

W H I T E P A P E R

Diabetes

And Its Complications: The Pathway to Dependency

Type 1 · Type 2 · Retinopathy · Kidney Disease · Neuropathy · Amputation · Dementia

A Complete Guide for Patients, Families, and Caregivers

Diagnosis · GLP-1 Era · CGM & Pump Technology · Care Costs · Long-Term Planning

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Sources: CDC, American Diabetes Association, NIDDK, USRDS, FDA, KFF, NIH ClinicalTrials.gov

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1. EXECUTIVE SUMMARY

Diabetes is the most quietly devastating chronic disease in the United States. It does not kill the way a heart attack or a stroke kills. It kills — and disables — by erosion. Over years and decades, persistently elevated blood sugar damages every organ system that matters for independent living: the eyes, the kidneys, the nerves, the blood vessels, the heart, and the brain. By the time a family sits down to talk about long-term care, the patient has usually accumulated three or four complications that, taken together, define the trajectory.

Today, 38.4 million Americans are living with diabetes — 11.6% of the population. Another 97.6 million adults have prediabetes. Roughly 1 in 4 people who have the disease do not yet know it. In Florida alone, over 2 million adults are diagnosed, with another 107,700 new cases each year. The Southeast, where Florida sits, anchors a 'Diabetes Belt' that runs 2–3 percentage points above national prevalence rates.

Diabetes is the leading cause of new blindness in working-age adults, the leading cause of kidney failure (44% of new dialysis starts), the leading cause of non-traumatic lower-extremity amputation (~150,000 per year), a doubling of cardiovascular event risk, and a 2–3x increase in dementia risk. Each of these complications is, by itself, a long-term care event. Most patients with poorly controlled diabetes for 15–20 years will collect several of them.

Diabetes cost the U.S. economy \$412.9 billion in 2022 — about \$19,736 per person with diagnosed diabetes per year. A patient on dialysis with diabetic nephropathy who needs skilled nursing care can easily generate \$200,000+ per year in care costs, almost entirely uncovered by Medicare.

Sources: ADA, CareScout 2025, USRDS.

This white paper is written for patients, families, and caregivers facing diabetes — from the prediabetes wake-up call through the GLP-1 era through the long, expensive years of advanced complications. It covers:

- How each complication — retinopathy, nephropathy, neuropathy, amputation, CVD, dementia — directly causes ADL loss and LTC need
- The current landscape of medications, including the transformative GLP-1 / GIP class (Ozempic, Mounjaro, Wegovy, Zepbound)
- The 2024–2026 FDA approvals that are reshaping care: weekly insulin (Awiqli), tirzepatide for sleep apnea, islet cell transplant (Lantidra)
- Continuous glucose monitors and automated insulin delivery systems — the closed-loop revolution
- The clinical trial pipeline that could deliver a functional cure for Type 1 diabetes within this decade
- The real cost of advanced diabetes — dialysis, amputation, hospitalization, and long-term care

- Long-term care insurance underwriting reality for diabetic applicants — and the rapidly closing planning window

2. UNDERSTANDING DIABETES

Diabetes is a group of metabolic disorders defined by chronically elevated blood glucose. The common thread is impaired insulin signaling — either the pancreas does not produce enough insulin, the body's cells do not respond to it, or both. Sustained hyperglycemia is what causes the long-term damage.

The Major Types

Type 2 Diabetes (T2D)

By far the most common form — roughly 90–95% of all diabetes cases, or about 34 million Americans. T2D develops gradually, usually over years of insulin resistance and progressive beta-cell decline. It is strongly linked to obesity, sedentary lifestyle, family history, age, and certain ethnic backgrounds. Once considered an adult disease, T2D is now increasingly diagnosed in children and adolescents — and youth-onset T2D progresses more aggressively to complications.

Type 1 Diabetes (T1D)

An autoimmune disease in which the immune system destroys the pancreatic beta cells that make insulin. Approximately 1.6–2 million Americans have T1D. It can develop at any age but classically presents in childhood or young adulthood. T1D requires lifelong insulin therapy from day one — there is no oral medication that substitutes for what the missing beta cells used to do.

Prediabetes

A1C 5.7–6.4%, fasting glucose 100–125 mg/dL. Approximately 97.6 million American adults — 38% of the adult population — have prediabetes. Without intervention, 15–30% will progress to Type 2 within five years. This is the cohort where the CDC's Diabetes Prevention Program (DPP) demonstrates a 58% reduction in conversion to T2D through modest weight loss and exercise.

Gestational Diabetes

Diabetes diagnosed during pregnancy, affecting roughly 5–9% of pregnancies. Usually resolves after delivery, but increases the mother's lifetime risk of Type 2 diabetes by approximately 7-fold.

Demographics and Disparities

- Black and Hispanic/Latino Americans are more than 50% more likely to have diabetes than non-Hispanic white Americans
- American Indian/Alaska Native adults have the highest prevalence at approximately 14.5%
- Asian Americans, at 9.0%, have higher prevalence than white Americans despite lower average BMI
- Prevalence in adults 65 and older is approximately 29.2% — nearly one in three
- The Southeastern U.S. forms a 'Diabetes Belt' running 2–3 percentage points above national rates

- Lower income and educational attainment are strongly associated with higher prevalence and worse outcomes

The Florida Context

Florida reflects — and in some respects exceeds — national patterns. Approximately 2,071,000 Florida adults have diagnosed diabetes (11.4% of the adult population), with an estimated 107,700 new diagnoses each year. Florida's adult obesity rate of 31.6% — 5.77 million adults — is the primary engine driving new Type 2 cases. The state's large retired population means many people arrive in Florida already managing diabetes; the cumulative complication burden in Florida's elderly is therefore especially heavy and especially relevant to LTC planning.

Why the Numbers Will Keep Rising

Three demographic forces ensure diabetes will be a larger, not smaller, problem over the next 20 years:

- Population aging — the 65+ population is the highest-prevalence cohort and the fastest-growing
- Childhood obesity — driving an entirely new cohort of youth-onset Type 2 patients now entering their 30s and 40s with decades of disease ahead of them
- Diagnostic improvement — the ADA's 2026 recommendation to begin screening at age 35 will newly diagnose millions who were previously undetected

Whether the GLP-1 era — with its weight loss and cardiometabolic benefits — ultimately bends this curve is one of the most important questions in U.S. healthcare. For LTC planning, the planning horizon must assume more patients with diabetes, not fewer.

3. THE COMPLICATIONS THAT DRIVE DEPENDENCY

This section is the clinical heart of why diabetes matters for long-term care planning. Each complication below is, in clinical terms, a separate disease in its own right. Taken together, they form the pathway by which a diabetes diagnosis at age 50 becomes a nursing home admission at age 75. Most patients eventually accumulate two, three, or four of these.

3.1 Diabetic Retinopathy and Blindness

Diabetes is the leading cause of new cases of blindness in working-age adults (ages 20–74) in the developed world. Approximately one in three people with diabetes has some form of diabetic retinopathy (DR), and up to 80% of patients who have had Type 1 diabetes for 20 or more years are affected. About 175,000 new cases are diagnosed each year in the U.S.

The disease progresses in stages: non-proliferative DR → proliferative DR (with abnormal new blood vessels) → diabetic macular edema → legal blindness. Anti-VEGF injections (Avastin, Lucentis, Eylea, Vabysmo) and laser therapy can slow or halt progression but rarely reverse vision already lost.

LTC dependency link: Legal blindness or severe vision impairment from diabetic retinopathy directly impairs bathing, grooming, dressing, meal preparation, and — critically — medication management. A visually impaired insulin-using patient cannot reliably draw up a syringe. The complication that begins as a 'minor' eye exam finding ends, for many patients, as the trigger for assisted living.

3.2 Diabetic Nephropathy and Kidney Failure

Diabetes is the single leading cause of end-stage renal disease (ESRD) in the United States, responsible for approximately 44% of new diagnoses. Approximately 37 million Americans have chronic kidney disease, and over 808,000 are living with ESRD, the majority on dialysis.

The progression: microalbuminuria → macroalbuminuria → declining eGFR → Stage 4–5 CKD → dialysis or transplant. Black patients have approximately 3x higher ESRD risk than white patients. SGLT2 inhibitors (Jardiance, Farxiga, Invokana) have transformed this picture by demonstrably slowing CKD progression — but only if started before significant damage is done.

LTC dependency link: In-center hemodialysis requires 3–4 hour sessions, three times per week, indefinitely. Functional status declines sharply in the first 12 months after dialysis initiation in older patients. Roughly 40% of adults aged 67+ die within a year of starting dialysis; many survivors require skilled nursing facility care. Transportation alone — to and from dialysis — becomes its own caregiving job.

3.3 Diabetic Neuropathy

Diabetic neuropathy is the single most common complication of diabetes — up to 50% of patients develop it over the course of their disease.

Peripheral Neuropathy

Presents as numbness, tingling, burning pain, or loss of protective sensation in the feet and hands. The loss of protective sensation is the silent precursor to diabetic foot ulcers and amputations. Painful diabetic peripheral neuropathy is treated with duloxetine, pregabalin, or gabapentin, but treatment is frequently inadequate.

Autonomic Neuropathy

Affects the involuntary nervous system. Cardiovascular autonomic neuropathy causes resting tachycardia and orthostatic hypotension — a doubled to tripled mortality risk. Gastrointestinal autonomic neuropathy causes gastroparesis (Section 3.8). Genitourinary autonomic neuropathy causes bladder dysfunction and erectile dysfunction.

LTC dependency link: Peripheral neuropathy is a direct pathway to falls. The patient cannot feel where the foot is landing, balance deteriorates, and a single fall — hip fracture, head injury, vertebral compression — often defines the moment of permanent dependency. Loss of protective sensation also means the patient cannot feel an injured foot until infection has set in.

3.4 Diabetic Foot Ulcers and Amputations

Diabetes is the leading cause of non-traumatic lower-extremity amputations in the United States. Approximately 150,000 amputations occur each year because of diabetes — above-knee, below-knee, or partial foot. People with diabetes are 10–30x more likely to undergo a lower-extremity amputation than people without diabetes.

The pathway is depressingly predictable: peripheral neuropathy → loss of protective sensation → minor trauma the patient does not feel → ulceration → infection → osteomyelitis → amputation. One in five hospitalizations among people with diabetes involves a diabetic foot problem.

The mortality numbers should be more widely known: 5-year mortality after a major lower-extremity amputation in a diabetic patient is 50–80% — comparable to many cancers. The amputation itself is rarely the end-state event; it is the threshold across which functional decline accelerates.

LTC dependency link: A major lower-extremity amputation creates immediate, often permanent ADL dependency. Ambulation, bathing, dressing, transfers — all are affected. Above-knee amputees frequently never return to fully independent living; most require home modifications, ongoing prosthetic care, and many transition to skilled nursing or assisted living.

3.5 Cardiovascular Disease

Cardiovascular disease is the leading cause of death among people with diabetes. Compared to the general population, people with Type 2 diabetes are 2–4x more likely to develop CVD, 2x more likely to have a heart attack, 1.5x more likely to have a stroke, and have up to 22% prevalence of heart failure.

Peripheral arterial disease (PAD) is also dramatically more common and contributes directly to the foot ulcer / amputation cycle. SGLT2 inhibitors and GLP-1 receptor agonists are now first-line not just because they lower glucose, but because they independently reduce major adverse cardiovascular events (MACE).

LTC dependency link: Stroke, heart failure, and post-MI deconditioning — all dramatically more common in diabetes — each create some of the most severe forms of functional impairment. Post-stroke disability is a leading driver of nursing home placement; heart failure exacerbations drive recurring hospitalizations and progressive ADL loss.

3.6 Diabetic Ketoacidosis and Hyperosmolar States

Diabetic ketoacidosis (DKA) is an acute, life-threatening complication of insulin deficiency — most common in T1D but increasingly reported in T2D, particularly in patients on SGLT2 inhibitors during illness. Hyperosmolar hyperglycemic state (HHS) affects primarily older adults with T2D and carries 10–20% mortality in elderly patients. The U.S. records approximately 220,000 DKA hospitalizations each year.

Common precipitants: infection, missed insulin doses, new-onset T1D, physiologic stress (surgery, MI, stroke). Each episode in an elderly person often results in prolonged hospitalization, cognitive decline, deconditioning, and a step down in functional baseline that does not return.

3.7 Cognitive Impairment and Dementia

Diabetes roughly doubles to triples the risk of developing Alzheimer's disease and vascular dementia. The mechanisms are multiple: chronic hyperglycemia generates advanced glycation end-products in brain tissue; insulin resistance impairs brain glucose metabolism; cerebrovascular disease damages white matter; and recurrent severe hypoglycemia causes direct neuronal injury.

The clinical pattern usually starts subtly — slower processing speed, mild memory complaints, executive dysfunction — and can progress to frank dementia requiring 24-hour supervised care. For LTC planning, this is one of the most consequential pathways: it tends to combine with other diabetes complications to produce particularly complex care needs.

LTC dependency link: Dementia attributable to diabetes is one of the highest-intensity LTC pathways. It typically leads to memory care unit placement, eventual total ADL dependency, and the largest single category of cumulative LTC spending. It is also the trajectory where caregiver burden — sleep loss, isolation, depression — is most extreme.

3.8 Gastroparesis

Delayed gastric emptying caused by vagal autonomic neuropathy affects an estimated 5–12% of T1D patients and long-duration T2D patients. Symptoms include nausea, vomiting, early satiety, bloating, and — critically — erratic blood glucose because nutrient absorption is unpredictable. Severe gastroparesis can require enteral or parenteral nutrition. Treatment options are limited: metoclopramide has a black-box warning for tardive dyskinesia; domperidone is not FDA-approved in the U.S.

3.9 Hypoglycemia in the Elderly

Severe hypoglycemia — blood glucose below 54 mg/dL — is one of the most underappreciated dangers in elderly diabetic patients, particularly those on insulin or sulfonylureas (glipizide, glimepiride, glyburide). Older patients lose their counter-regulatory hormonal response, so they often have no warning symptoms before becoming confused or unconscious.

Hypoglycemia in the elderly can cause falls, fractures, seizures, cardiac arrhythmias, strokes, and death. Nocturnal hypoglycemia is especially dangerous because it can go undetected until catastrophic. This is why ADA Standards of Care now recommend less aggressive A1C targets (7.5–8.5%) for frail elderly — a deliberate trade-off accepting somewhat higher long-run risk to prevent immediate-risk hypoglycemic events.

LTC dependency link: A single severe hypoglycemic episode requiring outside assistance is a sentinel event. From that point, the family caregiver and any home health aide must be trained in glucagon administration, blood glucose monitoring, and dose adjustment. Many families discover, in the aftermath of one bad episode, that the patient can no longer live alone safely.

4. DIAGNOSIS AND MONITORING

Diagnostic Criteria (ADA 2026 Standards)

The American Diabetes Association's 2026 Standards of Medical Care maintain the established diagnostic thresholds and update screening recommendations. A diabetes diagnosis is established when any one of the following is met (and ideally confirmed by repeat testing on a separate day):

Test	Prediabetes Range	Diabetes Threshold
Fasting Plasma Glucose (FPG)	100–125 mg/dL (IFG)	≥ 126 mg/dL
2-Hour OGTT (75g glucose)	140–199 mg/dL (IGT)	≥ 200 mg/dL
Hemoglobin A1C	5.7–6.4%	≥ 6.5%
Random Plasma Glucose	n/a	≥ 200 mg/dL with symptoms

2026 ADA Updates to Screening

- Screen all adults for prediabetes and diabetes beginning at age 35 (down from the previous age 45 threshold)
- Screen earlier in patients with BMI ≥ 25 (≥ 23 for Asian Americans), family history, hypertension, dyslipidemia, prior gestational diabetes, PCOS, or racial/ethnic minority status
- In at-risk individuals, consider screening for presymptomatic Type 1 risk using islet autoantibodies (anti-GAD65, anti-IA-2, anti-ZnT8, anti-insulin)
- Rescreen every 1–3 years depending on individual risk profile

Hemoglobin A1C — The Central Management Metric

A1C reflects average blood glucose over the previous 2–3 months, expressed as a percentage. It is the single most important number in long-term diabetes management.

- Target for most non-elderly adults: < 7.0% (ADA)
- Tighter target for selected patients: < 6.5% (AACE; younger patients without significant comorbidity)
- Less aggressive target for frail elderly: 7.5–8.5% (ADA, to reduce hypoglycemia risk)
- Each 1% reduction in A1C is associated with approximately 35–40% reduction in microvascular complications

A1C has limitations: it can be falsely low in hemolytic anemia, falsely high in iron deficiency, and unreliable in certain hemoglobinopathies. Continuous glucose monitoring provides a more granular picture and is increasingly the preferred adjunct.

Continuous Glucose Monitoring (CGM)

CGMs are the most transformative diagnostic and management advance in diabetes care in decades. A small sensor worn on the upper arm or abdomen measures interstitial glucose every 1–5 minutes and transmits the data to a smartphone or receiver. The ADA now recommends CGM for all insulin-using patients and many patients with T2D on high-risk regimens.

Device	Wear Duration	Key Features
Dexcom G7	10 days	30-minute warmup; direct integration with AID systems; no calibration
FreeStyle Libre 3 Plus	15 days	Smallest CGM sensor; factory calibrated; available OTC for T2D
Eversense 365 (Senseonics)	365 days (implantable)	First 1-year implantable CGM; eliminates sensor changes
Medtronic Guardian 4	7 days	Integrated with 780G AID system; predictive alerts

Time in Range (TIR)

Time in Range is the emerging gold standard alongside A1C. It measures the percentage of the day glucose stays in the target range of 70–180 mg/dL. The ADA recommends greater than 70% TIR for most adults. In clinical trials, every 10% improvement in TIR corresponds to meaningful reductions in retinopathy progression and other microvascular complications.

Two patients can have an identical A1C of 7.0% with very different glycemic pictures — one stable around 154 mg/dL, the other oscillating wildly between 50 and 300 mg/dL. CGM data exposes the difference. Glycemic variability — not just average — drives both quality of life and complications.

5. MEDICATIONS

GLP-1 Receptor Agonists — The Paradigm Shift

The GLP-1 (glucagon-like peptide-1) receptor agonist class has fundamentally changed both diabetes and obesity medicine since the mid-2010s. With the approval of semaglutide (Ozempic, Wegovy) and tirzepatide (Mounjaro, Zepbound), the field crossed a threshold: these drugs not only lower blood glucose but independently reduce cardiovascular events, reduce kidney disease progression, induce 15–25% weight loss, and — in the case of tirzepatide — treat obstructive sleep apnea.

Drug (Generic)	Brand	Manufacturer	Indication	Route
Semaglutide	Ozempic	Novo Nordisk	Type 2 Diabetes	Weekly injection
Semaglutide	Wegovy	Novo Nordisk	Obesity / CV risk reduction	Weekly injection
Semaglutide (oral)	Rybelsus	Novo Nordisk	Type 2 Diabetes	Daily oral tablet
Tirzepatide	Mounjaro	Eli Lilly	Type 2 Diabetes	Weekly injection
Tirzepatide	Zepbound	Eli Lilly	Obesity / Sleep Apnea	Weekly injection
Dulaglutide	Trulicity	Eli Lilly	Type 2 Diabetes	Weekly injection
Liraglutide	Victoza / Saxenda	Novo Nordisk	T2D / Obesity	Daily injection

In the SELECT trial, semaglutide 2.4mg (Wegovy) reduced major adverse cardiovascular events by 20% in patients with established CVD and obesity — without requiring a diabetes diagnosis. This was a landmark moment: the first proof that an obesity drug independently prevents cardiovascular death. In the SURMOUNT-5 head-to-head trial, tirzepatide produced approximately 6 kg greater weight loss than semaglutide and a larger reduction in cardiometabolic risk.

Cost reality: Mounjaro's list price is approximately \$1,300 per month, or \$15,600 per year. Wegovy is approximately \$1,350 per month. Manufacturer copay cards can reduce out-of-pocket cost to as little as \$25 per prescription for eligible commercially insured patients. Medicare coverage for these drugs depends on indication — covered for Type 2 diabetes (Ozempic, Mounjaro), more limited for obesity (Wegovy, Zepbound). The first negotiated Medicare price for Ozempic takes effect in 2027 under the Inflation Reduction Act.

The GLP-1 Pipeline 2026–2028

The GLP-1 pipeline is one of the most active in pharmaceutical history. Several drugs in late-stage trials are expected to produce weight loss and metabolic effects beyond what current agents achieve.

Drug	Company	Mechanism	Status / Notable Data
Retatrutide	Eli Lilly	Triple GIP/GLP-1/glucagon	Phase 3; ~24% weight loss Phase 2
CagriSema	Novo Nordisk	Semaglutide + cagrilintide (amylin)	Phase 3; > 25% weight loss early data
Orforglipron	Eli Lilly	Oral GLP-1 small molecule	Phase 3; first oral non-peptide GLP-1
Survodutide	Boehringer Ingelheim	GLP-1/glucagon dual	Phase 3 obesity and MASH
Mazdutide	Innovent / Lilly (China)	GLP-1/glucagon dual	Phase 3

SGLT2 Inhibitors — The Cardio-Renal Workhorse

SGLT2 (sodium-glucose cotransporter-2) inhibitors work by causing the kidneys to excrete excess glucose in the urine. Beyond glucose control, they have demonstrated robust cardiovascular and renal protective effects independent of glycemic lowering. ADA 2026 guidelines recommend SGLT2 inhibitors for any patient with T2D plus established atherosclerotic CVD, heart failure, or CKD — regardless of A1C level.

Drug (Generic)	Brand	Key Outcome Data
Empagliflozin	Jardiance	EMPA-REG (CV), EMPEROR-Reduced & Preserved (HF), EMPA-KIDNEY (CKD)
Dapagliflozin	Farxiga	DAPA-HF, DELIVER (HF), DAPA-CKD (renal protection)
Canagliflozin	Invokana	CANVAS (CV), CREDENCE (renal)
Ertugliflozin	Steglatro	VERTIS-CV

Typical benefits: ~0.5–1.0% A1C reduction, 2–3 kg weight loss, ~3–5 mmHg blood pressure reduction, meaningful heart failure hospitalization reduction, and slowing of CKD progression. Key caution: SGLT2 inhibitors should be held during acute illness, dehydration, or before surgery because of euglycemic DKA risk.

Insulin Therapy

Insulin remains essential for all Type 1 patients and many with longstanding Type 2 disease. The insulin landscape in 2026 is wider than ever, with biosimilar competition driving prices down and a major new development — once-weekly basal insulin — reshaping daily-injection burden.

Rapid-Acting Insulins (mealtime)

- Lyumjev (insulin lispro-aabc, Lilly) — ultra-rapid; can be injected just before or at the start of a meal
- Fiasp (insulin aspart, Novo Nordisk) — ultra-rapid; pump-compatible
- Humalog / Admelog (lispro), NovoLog / Fiasp (aspart), Apidra (glulisine) — standard rapid-acting analogs

Long-Acting Basal Insulins

- Tresiba (insulin degludec, Novo Nordisk) — ultra-long acting (42+ hours); less nocturnal hypoglycemia
- Toujeo (insulin glargine U-300, Sanofi) — 3x concentrated; flatter profile than Lantus
- Lantus / Basaglar / Semglue / Rezvoglar (insulin glargine and biosimilars) — once-daily basal

Landmark 2026 Approval — Once-Weekly Insulin

On March 26, 2026, the FDA approved Awiqli (insulin icodec-abae, Novo Nordisk) for adults with Type 2 diabetes — the first-ever once-weekly basal insulin. This single approval reduces basal insulin injections from 7 per week to 1 per week. For elderly patients and any patient who has resisted insulin initiation because of injection burden, this is a meaningful clinical advance and may pull millions of poorly-controlled T2D patients off oral-only regimens onto basal insulin earlier in their disease course.

The \$35 insulin cap: Under the Inflation Reduction Act, Medicare Part D enrollees pay no more than \$35 per month out-of-pocket for any covered insulin. This has dramatically reduced cost-related non-adherence among Medicare beneficiaries. The cap does not extend to non-Medicare commercial insurance, where insulin costs still vary widely; some manufacturers (Lilly, Novo Nordisk, Sanofi) voluntarily cap retail price at approximately \$35/month for many patients.

Metformin — The First-Line Anchor

Metformin remains the world's most widely prescribed diabetes medication and the recommended first-line pharmacotherapy for Type 2 diabetes. It reduces hepatic glucose production and improves insulin sensitivity. Typical benefits: 1–2% A1C reduction, weight-neutral or modest weight loss, near-zero hypoglycemia risk as monotherapy, excellent long-term safety, and very low cost. It is contraindicated when eGFR falls below 30 mL/min and must be held before IV contrast studies.

6. DEVICES AND EMERGING TECHNOLOGIES

Automated Insulin Delivery — The Closed Loop

Automated insulin delivery (AID) systems — sometimes called 'closed-loop' or 'artificial pancreas' systems — combine a continuous glucose monitor, an insulin pump, and a control algorithm that automatically adjusts insulin delivery based on real-time glucose data. AID approaches true physiologic insulin management more closely than any therapy that has come before.

System	CGM Used	Notable Features
Tandem Control-IQ+	Dexcom G7	Predictive low-glucose suspend; auto-correction boluses; refreshed algorithm 2025
Omnipod 5	Dexcom G6/G7	Tubeless pod; SmartAdjust algorithm; no infusion sets
Medtronic MiniMed 780G	Guardian 4	Auto-correction boluses every 5 minutes; highest TIR in real-world comparisons
Beta Bionics iLet	Dexcom G6	Autonomous dosing; only system requiring no carbohydrate counting

Real-world data from AID users consistently shows time-in-range improvements of 10–20 percentage points compared to multiple daily injections, with substantial reductions in hypoglycemia. For Type 1 patients, AID is now considered standard of care wherever insurance coverage allows.

Smart Insulin Pens

For patients who prefer multiple daily injections to a pump, smart pens (InPen by Medtronic, NovoPen 6, Lilly Tempo Pen) automatically log dose, timing, and amount and sync to a smartphone app. They offer structured dose tracking without pump complexity — a useful middle ground for older patients new to insulin or for any patient who wants the data without the equipment.

Islet Cell Transplantation — Lantidra (2023)

In June 2023, the FDA granted approval to Lantidra (donislecel, CellTrans) — the first allogeneic pancreatic islet product for Type 1 diabetes. Lantidra is infused into the portal vein; the islets engraft in the liver and produce insulin. In clinical trials, approximately 30% of patients achieved insulin independence for at least 1 year, and 11% for at least 5 years. The trade-off is lifelong immunosuppression and dependence on cadaveric donor islets, which are in very limited supply. Lantidra is therefore reserved for T1D patients with severe hypoglycemia unawareness who fail optimal therapy.

The Stem-Cell Beta Cell Era

The most exciting frontier in Type 1 diabetes is the emergence of stem-cell-derived beta cell therapies. At the ADA 85th Scientific Sessions in June 2025, Vertex Pharmaceuticals presented data on zimislecel (formerly VX-880) showing:

- All 12 patients with at least 1 year of follow-up who received a full dose achieved an A1C below 7%
- All achieved greater than 70% time-in-range
- 10 of 12 patients (83%) were insulin-free at 1+ year of follow-up

This is the most compelling human evidence to date that a functional cure for Type 1 diabetes is achievable. Phase 3 trials are underway; a Biologics License Application is anticipated 2026–2027. A second Vertex program, VX-264, uses an encapsulation device so that recipients would not require immunosuppression — the holy grail. Sernova Corporation has a competing scaffold-based approach (the Cell Pouch) with FDA Fast Track designation.

If zimislecel or its descendants reach commercialization, the trajectory of Type 1 diabetes — and eventually parts of advanced Type 2 — will fundamentally change. For families with T1D, this is the first time in a century that a functional cure is on the table as a realistic medical reality, not a research aspiration.

Smart (Glucose-Responsive) Insulin

Several research programs are developing 'smart insulins' that would only activate when blood glucose is elevated — effectively eliminating hypoglycemia risk. These are still in early development and not yet in Phase 3 trials, but they represent the long-horizon goal: an insulin that behaves more like a healthy pancreas and less like a blunt instrument.

7. CLINICAL TRIALS AND PIPELINE 2026

Few therapeutic areas have a more active pipeline than diabetes and metabolic disease in 2026. Below are the trials and programs most likely to change practice over the next 3–5 years.

Major Outcomes Trials — Where the Field Stands

Trial	Drug	Population	Outcome
SELECT	Semaglutide 2.4mg	Overweight + CVD (no T2D)	20% MACE reduction — landmark for obesity-only indication
SURMOUNT-5	Tirzepatide vs. semaglutide	Obesity head-to-head	Tirzepatide superior by ~6 kg weight loss
SURPASS-CVOT	Tirzepatide	T2D with high CV risk	MACE data expected 2025–2026
EMPEROR-Preserved	Empagliflozin	HFpEF (with and without T2D)	Significant reduction in CV death / HF hospitalization
DELIVER	Dapagliflozin	HFpEF	Confirmed SGLT2i benefit across the HF spectrum
EMPA-KIDNEY	Empagliflozin	CKD (with and without T2D)	Confirmed renal protection across CKD population

Tirzepatide — The Expanding Footprint

Tirzepatide is rapidly expanding beyond its original T2D and obesity indications:

- Obstructive sleep apnea — Zepbound was approved for moderate-to-severe OSA in adults with obesity (December 2024), becoming the first non-PAP pharmacological treatment for sleep apnea
- Heart failure with preserved ejection fraction (HFpEF) — the SUMMIT trial showed improved 6-minute walk distance and quality of life in obese HFpEF patients; FDA application pending
- Chronic kidney disease in T2D — SURMOUNT-CKD and SURPASS-RENALPROTECT trials ongoing
- Metabolic dysfunction-associated steatohepatitis (MASH/NASH) — Phase 3 SYNERGY-NASH trial ongoing

Beta-Cell Replacement — The Functional Cure Pipeline

Beyond Vertex's zimislecel program, the pipeline for functional cure of Type 1 diabetes includes:

- VX-264 (Vertex) — encapsulated stem cell islets requiring no immunosuppression; Phase 1/2 dosing
- Sernova Cell Pouch — implantable subcutaneous scaffold for islets; FDA Fast Track

- Sana Biotechnology — hypoimmune universal islet cells; preclinical to early clinical
- CRISPR-edited beta cells — multiple academic and industry programs

Weekly Insulin Beyond Awiqli

With Awiqli (insulin icodec) approved in March 2026 as the first once-weekly basal insulin, several other companies are advancing weekly insulin programs. Lilly's basal insulin Fc (BIF) is in Phase 3 development. The implications for adherence and patient acceptance — particularly in older adults with T2D — are substantial.

Anti-Obesity Combinations and Maintenance Therapy

As GLP-1 weight loss matures, the next clinical question is durability. Most patients who stop semaglutide regain about two-thirds of lost weight within a year. Combination programs (GLP-1 + amylin, GLP-1 + glucagon, oral + injectable rotation) and lower-dose maintenance regimens are being studied to address rebound. This will become central to how diabetes prevention and obesity treatment are integrated into LTC planning over the next decade.

8. ECONOMIC BURDEN AND COSTS

The National Bill

\$412.9B Total U.S. cost of diabetes (2022) — ADA economic burden study

\$306B Direct medical costs

\$107B Indirect costs (lost productivity, absenteeism, disability, premature death)

\$19,736 Average annual healthcare cost per person with diagnosed diabetes

2.6x Average healthcare cost ratio: diabetic vs. non-diabetic

These are not abstract numbers. They translate directly into out-of-pocket costs for medications, supplies, specialty visits, and — eventually — the much larger costs of complication care.

Per-Person Annual Cost Breakdown

Category	Estimated Annual Cost Range
Insulin (multiple types, pre-IRA cap)	\$1,000 – \$6,000+
GLP-1 receptor agonist (Mounjaro / Ozempic)	\$13,000 – \$16,000 list price
Insulin pump hardware (Year 1)	\$5,000 – \$8,000
CGM sensors + transmitter	\$2,500 – \$4,800/year
Oral medications (metformin, etc.)	\$50 – \$300
Physician visits, labs, specialists	\$1,500 – \$5,000+
Total moderate-complexity insured patient	~\$7,000 – \$25,000+

The Real Cost — Complications

Routine diabetes care is expensive. Complication care is catastrophic.

Complication / Procedure	Estimated Annual or Per-Event Cost
In-center hemodialysis (3x/week)	\$93,000 – \$110,000 / year
Peritoneal dialysis (home)	\$60,000 – \$80,000 / year
Lower-extremity amputation (hospital + rehab)	\$30,000 – \$70,000+ per event

Complication / Procedure	Estimated Annual or Per-Event Cost
Diabetic foot ulcer hospitalization	\$20,000 – \$40,000 per admission
Coronary artery bypass (CABG)	\$50,000 – \$150,000
Stroke hospitalization + acute rehab	\$30,000 – \$80,000
Anti-VEGF injections for diabetic macular edema	\$15,000 – \$30,000 / year

Long-Term Care Setting Costs (CareScout 2025)

Care Setting	Annual Median Cost (2025)	Notes for Diabetic Patients
Skilled Nursing Facility — Private	\$129,575	End-stage care; dialysis units common
Skilled Nursing Facility — Semi-Private	\$114,975	Skilled care setting; insulin management
Assisted Living Facility	\$74,400	Personal care, medication management
Memory Care Unit	\$80,000 – \$110,000	For diabetic dementia patients
Home Health Aide (44 hrs/week)	\$80,080	Personal care; no medical supervision
Adult Day Health Care	\$22,000 – \$25,000	Daytime only; family respite

Combine the numbers: a 75-year-old patient with diabetic ESRD requiring dialysis (\$93,000/yr) and skilled nursing care (\$129,575/yr) is generating \$222,000 per year in care costs. Medicare covers dialysis and some hospitalization but does not cover long-term custodial care. Without LTC insurance or substantial savings, the gap closes only through Medicaid spend-down — typically requiring exhaustion of most non-exempt assets.

9. THE DEPENDENCY AND LTC ANGLE

This section ties the medical content directly to long-term care planning. Each complication described in Section 3 has a specific pathway to functional impairment. Recognizing those pathways early is what makes LTC planning effective — and what makes the difference between a family that pays \$200,000 a year out of pocket and a family that does not.

Complication-to-ADL Mapping

Complication	ADLs / IADLs Affected	Likely LTC Setting Trigger
Severe retinopathy / blindness	Bathing, dressing, meal prep, meds, driving	Assisted living; home aide
Bilateral lower-extremity amputation	Ambulation, transfers, bathing, toileting	SNF; intensive home care
Dialysis dependence	Fatigue impairs most ADLs; transportation burden	Home aide; eventual SNF
Peripheral neuropathy with falls	Ambulation, balance, fracture risk	Acute hospital → SNF → rehab
Diabetic stroke	All ADLs; paralysis; speech; cognition	Acute rehab → SNF or memory care
Diabetic dementia	All ADLs by moderate stage	Memory care unit; 24-hr supervision
Heart failure deconditioning	Bathing, ambulation, housekeeping	Recurring SNF stays; eventual ALF
Gastroparesis / malnutrition	Meal prep; weight maintenance	Home enteral nutrition; SNF

Functional Decline by the Numbers

- Adults with Type 2 diabetes have 1.5–2x greater risk of disability and functional limitation at any age compared to non-diabetic peers
- Among elderly adults (65+) with T2D, approximately 20–30% report limitations in at least two ADLs
- Diabetes with one or more complications carries approximately 2x the rate of nursing home admission compared to diabetes without complications
- Approximately 40% of adults age 67+ die within 12 months of starting dialysis; many survivors require skilled nursing care

The Cumulative Burden — A Realistic Trajectory

A patient diagnosed with Type 2 diabetes at age 50 who manages it suboptimally over 20 years often arrives at age 70 with a combination something like:

- Moderate peripheral neuropathy and impaired balance
- Stage 3–4 CKD with proteinuria, approaching dialysis
- Diabetic macular edema and moderate vision loss
- Coronary artery disease, possibly with a prior MI or stent
- Early cognitive impairment, often unrecognized by family
- Hypertension, dyslipidemia, and modest weight gain

This is the actuarial reality LTC insurers price for. The cumulative probability of requiring significant formal long-term care services is dramatically higher for this person than for a healthy non-diabetic peer. Critically, by the time the trajectory above is visible, the patient is no longer insurable for traditional long-term care insurance — the planning window has closed.

This is the central insight of LTC planning for diabetes patients: the planning conversation has to happen during the years when the patient is doing well, not when complications appear. Once the eye, kidney, nerve, or vascular damage is documented, options narrow dramatically and the family is left funding the care out of personal assets, Medicaid, or both.

10. CAREGIVER BURDEN

The diabetes literature consistently underestimates the work performed by family caregivers. This section corrects that picture. The informal caregiver — spouse, adult child, sibling — is the silent infrastructure that holds advanced diabetes care together at home, and the cost of that infrastructure (in hours, stress, and lost income) does not appear on any medical bill.

The Numbers

- Family caregivers of adults with complicated diabetes spend an estimated 8–20 hours per week on diabetes-related caregiving tasks
- Caregiver depression rates approach 30–40% in studies of high-burden diabetes caregiving
- The economic value of informal caregiving for diabetes in the U.S. is estimated in the tens of billions annually, included in the ADA's \$413B figure
- Sleep disruption is nearly universal among caregivers of insulin-using patients, particularly those at risk of nocturnal hypoglycemia

Self-Management Complexity

Diabetes is the most self-management-intensive chronic disease that exists in primary care. The patient — with caregiver support — is expected to perform:

- Multiple daily finger sticks or continuous interpretation of CGM data and alarms
- Carbohydrate counting and pre-meal insulin dose calculation (for insulin users)
- Medication management for 5–10 concurrent drugs (typical for T2D with comorbidities)
- Daily foot inspection (in patients with neuropathy or vascular disease)
- Annual or more frequent specialist visits across multiple disciplines
- Dietary planning consistent with diabetes, CKD, and CVD recommendations — often contradictory

Hypoglycemia Vigilance

This is perhaps the most psychologically corrosive part of caregiving for an insulin-using elderly patient. The caregiver becomes a 24-hour watchdog for symptoms that the patient may not feel: unusual confusion, sweating, slurred speech, restlessness during sleep. A single severe nocturnal hypoglycemic episode — found unconscious in the morning — is the kind of event that ends caregiver sleep for months afterward. Many family caregivers describe this vigilance as the most exhausting part of the role.

Foot and Wound Care

In a patient with peripheral neuropathy who cannot see or feel his or her feet, daily foot inspection often falls entirely on the family caregiver. The stakes are unforgiving: a foot wound that goes

undetected for 24–48 hours can progress from a minor abrasion to a limb-threatening infection. This is one of the routine caregiver tasks that, when missed, leads to amputation.

Multispecialty Coordination

A patient with T2D and several complications may be under the care of: endocrinology, primary care, nephrology, cardiology, ophthalmology, podiatry, neurology, vascular surgery, wound care, and — if dialysis is involved — a dialysis center medical director. Appointments, referrals, medication reconciliation, and follow-through frequently fall on the family caregiver. Poor coordination is one of the leading causes of preventable amputation and avoidable hospitalization.

Talk to a palliative care or care management consultant about diabetes care coordination when the patient is seeing four or more specialists. Care management services — sometimes covered by Medicare Advantage or commercial insurance — can dramatically reduce caregiver burden and hospitalization rates. Many families discover this option only after a major event.

Caregiver Resources

- American Diabetes Association — diabetes.org — family education and support
- Breakthrough T1D (formerly JDRF) — breakthrought1d.org — T1D family resources, peer support
- diaTribe Foundation — diatribe.org — patient and family education, technology reviews
- Family Caregiver Alliance — caregiver.org — cross-disease caregiver support and respite
- Medicare Diabetes Self-Management Training (DSMT) — up to 10 hours covered initially plus 2 hours per year
- Eldercare Locator — 1-800-677-1116 — connects families with local respite and adult day health resources

11. LONG-TERM CARE INSURANCE REALITY

Diabetes — particularly with complications or insulin dependence — significantly affects long-term care insurance eligibility, pricing, and product selection. This is among the most practically consequential sections of this white paper for families using FundingDependency.com to plan.

Traditional LTC Insurance Underwriting

Traditional long-term care insurance carriers underwrite diabetes more strictly than most chronic conditions, because the cumulative complication burden directly drives expected LTC utilization. The framework below reflects publicly available underwriting guides from major carriers and is illustrative; specific carrier rules vary.

Clinical Scenario	Traditional LTCi	Hybrid Life/LTC
T2D, diet-controlled, A1C < 7.5, no complications	Often eligible, standard or rated	Usually eligible
T2D, oral meds only, A1C 7.0–7.9, no complications	Often eligible, may be rated	Usually eligible
T2D, A1C 8.0–8.5, no complications	Borderline; carrier-dependent	Eligible at some carriers
T2D or T1D on insulin, A1C < 8.0, no complications	Usually declined	Sometimes available
Any type with peripheral neuropathy	Typically declined	Very limited
Any type with CKD stage 3+	Typically declined	Limited
History of retinopathy requiring treatment	Typically declined	Limited
History of diabetic foot ulcer or amputation	Declined	Likely declined
Insulin + any cognitive impairment	Declined	Declined

Key Underwriting Thresholds

- Most traditional LTCi carriers view A1C below 7.5–8.0 with no complications as the rough boundary for potential eligibility
- Insulin use alone is a hard decline trigger at many carriers, regardless of A1C, because of hypoglycemia-induced fall and cognitive event risk
- The window for applying is before insulin is initiated and before any complication is documented in the medical record

- Each year of delay in poorly-controlled diabetes raises the risk of crossing an underwriting threshold permanently

Hybrid / Linked-Benefit Life Insurance with LTC Riders

Hybrid policies — such as Lincoln MoneyGuard, Nationwide CareMatters, Pacific Life PremierCare, and Securian SecureCare — combine a life insurance death benefit with an LTC rider. These products are funded with a single premium or limited-pay structure and offer:

- More flexible underwriting than traditional LTCi — some insulin users without complications can qualify
- Return of premium death benefit if LTC benefits are not used — the money is never wasted
- Predictable, locked-in premiums (unlike traditional LTCi, which has a history of premium increases)
- Cash indemnity benefits in many products — family can use payments more flexibly than reimbursement-based traditional LTCi

For diabetic patients still within an insurable window, hybrid policies often represent the best risk-adjusted planning vehicle: more achievable underwriting, no premium-increase risk, return of premium, and a meaningful LTC benefit. The trade-off is a single premium of typically \$50,000–\$200,000+ depending on benefit design and age.

When Insurance Is No Longer Available

For patients with established complications or longstanding insulin use, the planning conversation shifts away from insurance to:

- Medicaid planning — timing of asset transfers, understanding 5-year look-back rules; varies significantly by state
- Asset-based planning — dedicated 'LTC bucket' of investments or annuities earmarked for care
- Family care agreements — formal compensation arrangements for adult children providing care
- Deferred income annuities — timed to anticipated care need years
- Health Savings Accounts (HSAs) — maximized while still employed; can be used tax-free for LTC expenses
- VA benefits — veterans with service-connected diabetes (Vietnam-era Agent Orange exposure, Gulf War Burn Pit exposure under the PACT Act) may qualify for Aid & Attendance and LTC benefits

Florida-Specific Considerations

- Florida has no state income tax — favorable for retirees but means no state-level LTC tax credit
- Florida Medicaid Long-Term Care Program has a 60-month look-back and asset limits of approximately \$2,000 for individuals (homestead exempt)

- South Florida and Tampa metro LTC costs run 10–20% above national medians — plan for higher benefit amounts
- Florida is a strong state for trust-based and annuity-based planning strategies due to favorable creditor protection rules

12. NEXT STEPS AND KEY MESSAGES

For Patients

- Get a baseline A1C, urine microalbumin, dilated eye exam, foot exam, and lipid panel — if any are missing, schedule them
- Ask the diabetes care team about CGM and, if insulin-using, automated insulin delivery; coverage has expanded substantially in 2025–2026
- Ask whether a GLP-1 receptor agonist or SGLT2 inhibitor is appropriate — for many patients these are now standard of care, not optional
- Discuss the once-weekly insulin Awiqli if poor adherence has been a barrier to insulin initiation
- Enroll in Medicare Diabetes Self-Management Training (DSMT) — covered, underused, and highly effective
- Get a baseline cognitive assessment in your 60s while it is still a baseline — it will matter later

For Family Members

- Know the patient's last A1C, last eGFR, last dilated eye exam, and last foot exam dates — if you do not know, find out
- Know which medications are in use and what the hypoglycemia protocol is if insulin is involved
- Make sure a glucagon kit (Baqsimi nasal, Gvoke prefilled, or Zegalogue) is in the home if the patient is on insulin
- Get a Power of Attorney and healthcare surrogate designation in place — do not wait for a hospitalization
- Have the LTC insurance conversation now — underwriting only gets harder
- If the patient is a veteran, file for VA benefits now — even modest service-connected ratings can compound dramatically by the time care is needed

For LTC Planners

- Document A1C trend, complication history, current medications, and recent specialist evaluations before pursuing any LTC product
- Quote both traditional LTCi and at least two hybrid options — the underwriting and pricing answer can be substantially different across carriers
- Frame the conversation around the actual numerical risk: 2x nursing home admission rate, 40% one-year mortality on dialysis, 50–80% five-year mortality after major amputation
- Discuss the rapidly closing window: insulin initiation, any new complication, or any cognitive change can move a client from insurable to uninsurable in months
- For uninsurable clients, build the asset-based and Medicaid-planning conversation in cooperation with an elder law attorney
- For veteran clients, screen for Agent Orange (Vietnam-era) and PACT Act (post-9/11 burn pit) diabetes presumptive eligibility

The Seven Distilled Messages

These are the takeaways FundingDependency.com readers should leave with:

1. Diabetes Is Not Just a Glucose Problem — It Is a Whole-Body Dependency Engine

Poorly controlled diabetes systematically damages eyes, kidneys, nerves, blood vessels, and the brain. Each complication directly impairs the ability to perform activities of daily living. Planning for LTC is not pessimism — it is medical realism.

2. The Window for LTC Insurance Is Open Now — and Closes Fast

LTC underwriting is harshest on complications. A person with T2D on oral medications, A1C under 7.5, and no complications may qualify today. Two years later, after insulin and a touch of neuropathy, that same person typically cannot. If diabetes is diagnosed, the time to explore LTCi is immediately.

3. The GLP-1 Era Is Changing Trajectories — But Not Retroactively

Semaglutide and tirzepatide are transformative — reducing cardiovascular events, slowing kidney disease, and enabling significant weight loss. But they work best before major complications develop. They do not reverse blindness, restore amputated limbs, or undo dialysis dependence.

4. Complications Are Cumulative and Often Silent Until They Are Not

Diabetic neuropathy, retinopathy, and early nephropathy develop without symptoms for years. By the time the patient is symptomatic, irreversible damage is done. Annual comprehensive diabetes exams — dilated eye exam, urine microalbumin, foot exam, A1C, lipids — are the early warning system. Skipping them costs decades of life and millions of dollars in lifetime care costs.

5. The \$413 Billion National Bill Translates to Tens of Thousands Per Family

Between medications, supplies, specialist visits, hospitalizations, and eventually LTC, diabetes is financially catastrophic without a plan. A patient with diabetic ESRD requiring skilled nursing care can easily produce \$200,000+ per year in costs — almost entirely uncovered without insurance or Medicaid.

6. Caregivers Need a Plan Too

The family caregiver supporting a parent or spouse through advanced diabetes complications faces sleep disruption, financial strain, career interruption, and serious mental health risk. LTC planning is also caregiver protection planning. Without it, the caregiver becomes the next patient.

7. Early Aggressive Control Is the Best Investment in Future Independence

The DCCT/EDIC and UKPDS trials established that intensive early glucose control dramatically reduces the lifetime incidence of retinopathy, nephropathy, and neuropathy. Every A1C point of reduction translates into reduced lifetime LTC probability. The CGM and AID revolution makes early, tight control more achievable than ever — and the GLP-1 era now adds cardiovascular and kidney benefits on top. The medical tools are better than they have ever been. The planning tools have to keep pace.

The most preventable tragedy in diabetes is the patient who was diagnosed at 50, never used a CGM, never tried a GLP-1, never had the LTC insurance conversation while insurable, and ended up with \$300,000 in family savings spent on home care and assisted living that could have been covered by a \$100,000 hybrid policy purchased ten years earlier. Almost every step in that sequence is preventable — if planning begins early.

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