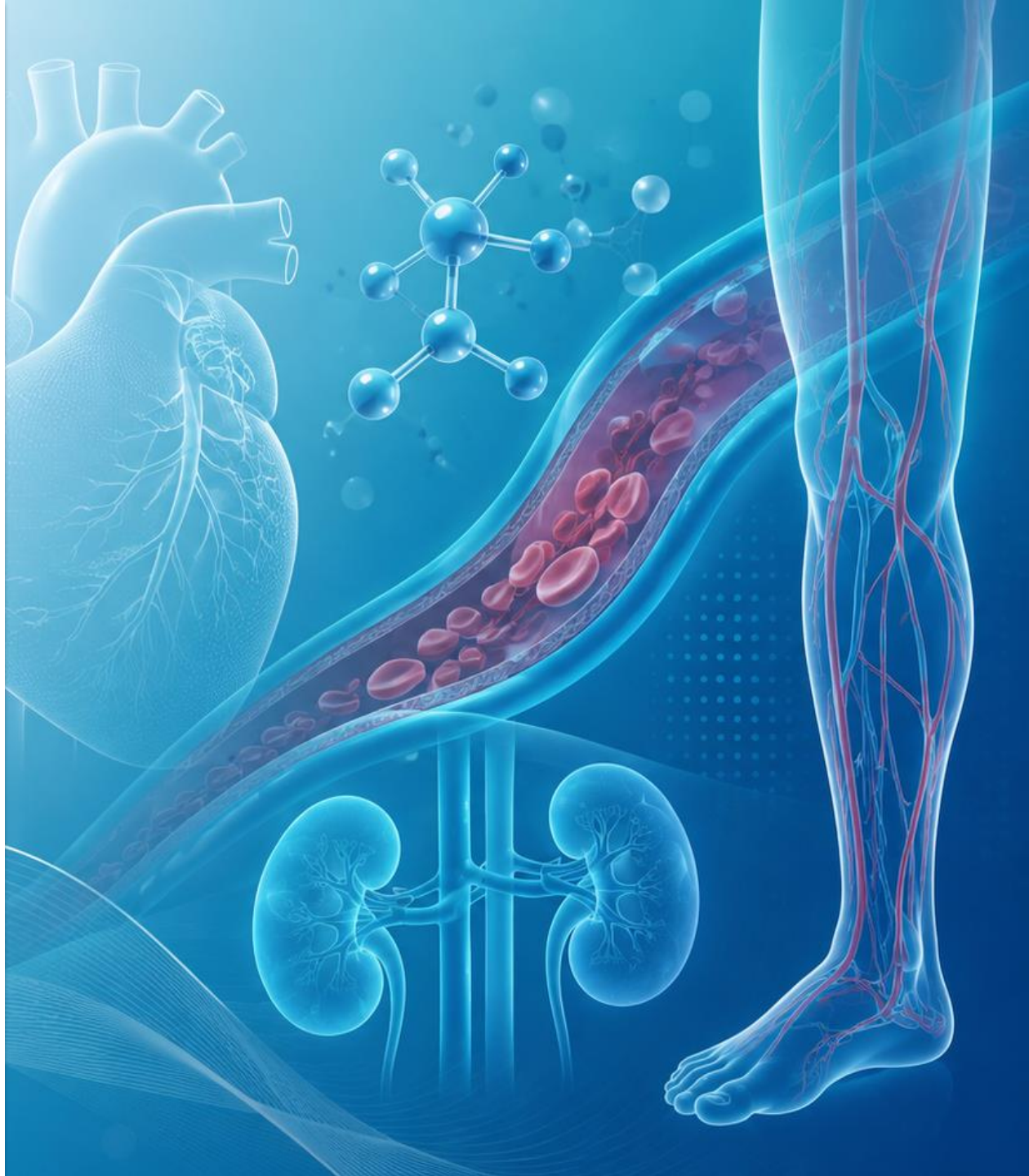
Beyond A1c

Diabetes & Cardiovascular Risk

A practical primary care approach

Dr. Eliscer Guzman, MD, FCC.



Why this matters: a high-burden cardiometabolic problem

40.1M

people in the U.S. had diagnosed or undiagnosed diabetes in 2023

115.2M

U.S. adults had prediabetes

919,032

CVD deaths in the U.S. in 2023 — about 1 in every 3 deaths

805,000

Heart attacks occur each year in the U.S.; about 1 in 5 are silent

115.2M

That is **more people than the entire population of Germany, France, or the United Kingdom**.

CDC National Diabetes Statistics Report, 2026 | CDC Heart Disease Facts, 2024/2025

Why this topic matters

Diabetes is a cardiovascular disease accelerator—not just a glucose disorder.

Major Cardiovascular Complications of Diabetes

Data-driven view for primary care: diabetes is a systemic vascular disease, not only hyperglycemia.

>2×

Coronary artery disease

Higher incident CHD risk vs adults without diabetes; consider silent ischemia and atypical symptoms. [1]

>2x

Ischemic stroke / TIA

Diabetes is linked to ischemic stroke risk; hypertension and dyslipidemia further amplify risk. [2]

2–4×

Heart failure

Diabetes increases HF risk; HFpEF is common with obesity, HTN, and CKD. [3]

2–7×

Peripheral artery disease

PAD is more prevalent in diabetes; neuropathy can mask claudication and rest pain. [4]

38%

CKD / cardiorenal syndrome

≈4 in 10 adults with diabetes have CKD; screen with eGFR and urine ACR. [5]

+28%

Atrial fibrillation

Diabetes increases AF risk; prediabetes also increases AF risk by ≈20%. [6]

Primary care message: treat diabetes as a cardiometabolic disease — manage A1c, BP, LDL-C, kidney risk, weight, smoking, and vascular symptoms together.

Refs: [1] Kalyani RR. Heart Disease and Diabetes. NCBI Bookshelf, 2023. [2] Chen C. Stroke and Diabetes in Adults. NCBI Bookshelf, 2025. [3] Park JJ et al. Cardiovasc Diabetol, 2021. [4] Soyoye DO et al. World J Diabetes, 2021; ACC PAD Scientific Statement, 2025. [5] CDC CKD in the United States, 2026. [6] Aune D et al. Nutr Metab Cardiovasc Dis, 2018.

The diabetes–cardiovascular duality

Prediabetes and diabetes are part of a cardiovascular–kidney–metabolic continuum.

CKM = Cardiovascular–Kidney–Metabolic syndrome: a framework linking obesity, prediabetes/diabetes, hypertension, dyslipidemia, CKD and CVD into one interconnected risk pathway.

~90%

U.S. adults had CKM stage ≥1

At least one cardiometabolic risk factor: excess adiposity, metabolic risk, CKD or CVD.

Aggarwal et al., JAMA 2024

14.6%

Advanced CKM stages 3–4

Already high-risk: subclinical CVD risk or established cardiovascular disease.

Aggarwal et al., JAMA 2024

Beyond A1c

Primary care opportunity

Screen early and treat BP, LDL-C, weight, kidney function, albuminuria and vascular symptoms.

AHA Presidential Advisory 2023

Key takeaway: Diabetes care is cardiovascular prevention — start before the first event.

References: Ndumele CE et al. Circulation. 2023;148:1606–1635. Aggarwal R et al. JAMA. 2024;331:1858–1860.

Association Between Renal Function and Echocardiographic Diastolic Dysfunction in Hispanic Adults

Retrospective Cross-Sectional Study Protocol

Version: 1.0

Study population: Adult Hispanic/Latino patients with transthoracic echocardiography and renal function labs available.

1. Unmet clinical need

Silent cardiorenal disease

CKD is common and frequently unrecognized. CDC estimates 38% of U.S. adults with diabetes have CKD and 87% of adults with CKD are unaware.

2. Hispanic/Latino relevance

Subclinical LV dysfunction is common

In ECHO-SOL, 49.7% of Hispanic/Latino adults had LV systolic or diastolic dysfunction; 96.1% was subclinical or unrecognized.

3. Our research question

Can renal labs flag early cardiac disease?

We will test whether reduced eGFR and/or albuminuria are associated with echocardiographic diastolic dysfunction in Hispanic adults.

Clinical relevance: If renal dysfunction tracks with diastolic dysfunction, routine eGFR/UACR could help identify patients needing earlier echo review, HFpEF prevention, and tighter CKM risk control.

Refs: CDC CKD in the United States, 2026; Mehta et al., Circ Heart Fail, 2016; Kuno et al., JACC Heart Fail, 2023; Matsushita et al., JAHA, 2017.

Peripheral Artery Disease in Diabetes

Common, silent, and high-risk — especially when neuropathy masks symptoms.

10–12M

U.S. adults live with PAD

A major ASCVD condition linked to MI, stroke, limb events, and death.

~25%

Adults ≥65 with diabetes have PAD

Diabetes accelerates atherosclerosis and increases limb risk.

Up to 40%

PAD patients report no leg pain

Classic claudication is often absent; neuropathy can hide symptoms.

1.3%

U.S. adults have severe PAD / CLTI-level risk

Tissue loss, amputation risk, and high mortality require urgent action.

Primary care action

Ask claudication, exertional leg fatigue, rest pain, cold feet, non-healing wounds.
Examine DP/PT pulses, skin, nails, ulcers, temperature.
Order ABI when symptoms/signs or high suspicion are present; **refer urgently** for rest pain or tissue loss.

References: 2024 ACC/AHA Multisociety PAD Guideline; ACC Scientific Statement on PAD in Adults With Diabetes, 2025; AHA PAD Health Disparities Statement, 2023.

Dr. Eliscer Guzman

Research protocol

Version 1.0

SGLT2 Inhibitor and GLP-1 RA Use and Limb Disease Severity in Diabetic PAD Patients Undergoing Peripheral Intervention

1. Unmet clinical need

PAD in diabetes is often silent

Neuropathy may mask claudication or rest pain. Many patients present only when ulcers, tissue loss, or advanced ischemia appear.

2. Evolving therapy gap

Modern agents may matter

SGLT2 inhibitors and GLP-1 receptor agonists improve cardiovascular and kidney outcomes, but limb-specific PAD data remain heterogeneous.

3. Our research question

Severity at intervention

Are users of SGLT2i or GLP-1 RA less likely to present with advanced PAD severity when they reach peripheral intervention?

Clinical relevance: If associated with less severe PAD presentation, earlier cardiometabolic optimization may help shift care from limb salvage to vascular prevention.

Refs: 2024 ACC/AHA PAD Guideline; Das et al., JACC 2025; Hong et al., Diabetes Res Clin Pract 2025; Caturano et al., J Clin Med 2025.

The primary-care cardiovascular risk checklist

This is the minimum dataset for a diabetes/prediabetes visit.

Glycemia	A1c, fasting glucose, meds, hypoglycemia
Weight	BMI, waist circumference, obesity treatment options
Blood pressure	Office BP + home BP when possible
ASCVD/HF symptoms	Chest pain equivalents, dyspnea, edema, exercise tolerance
Lipids	LDL-C, HDL-C, triglycerides, statin intensity
PAD/foot	Pulses, wounds, claudication, neuropathy
Kidney	eGFR + urine albumin/creatinine ratio
Lifestyle	Nutrition, activity, sleep, tobacco, alcohol

Clinical point: risk reduction comes from treating the cluster, not just lowering A1c.

ADA Standards of Care—2026: Comprehensive Medical Evaluation and Risk Management

Treatment framework: beyond A1c

Choose diabetes therapy by the patient's cardiovascular, kidney, weight, PAD risk — not only glucose level.

Key message

Start with A1c, but build the plan around risk phenotype.

The medication choice should consider established ASCVD, heart failure, CKD, obesity, PAD, cost/access, and patient preference.

Before prescribing, ask:

1. **ASCVD or high CV risk?**
2. **Heart failure?**
3. **CKD or albuminuria?**
4. **Obesity or weight goal?**
5. **PAD, smoking, or foot risk?**

This makes diabetes care a CV–kidney–metabolic prevention strategy.

Risk-based treatment priorities

Primary care action: screen eGFR + UACR, treat BP/LDL, address weight and smoking, and select SGLT2i/GLP-1 RA based on comorbid risk.

References: ADA Standards of Care in Diabetes—2026: Pharmacologic Approaches, Cardiovascular Disease & Risk Management, and CKD & Risk Management.

Prediabetes: cardiovascular risk is already active

Do not present it as “borderline sugar.” Present it as early vascular risk.

Core message

When A1c reaches 5.7–6.4%, the patient may already have insulin resistance, endothelial dysfunction, visceral adiposity, hypertension, dyslipidemia, fatty liver or kidney risk.

115.2M

U.S. adults

estimated to have prediabetes

>2 in 5

adults

meet criteria for prediabetes

~80%

unaware

most do not know they have it

Diagnostic range

A1c	FPG	2-hr OGTT
5.7–6.4%	100–125 mg/dL	140–199 mg/dL

“This is the best time to prevent diabetes and cardiovascular disease.”

Clinical takeaway: Prediabetes is already a cardiovascular-risk condition — screen and treat the whole cardiometabolic profile.

References: CDC National Diabetes Statistics Report 2026; ADA Standards of Care in Diabetes—2026, Section 3.

MESA Study: prediabetes risk can already be seen in the arteries

Coronary calcium shows subclinical atherosclerosis before symptoms or events.

MESA studied adults free of clinical CVD and used coronary artery calcium (CAC) on CT to detect silent atherosclerosis.

Impaired fasting glucose / MetS › Incident CAC › CAC progression › CHD events

1.7×	1.9×	+22.6	HR 4.1–4.9
incident CAC	incident CAC	CAC progression	CHD events

Point for primary care: prediabetes often travels with metabolic syndrome. MESA shows this risk can already be seen as coronary calcium before symptoms appear.

References: Bild et al., Am J Epidemiol 2002; Wong et al., JACC Cardiovasc Imaging 2012; ADA Standards of Care in Diabetes—2026.

Evidence-based medications: headline cardiovascular data

EMPA-REG OUTCOME

Empagliflozin in T2D + high CV risk

38% relative reduction in CV death

Zinman et al., NEJM 2015

DAPA-HF

Dapagliflozin in HFrEF, with/without diabetes

26% relative reduction in worsening HF or CV death

McMurray et al., NEJM 2019

SELECT

Semaglutide 2.4 mg in overweight/obesity + established CVD, no diabetes

20% relative reduction in 3-point MACE

Lincoff et al., NEJM 2023

Zinman et al. NEJM 2015 | McMurray et al. NEJM 2019 | Lincoff et al. NEJM 2023 | ADA Standards of Care—2026

Prediabetes: lifestyle is a cardiovascular intervention

Lifestyle treatment prevents diabetes and improves cardiometabolic risk.

58%

reduction in diabetes incidence with intensive lifestyle intervention in the DPP

5–7%

weight-loss goal used in diabetes prevention programs

150 min/wk

moderate-intensity physical activity target

Primary-care counseling script

“Your A1c is in the prediabetes range. This is not diabetes yet, but it is a strong warning sign. Our goal is to prevent diabetes and protect your heart, kidneys, brain and legs.”

Diabetes Prevention Program Research Group. NEJM 2002 | ADA Standards of Care—2026: Prevention or Delay of Diabetes

Lipids in Diabetes: Treat Early, Treat to Target

LDL-C lowering is cardiovascular prevention — not just cholesterol management.

<70 mg/dL

Primary prevention target

Adults 40–75 with diabetes: treat LDL-C to target.

<55 mg/dL

Secondary prevention target

Diabetes + established ASCVD: intensify to lower LDL-C goal.

4–12 wks

Recheck after changes

Repeat lipid panel after starting or changing lipid-lowering therapy.

Primary care action plan

1. Check lipid panel at diagnosis and at least annually.
2. Start statin based on age, ASCVD, and risk enhancers.
3. Escalate if LDL-C remains above goal: ezetimibe → PCSK9 pathway when appropriate.

LDL-C is not “just a lab value.”
In diabetes, it is a modifiable driver of MI, stroke, PAD, and limb events.

Treat diabetes as ASCVD prevention — act before the first event.

References: ADA Standards of Care in Diabetes—2026; ADA Lipid Management in Diabetes visual guide, 2026; 2026 ACC/AHA Dyslipidemia Guideline.

Lifestyle is cardiovascular medicine

Weight

Target clinically meaningful weight loss; even 5–10% can improve metabolic risk.

Activity

Aim for 150 min/week moderate activity + resistance training when feasible.

Nutrition

Mediterranean/DASH-style pattern; reduce sugary drinks and refined carbs.

Smoking

Ask, advise, assist; smoking strongly worsens ASCVD and PAD risk.

Sleep/stress

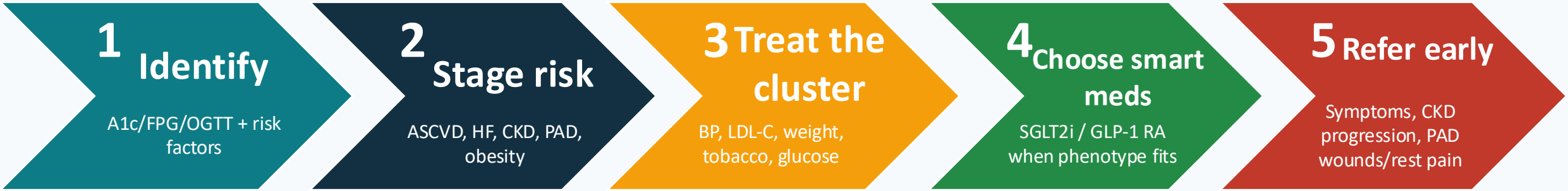
Screen for sleep apnea when obesity, resistant HTN, snoring, or daytime fatigue.

Adherence

Cost, insurance, side effects, and health literacy are clinical risk factors.

A practical algorithm for primary care

Use this workflow for every adult with prediabetes or diabetes.



The “A1c-only” visit misses cardiovascular prevention opportunities.

ADA Standards of Care—2026 | AHA/ACC Primary Prevention and PAD guidance

When to refer

Cardiology

Chest pain, dyspnea/anginal equivalent, HF symptoms, abnormal ECG with symptoms, resistant HTN, established ASCVD.

Vascular / wound care

Rest pain, non-healing wound, absent pulses, abnormal ABI, suspected CLTI, gangrene, infection.

Nephrology

Rapid eGFR decline, severe albuminuria, advanced CKD, difficult BP control.

Endocrinology

Unclear diabetes type, recurrent hypoglycemia, complex insulin regimen, uncontrolled A1c.

Referral should not replace prevention.
Primary care should start risk reduction while specialty evaluation is pending.

Take-home messages

Prediabetes is a cardiovascular warning sign—not a benign label.

Diabetes is a cardiometabolic disease, not only hyperglycemia.

Primary care should screen for CAD, HF, CKD, and PAD symptoms.

Treat BP, LDL-C, weight, smoking, kidney disease, and glucose together.

Choose SGLT2 inhibitors / GLP-1 RAs when heart, kidney, obesity, and ASCVD risk support their use.

Early referral can prevent MI, stroke, heart failure, kidney failure, and amputation.

HISPRED-CAD

(HISPanic PREDiabetes and Coronary Artery Disease Study)

Association Between Prediabetes and Clinical or Subclinical Coronary Artery Disease in Hispanic Patients:

A Retrospective Cohort Study (2020–2025)

Author: Dr Eliscer Guzman

STUDY RESULTS

CORONARY FINDINGS

Plaque presence **73.2%**

Significant stenosis / obstructive CAD **29.6%**

Non-obstructive CAD **43.6%**

CARDIOVASCULAR RISK FACTORS

Obesity **60.8%**

Hypertension **88.3%**

Dyslipidemia **70.6%**

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- Das SR, Bonaca MP, Creager MA, et al. Management of Peripheral Artery Disease in Adults With Diabetes: 2025 ACC Scientific Statement. J Am Coll Cardiol. 2025. doi:10.1016/j.jacc.2025.11.027.