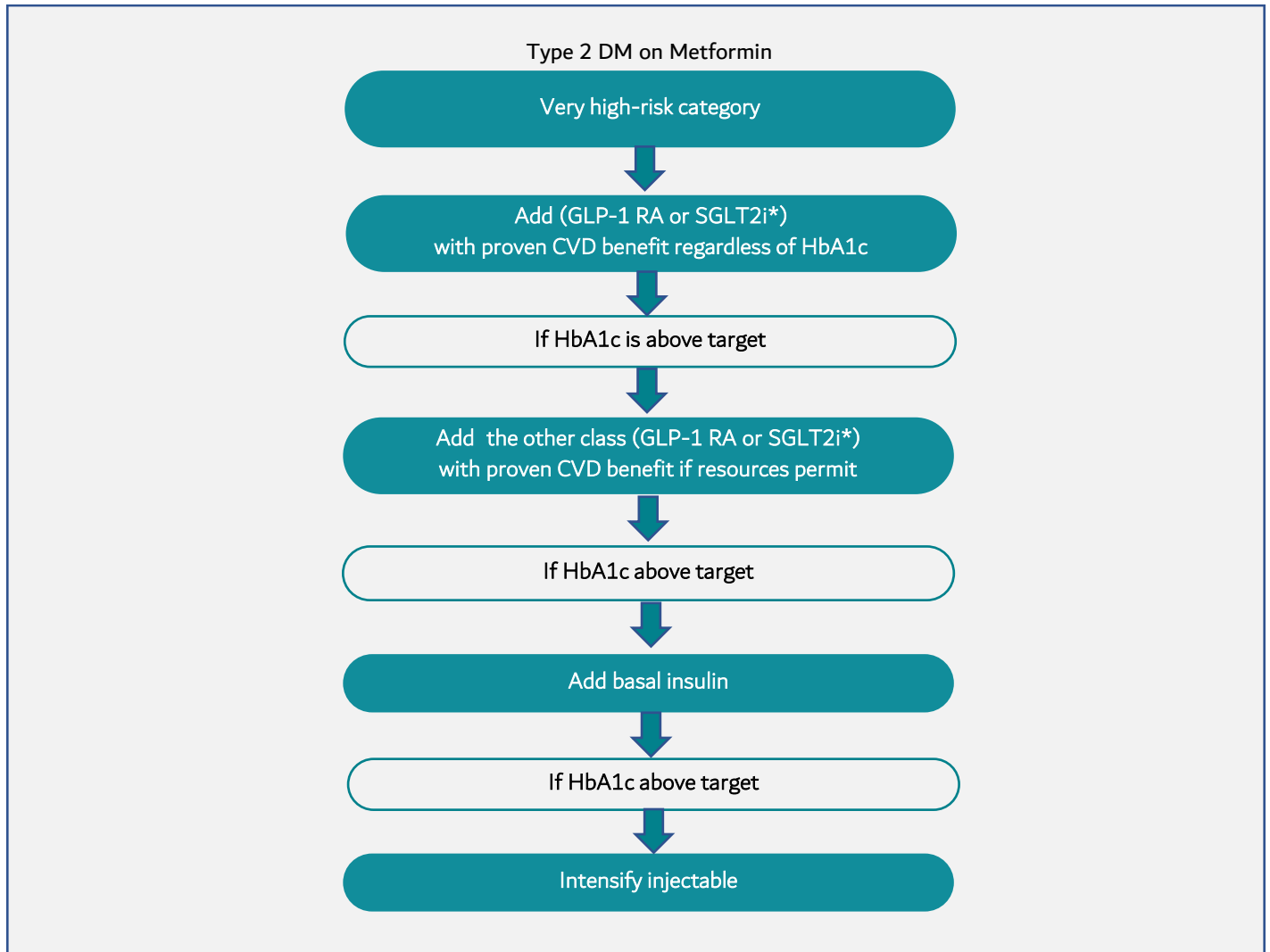
<sup>2</sup>SGLT2i is the preferred option in people with heart failure or impaired renal function (refer to prescribing information with regards to renal function)

<sup>3</sup>Avoid pioglitazone, saxagliptin and alogliptin in congestive heart failure.

<sup>4</sup>Pioglitazone No dose adjustment is required

DPP-4i, dipeptidyl peptidase 4 inhibitors; GLP-1 RAs, glucagon-like peptide 1 receptor analogues; SGLT2i, sodium-glucose cotransporter 2 inhibitors; SU, sulfonylureas; TZD, thiazolidinediones

## Pharmacotherapy for patients with diabetes in the very high-risk category

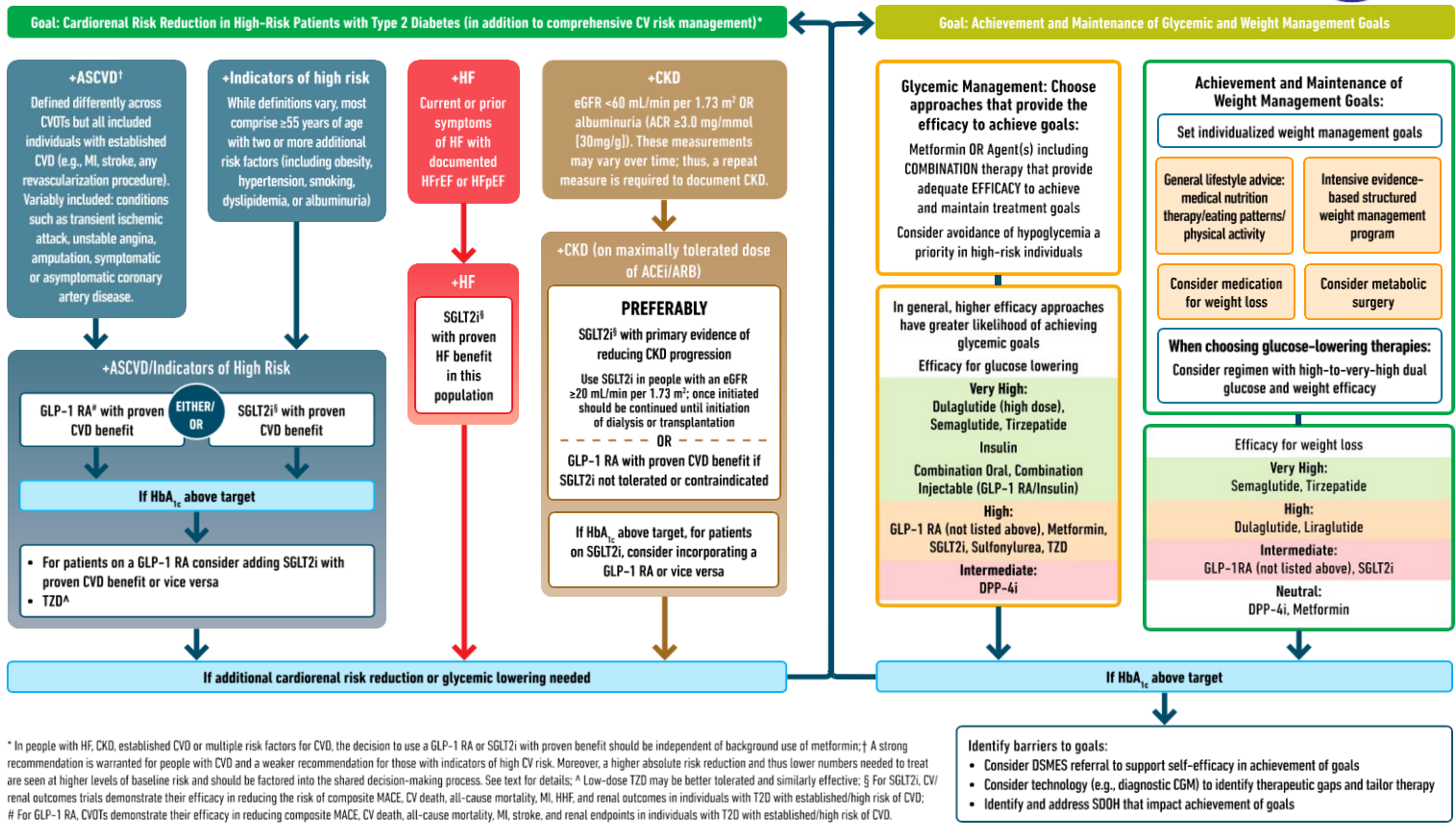


\* Sodium-glucose cotransporter 2 inhibitors (SGLT2is) are the preferred option in people with heart failure or impaired renal function. GLP-1 RA, glucagon-like peptide 1 receptor agonist; CVD, cardiovascular disease; HbA1c, glycated hemoglobin.

# Management of hyperglycemia in adults with T2DM

## USE OF GLUCOSE-LOWERING MEDICATIONS IN THE MANAGEMENT OF TYPE 2 DIABETES

HEALTHY LIFESTYLE BEHAVIORS; DIABETES SELF-MANAGEMENT EDUCATION AND SUPPORT (DSMES); SOCIAL DETERMINANTS OF HEALTH (SDOH)



\* In people with HF, CKD, established CVD or multiple risk factors for CVD, the decision to use a GLP-1 RA or SGLT2i with proven benefit should be independent of background use of metformin; † A strong recommendation is warranted for people with CVD and a weaker recommendation for those with indicators of high CV risk. Moreover, a higher absolute risk reduction and thus lower numbers needed to treat are seen at higher levels of baseline risk and should be factored into the shared decision-making process. See text for details; § For SGLT2i, CV/renal outcomes trials demonstrate their efficacy in reducing the risk of composite MACE, CV death, all-cause mortality, MI, HFrEF, and renal outcomes in individuals with T2D with established/high risk of CVD; # For GLP-1 RA, CVDs demonstrate their efficacy in reducing composite MACE, CV death, all-cause mortality, MI, stroke, and renal endpoints in individuals with T2D with established/high risk of CVD.



STANDARDS OF CARE | SEPTEMBER 2022  
Management of Hyperglycemia in Type 2 Diabetes-2022  
Consensus Report: American Diabetes Association and European Association for the Study of Diabetes

# Health Outcomes Indicators

## Screening for Pre-diabetes in Asymptomatic overweight/obese Adults

Description Title	Screening for pre-diabetes in asymptomatic adults
<b>Definition</b>	Percentage of patients aged $\geq 30$ years and who are overweight or obese (BMI $\geq 25$ or $\geq 23$ kg/m <sup>2</sup> for those of Asian descent) with FPG 100 mg/dL to 125 mg/dL, OR OGTT 140 mg/dL to 199 mg/dL OR HbA1c 5.7-6.4%, during measurement year
<b>Numerator</b>	Number of patients aged $\geq 30$ years and older who are overweight or obese (BMI $\geq 25$ or $\geq 23$ kg/m <sup>2</sup> for those of Asian descent) with FPG 100 mg/dL to 125 mg/dL, OR OGTT 140 mg/dL to 199 mg/dL OR HbA1c 5.7-6.4%, during measurement year
<b>Denominator</b>	Total patients aged $\geq 30$ years who are overweight or obese (BMI $\geq 25$ or $\geq 23$ kg/m <sup>2</sup> for those of Asian descent) who are tested for FPG, OGTT, HbA1C during the measurement year
<b>Exclusion criteria</b>	Patients aged $< 30$ years and diagnosed with diabetes mellitus
<b>Unit of measure</b>	% of patients screened
<b>Measure target and/or threshold</b>	Higher % of patients screened is better
<b>Rationale</b>	Emirates Diabetes Society Consensus Guidelines for the Management of Type 2 Diabetes Mellitus-2020 recommends screening for pre-diabetes at an early age of 30 years. The guideline recommends to repeat testing for persons with normal test results at least once every 3 years or 6-monthly if the person is diagnosed with pre-diabetes

## Retesting of Abnormal Blood Glucose in Patients with Prediabetes

Description Title	Retesting of Abnormal Blood Glucose in Patients with Prediabetes
<b>Definition</b>	Percentage of patients aged $\geq 18$ years who had an abnormal fasting plasma glucose, oral glucose tolerance test, or hemoglobin A1c result in the range of prediabetes as defined by EDA in the previous year who have a blood glucose test performed during the measurement year
<b>Numerator</b>	Number of patients aged $\geq 18$ years who had an abnormal fasting plasma glucose, oral glucose tolerance test, or hemoglobin A1c result in the range of prediabetes in the previous year who have a blood glucose test performed during the measurement year
<b>Denominator</b>	Patients aged $\geq 18$ years diagnosed with pre-diabetes (abnormal findings on fasting glucose or OGTT or HbA1c in previous year)
<b>Exclusion criteria</b>	Patients aged $< 18$ years
<b>Unit of measure</b>	Higher is better
<b>Measure target and/or threshold</b>	Emirates Diabetes Society Consensus Guidelines for the Management of Type 2 Diabetes Mellitus-2020 recommends screening for pre-diabetes at an early age of 30 years. The guideline recommends to repeat testing for persons with normal test results at least once every 3 years or 6-monthly if the person is diagnosed with pre-diabetes
<b>Rationale</b>	Retesting of Abnormal Blood Glucose in Patients with Prediabetes

## Percentage of T2DM Adults with Hypertension

Description Title	Percentage of T2DM adults with hypertension
<b>Definition</b>	Percentage of T2DM adults with systolic blood pressure of $\geq 130$ mm Hg and a diastolic blood pressure of $\geq 80$ mm Hg during the measurement year
<b>Numerator</b>	Number of T2DM adults with systolic blood pressure of $\geq 130$ mm Hg and a diastolic blood pressure of $\geq 80$ mm Hg during the measurement year
<b>Denominator</b>	Total number of T2DM diabetes patients during the measurement year
<b>Exclusion criteria</b>	Exclude patients with T1DM, and T2DM patients with MI, Stroke, HF, PAD
<b>Unit of measure</b>	Numerator/Denominator x 100%
<b>Measure target and/or threshold</b>	Lower is better
<b>Rationale</b>	Blood pressure (BP) lowering in people with diabetes reduces the risk of macrovascular and microvascular disease.

## Glycosylated Hemoglobin (HbA1c) Assessment

Description Title	Assessment of HbA1c levels in patients with T2DM at least two times a year
<b>Definition</b>	The percentage of adults aged $\geq 18$ years with T2DM with at least two HbA1c tests during the measurement year
<b>Numerator</b>	Number of adults aged $\geq 18$ years with T2DM with at least two HbA1c tests in the measurement year
<b>Denominator</b>	Total number of adults $\geq 18$ years with T2DM
<b>Exclusion criteria</b>	Members aged $< 18$ years who do not have a diagnosis of diabetes, in any setting, during the measurement year and who had a diagnosis of polycystic ovarian syndrome, gestational diabetes or steroid-induced diabetes, in any setting, during the measurement year
<b>Unit of measure</b>	Percentage (Numerator/Denominator x 100)
<b>Measure target and/or threshold</b>	Average of twice a year is better
<b>Rationale</b>	Emirates guidelines 2020 recommends testing for glycosylated hemoglobin for people with diabetes at least twice a year. The number of glycosylated hemoglobin tests is an indicator of diabetes care and provider effort in monitoring the patient's glycemic control.

## HbA1c Control (Poor control)

Description Title	Poor A1c control (>7%) in patients with T2DM
<b>Definition</b>	The percentage of adults $\geq 18$ years with T2DM with most recent HbA1C level >7% (poor control) in last 6 months, testing to be done once every quarter
<b>Numerator</b>	Number of adults $\geq 18$ years with T2DM with most recent HbA1C level >7% (poor control) in last 6 months, testing to be done once every quarter
<b>Denominator</b>	Total number of adults $\geq 18$ years with T2DM
<b>Range of Measure</b>	Patients with HbA1C poor control to undergo testing four times per year
<b>Exclusion criteria</b>	Members who do not have a diagnosis of diabetes, in any setting, during the measurement year and who had a diagnosis of polycystic ovarian syndrome, gestational diabetes or steroid-induced diabetes, in any setting, during the measurement year
<b>Unit of measure</b>	Percentage (Numerator/Denominator x 100)
<b>Measure target and/or threshold</b>	Lower is better
<b>Rationale</b>	Inadequate glycemic control is associated with the development of macrovascular complications (cardiovascular diseases [CVD], stroke, myocardial infarction [MI], and angina pectoris) and microvascular complications (retinopathy, nephropathy, and neuropathy).

## HbA1c Control (Good control)

Description Title	Good A1c control ( $\leq 7\%$ ) in patients with T2DM
<b>Definition</b>	The percentage of adults $\geq 18$ years with T2DM with most recent HbA1C level $\leq 7\%$ (good control) in last 6 months
<b>Numerator</b>	The percentage of adults $\geq 18$ years with T2DM with most recent HbA1C level $\leq 7\%$ (good control) in last 6 months
<b>Denominator</b>	Total number of adults $\geq 18$ years with T2DM
<b>Range of Measure</b>	Patients with HbA1C good control to undergo testing two times per year
<b>Exclusion criteria</b>	Members who do not have a diagnosis of diabetes, in any setting, during the measurement year and who had a diagnosis of polycystic ovarian syndrome, gestational diabetes or steroid-induced diabetes, in any setting, during the measurement year
<b>Unit of measure</b>	Percentage (Numerator/Denominator x 100)
<b>Measure target and/or threshold</b>	Higher is better
<b>Rationale</b>	Inadequate glycemic control is associated with the development of macrovascular complications (cardiovascular diseases [CVD], stroke, myocardial infarction [MI], and angina pectoris) and microvascular complications (retinopathy, nephropathy, and neuropathy).

## Lipid Profile Assessment

Description Title	Assessment of lipid profile in patients with T2DM at least once in a year
<b>Definition</b>	The percentage of adults aged $\geq 18$ years with T2DM with at least one LDL-cholesterol test during the measurement year
<b>Numerator</b>	The number of adults aged $\geq 18$ years with T2DM with at least one LDL-cholesterol test during the measurement year
<b>Denominator</b>	Total number of adults aged $\geq 18$ years with T2DM during the measurement year
<b>Exclusion criteria</b>	Members who do not have a diagnosis of diabetes, in any setting, during the measurement year and who had a diagnosis of polycystic ovarian syndrome, gestational diabetes or steroid-induced diabetes, in any setting, during the measurement year
<b>Unit of measure</b>	Percentage (Numerator/Denominator x 100)
<b>Measure target and/or threshold</b>	Higher is better
<b>Rationale</b>	Diabetes is a major risk factor for coronary heart disease and other forms of cardiovascular disease. Reducing lipid levels in people with diabetes reduces the risk for cardiovascular complications.

## LDL-Cholesterol Control

Description Title	LDL-C control in patients with T2DM
<b>Definition</b>	The percentage of adults $\geq 18$ years with T2DM having optimum control of LDL-C (70-100mg/dL) during the measurement year
<b>Numerator</b>	Number of adults $\geq 18$ years with T2DM having optimum control of LDL-C (70-100mg/dL) during the measurement year
<b>Denominator</b>	Total number of adults $\geq 18$ years with T2DM who underwent LDL-C test during the measurement year
<b>Exclusion criteria</b>	Members who do not have a diagnosis of diabetes, in any setting, during the measurement year and who had a diagnosis of polycystic ovarian syndrome, gestational diabetes or steroid-induced diabetes, in any setting, during the measurement year
<b>Unit of measure</b>	Percentage (Numerator/Denominator x 100)
<b>Measure target and/or threshold</b>	Higher is better
<b>Rationale</b>	Diabetes is a major risk factor for coronary heart disease and other forms of cardiovascular disease. Reducing lipid levels in people with diabetes reduces the risk for cardiovascular complications.



## BMI assessment

Description Title	Assessment of BMI in patients with T2DM at least once in a year
<b>Definition</b>	The percentage of adults aged $\geq 18$ years with T2DM assessed for BMI during the measurement year
<b>Numerator</b>	Number of adults aged $\geq 18$ years with T2DM assessed for BMI during the measurement year
<b>Denominator</b>	Total number of adults $\geq 18$ years with T2DM during the measurement year
<b>Exclusion criteria</b>	Members aged $< 18$ years and members who do not have a diagnosis of diabetes, in any setting, during the measurement year and who had a diagnosis of polycystic ovarian syndrome, gestational diabetes or steroid-induced diabetes, in any setting, during the measurement year
<b>Unit of measure</b>	Percentage (Numerator/Denominator x 100)
<b>Measure target and/or threshold</b>	Higher is better
<b>Rationale</b>	Obesity adds to CV risk in diabetes patients

## Dilated or Retinal Eye Examination

Description Title	Eye examination for assessment of retinopathy in patients with T2DM at least once in a year
<b>Definition</b>	The percentage of adults aged $\geq 18$ years with T2DM with retinal or dilated eye examination during the measurement year
<b>Numerator</b>	Number of adults aged $\geq 18$ years with T2DM with retinal or dilated eye examination during the measurement year
<b>Denominator</b>	Total number of adults aged $\geq 18$ years with T2DM during the measurement year
<b>Exclusion criteria</b>	Members who do not have a diagnosis of diabetes, in any setting, during the measurement year and who had a diagnosis of polycystic ovarian syndrome, gestational diabetes or steroid-induced diabetes, in any setting, during the measurement year
<b>Unit of measure</b>	Percentage (Numerator/Denominator x 100)
<b>Measure target and/or threshold</b>	Higher is better
<b>Rationale</b>	Persons with diabetes are at increased risk for blindness as a result of retinopathy. Diabetes is the leading cause of new cases of blindness among adults aged at least $\geq 30$ years . Routine dilated eye examinations can lead to early detection and effective treatment of retinopathy.

## Foot Examination

Description Title	Comprehensive foot examination in patients with T2DM at least once in a year
<b>Definition</b>	The percentage of adults aged $\geq 18$ years with T2DM with comprehensive foot examination in last one year
<b>Numerator</b>	Number of adults aged $\geq 18$ years with T2DM with comprehensive foot examination in last one year
<b>Denominator</b>	Total number of adults aged $\geq 18$ years with T2DM
<b>Exclusion criteria</b>	Members who do not have a diagnosis of diabetes, in any setting, during the measurement year and who had a diagnosis of polycystic ovarian syndrome, gestational diabetes or steroid-induced diabetes, in any setting, during the measurement year
<b>Unit of measure</b>	Percentage (Numerator/Denominator x 100)
<b>Measure target and/or threshold</b>	Higher is better
<b>Rationale</b>	Persons with diabetes are at increased risk for foot ulcers as a result of PVD. Diabetes is the leading cause of new cases of foot ulcers among adults aged at least $\geq 30$ years. Routine PVD examinations can lead to early detection and effective treatment of PVD.

## Kidney Health Evaluation for Patients with Diabetes

Description Title	Kidney health evaluation in patients with T2DM at least once in a year
<b>Definition</b>	The percentage of adults aged $\geq 18$ years with T2DM who received a kidney health evaluation during the measurement year
<b>Numerator</b>	The percentage of adults aged $\geq 18$ years with T2DM who received a kidney health evaluation (Nephropathy screening test/Evidence of treatment for nephropathy or ACE/ARB therapy/Evidence of stage 4 chronic kidney disease/Evidence of ESRD/Evidence of kidney transplant/A visit with a nephrologist/A positive urine macroalbumin test/A urine macroalbumin test where laboratory data indicates a positive result/At least one ACE inhibitor or ARB dispensing event) during the measurement year
<b>Denominator</b>	Total number of adults aged $\geq 18$ years with T2DM during the measurement year
<b>Exclusion criteria</b>	Members who do not have a diagnosis of diabetes, in any setting, during the measurement year and who had a diagnosis of polycystic ovarian syndrome, gestational diabetes or steroid-induced diabetes, in any setting, during the measurement year
<b>Unit of measure</b>	Percentage (Numerator/Denominator x 100)
<b>Measure target and/or threshold</b>	Higher is better
<b>Rationale</b>	Diabetic nephropathy is a serious complication of type 1 diabetes and type 2 diabetes. Urine albumin-to-creatinine ratio and estimated glomerular filtration rate should be obtained at the time of diagnosis and annually thereafter.

## Prescription of GLP-1RA/SGLT-2 in T2DM Patients with Established ASCVD/ or Established CKD

Description Title	Prescription of GLP-1 RA in T2DM patients with established ASCVD/or established kidney disease
<b>Definition</b>	The percentage of adults $\geq 18$ years with T2DM with established ASCVD and/or established kidney disease, prescribed with GLP-1 RA during the measurement year
<b>Numerator</b>	Number of adults $\geq 18$ years with T2DM with established ASCVD and/or established kidney disease, prescribed with GLP-1 RA during the measurement year
<b>Denominator</b>	Total number of adults $\geq 18$ years with T2DM with established ASCVD/ or kidney disease during the measurement year
<b>Exclusion criteria</b>	Members who do not have a diagnosis of diabetes, in any setting, during the measurement year and who had a diagnosis of polycystic ovarian syndrome, gestational diabetes or steroid-induced diabetes, in any setting, during the measurement year
<b>Unit of measure</b>	Percentage (Numerator/Denominator x 100)
<b>Measure target and/or threshold</b>	Higher is better
<b>Rationale</b>	Among individuals with type 2 diabetes who have established ASCVD or indicators of high CV risk, established CKD, or HF, an SGLT2 inhibitor and/or GLP-1 receptor agonist with demonstrated CVD benefit (Table 9.2 and Figure 9.3) is recommended as part of the glucose-lowering regimen and comprehensive CV risk reduction, independent of A1C and in consideration of patient-specific factors

## Prescription of SGLT-2 in T2DM Patients with Established HFrEF or HFpEF

Description Title	Prescription of SGLT2 inhibitor in patients with T2DM with established HFrEF
<b>Definition</b>	The percentage of adults $\geq 18$ years with T2DM with established HFrEF or HFpEF, prescribed with SGLT2 inhibitor during the measurement year
<b>Numerator</b>	The number of adults $\geq 18$ years with T2DM with established HFrEF or HFpEF, prescribed with SGLT2 inhibitor during the measurement year
<b>Denominator</b>	Total number of adults $\geq 18$ years with T2DM with established HFrEF or HFpEF during the measurement year
<b>Exclusion criteria</b>	Members who do not have a diagnosis of diabetes, in any setting, during the measurement year and who had a diagnosis of polycystic ovarian syndrome, gestational diabetes or steroid-induced diabetes, in any setting, during the measurement year
<b>Unit of measure</b>	Percentage (Numerator/Denominator x 100)
<b>Measure target and/or threshold</b>	Higher is better
<b>Rationale</b>	In patients with type 2 diabetes and established HFpEF or HFrEF, an SGLT2 inhibitor with proven benefit in this patient population is recommended to reduce risk of worsening HF, hospitalizations for HF, and CV death.

## Prescription of ACEi or ARB in Diabetes Patients with CAD

Description Title	Prescription of ACEi or ARB in T2DM patients with CAD
<b>Definition</b>	The percentage of adults $\geq 18$ years with T2DM and CAD treated with ACEi or ARB during the measurement period
<b>Numerator</b>	The number of adults $\geq 18$ years with T2DM and CAD treated with ACEi or ARB during the measurement year
<b>Denominator</b>	Total number of adults $\geq 18$ years with T2DM and CAD during the measurement year
<b>Exclusion criteria</b>	Members who do not have a diagnosis of diabetes, in any setting, during the measurement year and who had a diagnosis of polycystic ovarian syndrome, gestational diabetes or steroid-induced diabetes, in any setting, during the measurement year
<b>Unit of measure</b>	Percentage (Numerator/Denominator x 100)
<b>Measure target and/or threshold</b>	Higher is better
<b>Rationale</b>	In patients with known ASCVD, particularly CAD, ACE inhibitor or ARB therapy is recommended to reduce the risk of CV events

## Medication Adherence

Description Title	Medication adherence in patients with T2DM
<b>Definition</b>	The percentage of adults $\geq 18$ years with T2DM who adhere to their diabetes medications at least 80% of the time during the time they are supposed to be taking the medications during the measurement year
<b>Numerator</b>	Number of adults $\geq 18$ years with T2DM who adhere to their diabetes medications at least 80% of the time during the time they are supposed to be taking the medications during the measurement year
<b>Denominator</b>	Total number of adults $\geq 18$ years with T2DM with medication prescription during the measurement year
<b>Exclusion criteria</b>	Members who do not have a diagnosis of diabetes, in any setting, during the measurement year and who had a diagnosis of polycystic ovarian syndrome, gestational diabetes or steroid-induced diabetes, in any setting, during the measurement year
<b>Unit of measure</b>	Percentage (Numerator/Denominator x 100)
<b>Measure target and/or threshold</b>	Higher is better
<b>Rationale</b>	Adherence to anti-diabetic medications improves glycaemic control, which in turn prevents complications and has a better prognosis. Further, it is cost-effective as it reduces the frequency of hospitalization and cost associated with complications.

## Avoidable Hospital Admission Indicator - Diabetes

Description Title	Avoidable hospital admission indicator for diabetes
<b>Definition</b>	Percentage of adults $\geq 18$ years non-maternal/non-neonatal hospital admissions with a principal diagnosis of T2DM during the measurement year
<b>Numerator</b>	Number of adults $\geq 18$ years non-maternal/non-neonatal hospital admissions with a principal diagnosis of T2DM during the measurement year
<b>Denominator</b>	Total number of adults $\geq 18$ years with T2DM patients during the measurement year
<b>Exclusion criteria</b>	<ul style="list-style-type: none"> <li>Cases where the patient died in hospital during the admission</li> <li>Cases resulting from a transfer from another acute care institution (transfers-in)</li> <li>Cases with MDC 14 or specified pregnancy, childbirth, and puerperium codes in any field</li> <li>Cases with MDC 15 or specified newborn and other neonate codes in any field</li> <li>Cases that are same day/day only admissions</li> </ul>
<b>Unit of measure</b>	Percentage (Numerator/Denominator x 100)
<b>Measure target and/or threshold</b>	Lower is better
<b>Rationale</b>	Improving the quality of primary care may reduce avoidable hospital admissions. Avoidable admissions for conditions such as diabetes are used as a quality metric in the Health Care Quality Indicators of the Organization for Economic Cooperation and Development (OECD).

## Avoidable Hospital Admission Indicator – Diabetes Lower Extremity Amputation Using Linked Data

Description Title	Avoidable hospital admission indicator for diabetes lower extremity amputation using linked data
<b>Definition</b>	Percentage of diabetic patients admitted for a major lower extremity amputation during the measurement year
<b>Numerator</b>	Number of diabetic patients admitted for a major lower extremity amputation during the measurement year
<b>Denominator</b>	Total number of diabetes patients during the measurement year
<b>Exclusion criteria</b>	<ul style="list-style-type: none"> <li>Cases with pregnancy, childbirth, and puerperium codes in any field</li> <li>Cases with newborn and other neonate codes in any field</li> <li>Cases with trauma diagnosis code in any field</li> <li>Cases with tumor-related peripheral amputation code in any field</li> </ul>
<b>Unit of measure</b>	Percentage (Numerator/Denominator x 100)
<b>Measure target and/or threshold</b>	Lower is better
<b>Rationale</b>	Improving the quality of primary care may reduce avoidable hospital admissions. Avoidable admissions for conditions such as diabetes are used as a quality metric in the Health Care Quality Indicators of the Organization for Economic Cooperation and Development (OECD).

## Hospitalization Indicator- Diabetes (CKD)

Description Title	Hospital admission indicator for patients with CKD and diabetes
<b>Definition</b>	The percentage of adults aged $\geq 18$ years with T2DM who were admitted to the hospital with primary diagnosis of CKD and had a secondary diagnosis of diabetes during the measurement year
<b>Numerator</b>	The number of adults aged $\geq 18$ years with T2DM who were admitted to the hospital with primary diagnosis of CKD and had a secondary diagnosis of diabetes during the measurement year
<b>Denominator</b>	The percentage of adults aged $\geq 18$ years with T2DM during the measurement year
<b>Exclusion criteria</b>	<ul style="list-style-type: none"> <li>▪ Cases where the patient died in hospital during the admission</li> <li>▪ Cases resulting from a transfer from another acute care institution (transfers-in)</li> <li>▪ Cases that are same day/day only admissions</li> <li>▪ Cases with diagnosis of CKD but does not have secondary diagnosis of diabetes</li> </ul>
<b>Unit of measure</b>	Percentage (Numerator/Denominator x 100)
<b>Measure target and/or threshold</b>	Lower is better
<b>Rationale</b>	Diabetes care is complex and delivered by different care providers in different settings across the healthcare system. Better coordination through all levels of care can lead to better outcomes and fewer hospitalizations.

## Hospitalization Indicator- Diabetes (Acute MI)

Description Title	Hospital admission indicator for patients with Acute MI and diabetes
<b>Definition</b>	The percentage of adults aged $\geq 18$ years with T2DM who were admitted to the hospital with acute myocardial infarction and had a secondary diagnosis of diabetes during the measurement year
<b>Numerator</b>	The number of adults aged $\geq 18$ years with T2DM who were admitted to the hospital with acute myocardial infarction and had a secondary diagnosis of diabetes during the measurement year
<b>Denominator</b>	The percentage of adults aged $\geq 18$ years with T2DM during the measurement year
<b>Exclusion criteria</b>	<ul style="list-style-type: none"> <li>▪ Cases where the patient died in hospital during the admission</li> <li>▪ Cases resulting from a transfer from another acute care institution (transfers-in)</li> <li>▪ Cases that are same day/day only admissions</li> </ul>
<b>Unit of measure</b>	Percentage (Numerator/Denominator x 100)
<b>Measure target and/or threshold</b>	Lower is better
<b>Rationale</b>	Diabetes care is complex and delivered by different care providers in different settings across the healthcare system. Better coordination through all levels of care can lead to better outcomes and fewer hospitalizations.

## Emergency Department Visits in Diabetes Patients (hypoglycemia and hyperglycemia)

Description Title	Emergency department visits in T2DM (hypo- and hyperglycemia)
<b>Definition</b>	The percentage of adults aged $\geq 18$ years with T2DM who visited emergency department in last one year (for diabetic ketoacidosis/hyperglycemic hyperosmolar state/hypoglycemia) during the measurement year
<b>Numerator</b>	The number of adults aged $\geq 18$ years with T2DM who visited emergency department in last one year (for diabetic ketoacidosis/hyperglycemic hyperosmolar state/hypoglycemia) during the measurement year
<b>Denominator</b>	The total number of adults aged $\geq 18$ years with T2DM patients during the measurement year
<b>Exclusion criteria</b>	Members who do not have a diagnosis of diabetes, in any setting, during the measurement year and who had a diagnosis of polycystic ovarian syndrome, gestational diabetes or steroid-induced diabetes, in any setting, during the measurement year
<b>Unit of measure</b>	Percentage (Numerator/Denominator x 100)
<b>Measure target and/or threshold</b>	Lower is better
<b>Rationale</b>	Uncontrolled hyperglycemia leading to diabetic ketoacidosis (DKA) and hyperglycemic hyperosmolar state (HHS) are life-threatening, <u>preventable</u> metabolic complications of diabetes

## The Percentage of T2DM patients with diabetes who underwent ocular procedures (Vitreotomy/laser photocoagulation)

Description Title	The percentage of patients with T2DM who underwent ocular procedures
<b>Definition</b>	The percentage of adults aged $\geq 18$ years with T2DM who underwent ocular procedures (vitrectomy and/or laser photocoagulation) during the measurement year
<b>Numerator</b>	The percentage of adults aged $\geq 18$ years with T2DM who underwent ocular procedures (vitrectomy and/or laser photocoagulation) during the measurement year
<b>Denominator</b>	The total number of adults aged $\geq 18$ years with T2DM
<b>Exclusion criteria</b>	Members who do not have a diagnosis of diabetes, in any setting, during the measurement year and who had a diagnosis of polycystic ovarian syndrome, gestational diabetes or steroid-induced diabetes, in any setting, during the measurement year
<b>Unit of measure</b>	Numerator/Denominator x 100%
<b>Measure target and/or threshold</b>	Lower is better
<b>Rationale</b>	Persons with diabetes are at increased risk for blindness as a result of retinopathy or vitreoretinal bleeding. Diabetes is the leading cause of new cases of blindness among adults aged at least $\geq 18$ years. Appropriate interventions can reduce the incidence of blindness caused due to diabetes complications.

## Percentage of T2DM Adults diagnosed with Anxiety

Description Title	Percentage of T2DM adults with Anxiety
<b>Definition</b>	The percentage of adults aged $\geq 18$ years with T2DM diagnosed with Anxiety during the measurement year
<b>Numerator</b>	Number of adults aged $\geq 18$ years with T2DM diagnosed with Anxiety during the measurement year
<b>Denominator</b>	Number of adults aged $\geq 18$ years with T2DM during the measurement year
<b>Exclusion criteria</b>	Exclude patients with bipolar disorders, drug/alcohol dependence, depression, medication affecting CNS function, pregnant women, patients with cancer
<b>Unit of measure</b>	Numerator/Denominator x 100%
<b>Measure target and/or threshold</b>	Lower is better
<b>Rationale</b>	Co-occurring mental health disorders in patients with diabetes are associated with impaired quality of life, poor treatment adherence, poor glycemia control (evidenced by elevated HbA1c levels), increased emergency room visits due to diabetic ketoacidosis, higher frequency of hospitalization, and higher rate of absenteeism leading to an increase in cost of medical care.

## Percentage of T2DM Adults diagnosed with Depression

Description Title	Percentage of T2DM adults with Anxiety/Depression
<b>Definition</b>	The percentage of adults aged $\geq 18$ years with T2DM diagnosed with Depression during the measurement year
<b>Numerator</b>	Number of adults aged $\geq 18$ years with T2DM diagnosed with Depression during the measurement year
<b>Denominator</b>	Number of adults aged $\geq 18$ years with T2DM during the measurement year
<b>Exclusion criteria</b>	Exclude patients with bipolar disorders, drug/alcohol dependence, anxiety, medication affecting CNS function, pregnant women, patients with cancer
<b>Unit of measure</b>	Numerator/Denominator x 100%
<b>Measure target and/or threshold</b>	Lower is better
<b>Rationale</b>	Co-occurring mental health disorders in patients with diabetes are associated with impaired quality of life, poor treatment adherence, poor glycemia control (evidenced by elevated HbA1c levels), increased emergency room visits due to diabetic ketoacidosis, higher frequency of hospitalization, and higher rate of absenteeism leading to an increase in cost of medical care.



## Referral to Registered Dietician

Description Title	Referral to registered dietician for medical nutrition therapy
<b>Definition</b>	The percentage of adults aged $\geq 18$ years with T2DM referred to a registered dietician for medical nutrition therapy during the measurement year
<b>Numerator</b>	Number of adults aged $\geq 18$ years with T2DM referred to a registered dietician for medical nutrition therapy during the measurement year
<b>Denominator</b>	Total number of adults aged $\geq 18$ years with T2DM during the measurement year
<b>Exclusion criteria</b>	Members who do not have a diagnosis of diabetes, in any setting, during the measurement year and who had a diagnosis of polycystic ovarian syndrome, gestational diabetes or steroid-induced diabetes, in any setting, during the measurement year
<b>Unit of measure</b>	Percentage (Numerator/Denominator x 100)
<b>Measure target and/or threshold</b>	Higher is better
<b>Rationale</b>	Diabetes dietitians can help achieve a healthy diet and lifestyle in the best way for diabetes management. Managing diabetes is very important to lower the risk of complications later.

## Referral to Smoking Cessation Clinics

Description Title	Diabetics referred to smoking cessation clinics
<b>Definition</b>	The percentage of pre-diabetes and T2DM patients aged $\geq 18$ years who are smokers and were referred to a smoking cessation clinic during the measurement year
<b>Numerator</b>	The number of pre-diabetes and T2DM patients aged $\geq 18$ years who are smokers and were referred to a smoking cessation clinic during the measurement year
<b>Denominator</b>	The percentage of pre-diabetes and T2DM patients aged $\geq 18$ years who are smokers during the measurement year
<b>Exclusion criteria</b>	Members who do not have a diagnosis of diabetes, in any setting, during the measurement year and who had a diagnosis of polycystic ovarian syndrome, gestational diabetes or steroid-induced diabetes, in any setting, during the measurement year
<b>Unit of measure</b>	Percentage (Numerator/Denominator x 100)
<b>Measure target and/or threshold</b>	Higher is better
<b>Rationale</b>	People with diabetes who stop smoking are likely to have a lower risk of death and cardiovascular events compared with those who continue to smoke. Smoking cessation is also associated with a reduction in levels of albuminuria, improvement of glycaemic control and lipid profile.

## Referral for Mental Health Status Assessment

Description Title	Referral to registered psychologist/psychiatrist for mental health status assessment
<b>Definition</b>	The percentage of adults aged $\geq 18$ years with T2DM referred to a registered psychologist/psychiatrist for mental health status assessment (anxiety/depression)
<b>Numerator</b>	The number of adults aged $\geq 18$ years with T2DM referred to a registered psychologist/psychiatrist for mental health status assessment
<b>Denominator</b>	Total number of adults aged $\geq 18$ years with T2DM during the measurement year
<b>Exclusion criteria</b>	Exclude patients with bipolar disorders, drug/alcohol dependence, depression, medication affecting CNS function, pregnant women, patients with cancer
<b>Unit of measure</b>	Percentage (Numerator/Denominator x 100)
<b>Measure target and/or threshold</b>	Higher is better
<b>Rationale</b>	Co-occurring mental health disorders in patients with diabetes are associated with impaired quality of life, poor treatment adherence, poor glycemia control (evidenced by elevated HbA1c levels), increased emergency room visits due to diabetic ketoacidosis, higher frequency of hospitalization, and higher rate of absenteeism leading to an increase in cost of medical care.

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