Prevention of Complications in Diabetes

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Diabetes

Diabetes is a group of diseases characterized by high blood sugar levels, occurring when the pancreas doesn't produce enough insulin or the body can't effectively use the insulin it produces.

Types of Diabetes

- **Type 1 diabetes** – An autoimmune condition where the body destroys insulin-producing cells. Usually starts in childhood or young adulthood.
- **Type 2 diabetes** – The most common type; the body doesn't use insulin properly (insulin resistance) and may not make enough. Often linked to lifestyle and genetics.
- **Prediabetes** – Blood sugar levels are higher than normal but not yet Type 2 diabetes.
- **Gestational diabetes** – Develops during pregnancy and usually resolves after birth but increases future risk of Type 2 diabetes.
- **Type 3c diabetes** – Caused by damage to the pancreas from disease or surgery, reducing insulin production

- **LADA (Latent Autoimmune Diabetes in Adults)** – A slow-developing form of autoimmune diabetes that occurs in adults, similar to Type 1.
- **MODY (Maturity-Onset Diabetes of the Young)** – A genetic (monogenic) form that runs in families and affects insulin production.
- **Neonatal diabetes** – A rare genetic form appearing in infants under 6 months old; can be temporary or permanent.
- **Brittle diabetes** – A severe, unstable form of Type 1 diabetes with frequent extreme blood sugar swings

Why Diabetes Complications Matter

Diabetes affects over 537 million adults worldwide, and while the condition itself is manageable, uncontrolled blood sugar can damage blood vessels and nerves throughout the body.

The good news:
Most complications are preventable with proper management, regular monitoring, and lifestyle modifications. Understanding your risks empowers you to take control.

Early intervention and consistent care can dramatically reduce your risk of serious complications and help you maintain a high quality of life.

Diabetes Complications

Acute Complications (develop rapidly, require urgent care)

Diabetic Ketoacidosis (DKA): Lack of insulin → fat breakdown → ketone buildup → acidosis.

Symptoms: Thirst, frequent urination, nausea, abdominal pain, deep breathing.

Hyperglycemic Hyperosmolar State (HHS): Very high glucose (>600 mg/dL), severe dehydration, no ketones; common in type 2 diabetes.

Hypoglycemia: Low blood sugar due to medication.

Symptoms: Sweating, tremors, confusion, seizures, coma.

Diabetes Complications

Microvascular Complications (small vessel damage)

Retinopathy: Damage to retinal vessels → vision loss/blindness.

Nephropathy: Kidney damage → protein in urine → possible kidney failure.

Neuropathy: Nerve damage → numbness, pain, poor wound healing; can affect digestion, heart rate, and sexual function.

Diabetes Complications

Coronary Artery Disease (CAD): Heart artery narrowing → angina or heart attack.
Cerebrovascular Disease: Brain artery blockage → stroke.
Peripheral Artery Disease (PAD): Poor leg blood flow → pain, ulcers, risk of amputation.

In short:
Acute: Sudden, life-threatening (DKA, HHS, hypoglycemia).
Microvascular: Eye, kidney, nerve damage.
Macrovascular: Heart, brain, limb vessel disease

Major Complications

Hypoglycaemia

Dangerously low blood sugar requiring immediate attention

DKA

Diabetic ketoacidosis - a serious metabolic emergency

Nephropathy

Kidney damage that can progress to failure

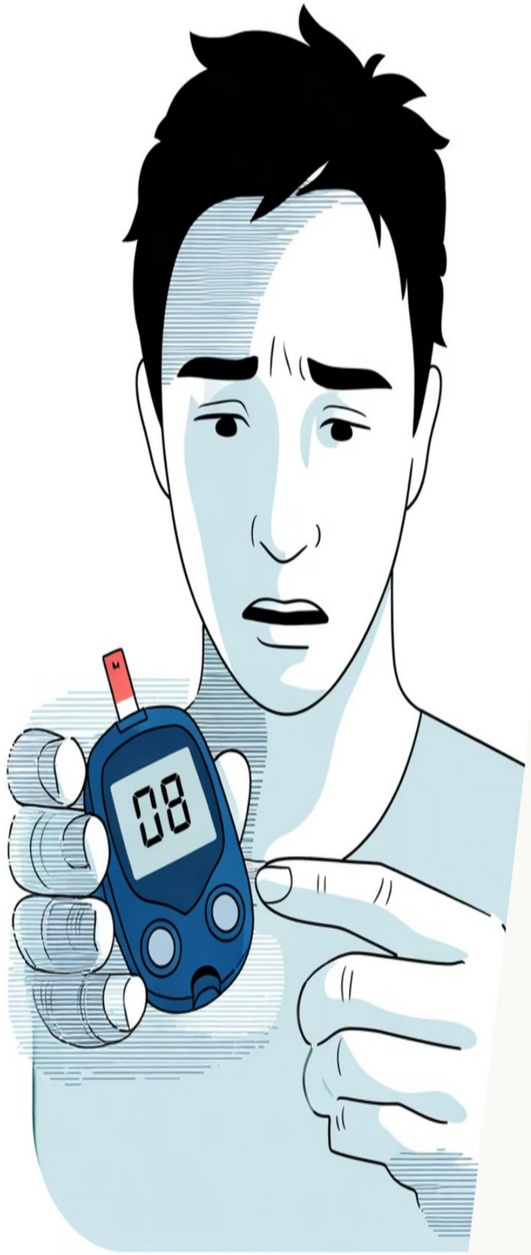
Retinopathy

Eye damage potentially leading to vision loss

Neuropathy

Nerve damage causing pain and sensory loss

Each of these complications has specific warning signs and proven prevention strategies. Let's explore how to protect yourself from each one.



Hypoglycaemia: When Blood Sugar Drops Too Low

1

What It Is

Blood glucose below 70 mg/dL causing symptoms like shakiness, sweating, confusion, and in severe cases, loss of consciousness.
Mild- Diaphoresis, Pallor, Parasthesia, Palpitations, tremors, anxiety
Moderate- Confusion/disorientation, Cold ,clammy skin,Tremors, Blurred vision
Severe- Seizures ,Loss of consciousness

2

Risk Factors

- Taking too much insulin or diabetes medication and added sugars
- Skipping meals or eating less than planned
- Increased physical activity without adjusting intake
- Alcohol consumption without food

3

Prevention Strategies

- Monitor blood sugar regularly, especially before driving
- Carry fast-acting glucose (tablets, juice, candy)
  - Coordinate meals with medication timing
  - Adjust insulin doses for exercise with your healthcare team
  - Educate family

DKA: A Serious Metabolic Emergency

Understanding DKA

Diabetic ketoacidosis occurs when your body breaks down fat too quickly, producing toxic ketones. This life-threatening condition requires immediate medical attention. Blood Sugar level >250mg/dl

Causes / Triggers:

Missed insulin doses
Infection or illness
Stress, surgery, or trauma
Undiagnosed type 1 diabetes

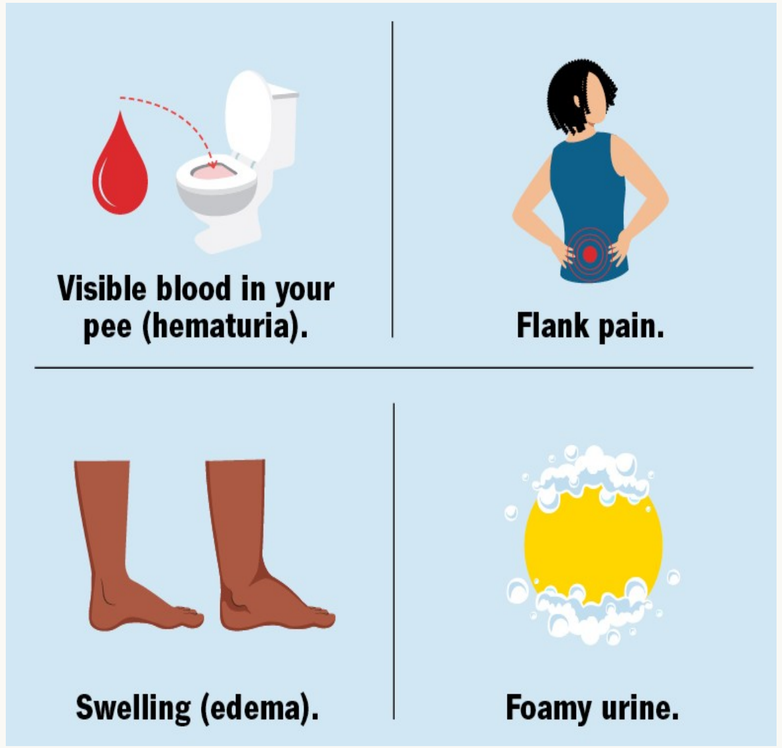
Warning Signs:

Excessive thirst, frequent urination
Nausea, vomiting, abdominal pain
Fruity (acetone) breath odor
Deep, rapid breathing (Kussmaul respirations)
Confusion or drowsiness

Prevention:

Never skip insulin doses.
Monitor blood glucose and ketones, especially during illness
Follow “sick-day rules” (maintain hydration, adjust insulin)
Seek medical help early for vomiting or high glucose
Educate patients and caregivers on early signs

Nephropathy: Protecting Kidneys



What Is Nephropathy?

High blood sugar damages the tiny blood vessels in your kidneys that filter waste. Signs & symptoms- Proteinuria, reduced urine output, edema & increased creatinine.

Key Risk Factors

Poor blood sugar control, high blood pressure, family history of kidney disease, smoking, and long diabetes duration all increases risk significantly.

Prevention Strategies

Maintain HbA1c below 7%, keep blood pressure under 130/80 mmHg, limit protein and salt intake, take ACE inhibitors or ARBs as prescribed, and get annual urine albumin tests.

Retinopathy: Safeguarding Vision

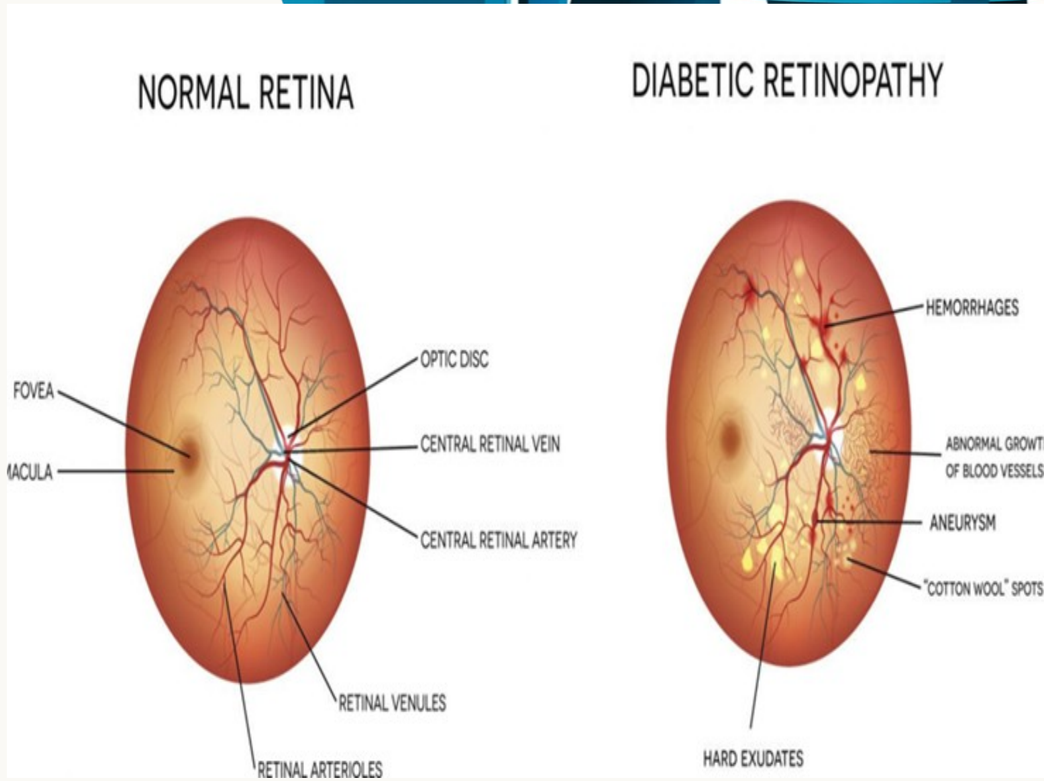
Understanding Eye Damage

Diabetic retinopathy damages the blood vessels in the retina, potentially causing blindness. It's the leading cause of vision loss in working-age adults.

Early stages have no symptoms, making regular eye exams essential for catching problems before permanent damage occurs.

Prevention Essentials

- Comprehensive dilated eye exam annually
- Blood sugar control (HbA1c < 7%)
- Blood pressure management below 130/80
- Control cholesterol levels with statins if needed
- Don't smoke - it accelerates retinal damage
- Report vision changes immediately



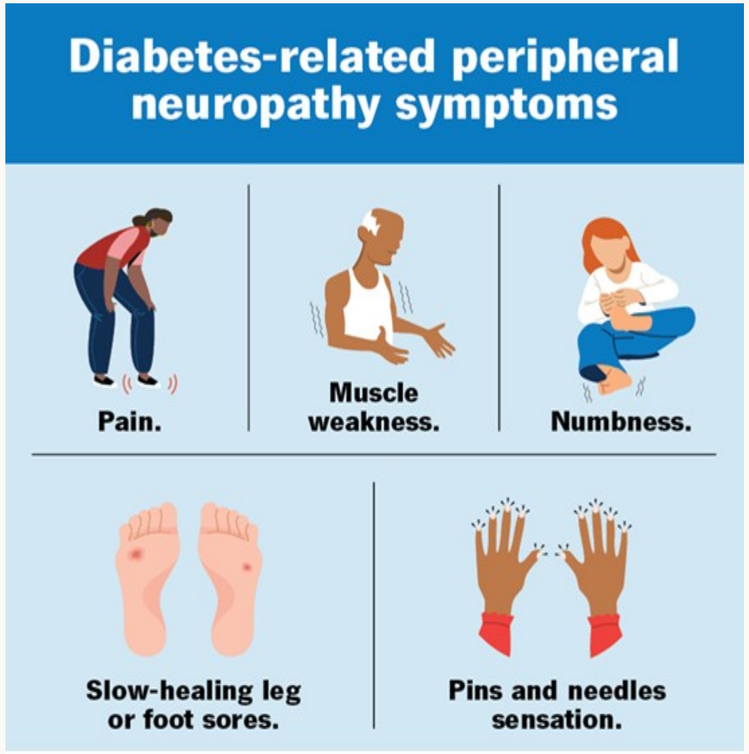
Neuropathy: Preventing Nerve Damage

What Happens

High glucose damages nerves, especially in feet and hands, causing pain, tingling, or numbness

Early Detection

Report numbness or pain immediately - early treatment prevents progression and ulcers



Major Risks

Poor glycemic control, long diabetes duration, high cholesterol, smoking, alcohol use

Prevention

Maintain target blood sugar, inspect feet daily, wear proper footwear, get annual foot exams

Comprehensive Prevention Strategy

Preventing complications requires a multi-faceted approach. These interconnected strategies work together to protect your health:

1

Glycemic Control

Target HbA1c below 7% through medication adherence, carbohydrate counting, and continuous glucose monitoring when appropriate

2

Blood Pressure Management

Keep BP under 130/80 mmHg with ACE inhibitors, ARBs, or other medications plus sodium reduction

3

Lipid Control

Manage cholesterol with statins, targeting LDL below 100 mg/dL to reduce cardiovascular risk

4

Healthy Lifestyle

Exercise 150 minutes weekly, eat Mediterranean-style diet, maintain healthy weight, quit smoking

5

Regular Screening

Annual comprehensive exams for eyes, feet, kidneys, and cardiovascular system catch problems early

6

Daily Foot Care

Inspect feet daily, moisturize skin, trim nails carefully, wear protective footwear always

Essential Screening & Monitoring Schedule

1

Daily

Blood glucose monitoring 2-4+ times, foot inspection, medication adherence, healthy eating

2

Every 3 Months

HbA1c test, healthcare provider visit to review blood sugar patterns and adjust medications

3

Annually

Comprehensive dilated eye exam, foot examination with monofilament test, urine microalbumin test, lipid panel, kidney function tests (creatinine, eGFR)

4

As Recommended

Blood pressure checks at every visit, dental cleanings twice yearly, influenza vaccine yearly, cardiovascular screening as indicated

Key Takeaway: Prevention works! With consistent monitoring, medication adherence, and healthy lifestyle choices, you can dramatically reduce your risk of serious diabetes complications. Partner with your healthcare team, stay informed, and take control of your health today.


Thank
you!