OBJECTIVES

At the conclusion of this presentation, the participant will be able to:

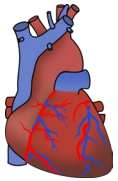
1. Recognize key aspects of diabetes diagnosis and management.
2. Apply general principles of diabetes management to practice.

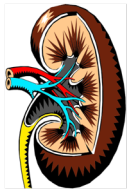
Case for Change

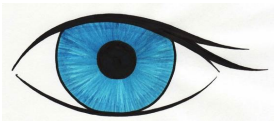
Every 23 seconds someone is diagnosed with diabetes.
This means 34.3 million people in the U.S. have diabetes
(1 of 10 people).

DIABETES IS DEADLY

In the U.S., diabetes is the **7th leading cause of death**.







For adults with diagnosed diabetes:

- 69% had high blood pressure, and 44% had high cholesterol.
- 39% had chronic kidney disease, and 12% reported having vision impairment or blindness.
- Diabetes was highest among Black and Hispanic/Latino adults, in both men and women.

https://www.cdc.gov/diabetes/library/spotlights/diabetes-facts-stats.html#:~:text=Key%20findings%20include%3A,t%20know%20they%20have%20it.

Diabetes is as invisible as it is deadly, impacting our families and our communities. Every 23 seconds someone is diagnosed with diabetes. Diagnosis means you are much more likely to go blind. To lose a limb. To die of a heart attack or a stroke. Millions more are at high risk of developing diabetes.

In 2019, about 1.4 million new cases of diabetes were diagnosed

96 million American adults
(more than 1 in 3)
have prediabetes

More than 8 in 10 adults
with prediabetes
don’t know they have it

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Clinical Risk Factors

Family history

- 2 to 3 times increased risk for Individuals with a mother, father, sister or brother has/had diabetes (first-degree relative)
- 5-6 times increase in risk for those with both a maternal and paternal history

Ethnicity

- Elevated risk for American Indian/Alaskan Natives, Asian, Hispanic, and Black Americas
- Disparities may be related, in part, to modifiable risk factors along with neighborhood, psychosocial, socioeconomic, and behavioral factors during young adulthood

Obesity

- More highly correlated to the risk of developing diabetes than age or race/ethnicity
- 100-fold increased risk for BMI > 35 kg/m^2 compared to < 22 kg/m2

Fat distribution

- Degree of insulin resistance highest in those with “central”/abdominal/”male type” obesity

Robertson RP. Type 2 diabetes mellitus: Prevalence and risk factors.. In: UpToDate, Mulder JE (Ed), UpToDate, Waltham, MA, 2022

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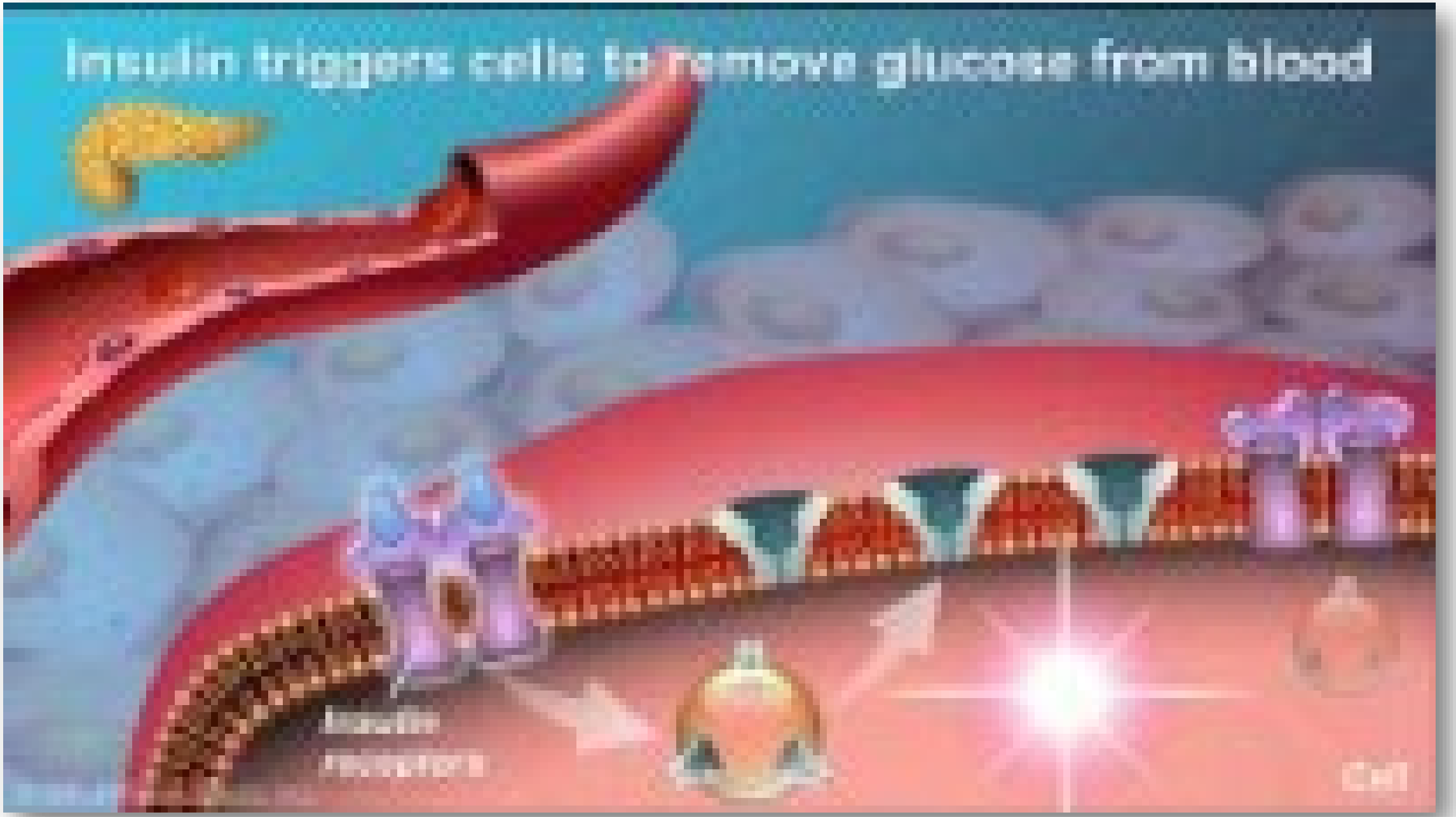
What is Diabetes?

Diabetes is a **disorder of our body's metabolism.** Metabolism is the chemical processes in our cells that produce energy needed to sustain life.

As a part of metabolism, blood sugar compounds like **starches and carbohydrates are broken down** to provide heat and energy for our body.

On the next slide, you are going to watch a short video to better understand type 2 diabetes.



Source: Prime Medic Inc., Postgraduate Institute for Medicine, and Annenberg Center for Health Sciences at Eisenhower
https://www.youtube.com/watch?v=JAjZv41iUJU

Complications

Patients diagnosed later in their disease course may present with **complications**

- *Macrovascular* or large blood vessel disease (atherosclerosis)
- *Microvascular* or small blood vessel disease (eye disease, kidney disease, nerve disease)

Onset and **progression can be delayed** with

✓Glycemic or good blood sugar control

✓Appropriate management of other diagnoses

(e.g., hypertension [high blood pressure], dyslipidemia [high lipids/fats], etc.)

Routine screenings can assist with **early detection**

✓Comprehensive foot exam

✓Eye exam

✓Urinalysis

Wexler DJ. Overview of general medical care in nonpregnant adults with diabetes mellitus. In: UpToDate, Mulder JE (Ed), UpToDate, Waltham, MA, 2020..

Type 1 and Type 2 Diabetes

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Type 1

- **Causes**: The body does not produce **any** of the hormone insulin
- **Number of people**: 5% of patients with diabetes
- **Treatment**: Patient must take insulin every day

Type 2

- **Causes**: Either the body does not produce enough insulin or the cells do not recognize the insulin that is being made, so the insulin can't work properly
- **Number of people**: 95% of people with diabetes
- **Treatment**: Diet and lifestyle modifications and anti-diabetes medications; some patients will eventually need to take insulin

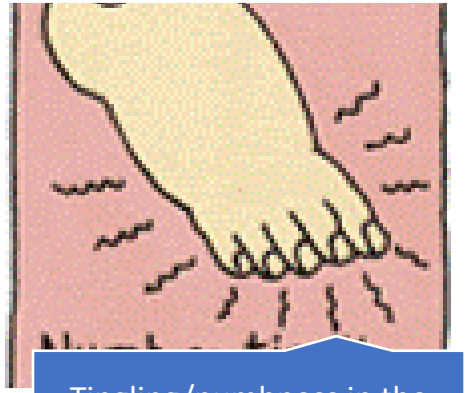
Symptoms of Diabetes

Unusual thirst

Frequent urination

Blurred vision

Fatigue



Tingling/numbness in the extremities

Unexplained weight loss

Frequent infections, including bladder infections

Wounds that won't heal

Diagnosing Diabetes

- Several tests that measure blood sugar levels are used to diagnose Diabetes
- The most common are fasting blood sugar (FBS) and Hemoglobin A1c (A1c)

	Fasting Blood Sugar (FBS)	Hemoglobin A1c (HbA1c or A1c)
How is it measured?	From blood drawn after the patient fasts overnight or has not eaten for approximately 8 hours	Blood draw
What does it measure?	Blood glucose	Average percent of circulating blood glucose over the past 3 or 4 months
What is a normal result?	<100 mg/dL	≤5.6%
What is the result for a patient with diabetes?	126 mg/dL or higher	≥6.5%

Medical Management of Type 2 Diabetes

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Oral Medications

- **Metformin** (brand names include Glucophage) is the most commonly used first medication. It works by decreasing the amount of glucose produced by the liver
- **Additional medications** may be added to Metformin and include:
  - Glucotrol
  - Actos
  - Victoza
  - Amaryl
  - Invokana
  - Januvia
  - Avandia
  - Farxiga
  - Onglyza

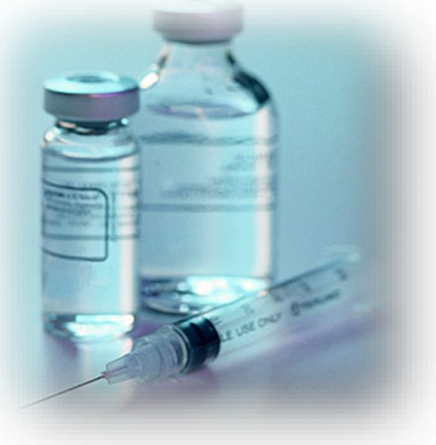
- These anti-diabetes medications work by increasing the ability of the body's cells to recognize and respond to insulin, reducing glucose production by the liver and/or reducing glucose levels in the blood

Medical Management of Type 1 or 2 Diabetes

Injectable and other modes of medication

Insulin is used if the patient ‘s diabetes is not controlled by anti-diabetes medications alone.

- There are several methods of insulin absorption, such as injectables, inhalants, pumps, and other devices
- **Injectables** are the most common route of insulin absorption; some common methods include:
  - Rapid acting; Humalog, Novolog
  - Short acting: Humulin R, Novolin R
  - Intermediate acting: NPH (Humulin N, Novolin N)
  - Long acting: Levemir, Lantus, Toujeo



- Examples of **inhalants** include:
  - Afrezza
- Examples of **pumps and devices** include:
  - Insulin pumps: small, computerized devices that help manage blood sugar; these devices release rapid-acting insulin into the body through a small catheter

Medical Management of Diabetes

- It is important for patients to engage in a **self-management plan** to control their blood sugar
- Dietary changes and adding exercise can help anti-diabetes medications to be more effective
- It is also important for patients to make sure that they avoid low blood sugar (hypoglycemia)

Symptoms of Hypoglycemia

- Shakiness
- Irritability or impatience
- Nervousness or anxiety
- Hunger and nausea
- Headaches
- Rapid/fast heartbeat

Early Warning Signs (Red Flags)

- Blurred/impaired vision
- Shakiness
- Irritability or impatience
- Nervousness or anxiety
- Hunger and nausea
- Headaches
- Rapid/fast heartbeat
- Confusion, including delirium
- Tingling or numbness in the lips or tongue
- Seizures
- Lack of coordination
- Unconsciousness

Serious/Severe Symptoms

Managing Hypoglycemia

Consume 15-20 grams of glucose or simple carbohydrates with

- Glucose tablets or gel tube (follow package instructions)
- 2 tablespoons of raisins
- 1 tablespoon sugar, honey, or corn syrup
- 4 ounces (1/2 cup) of juice or regular soda (not diet), 8 ounces of nonfat or 1% milk
- Hard candies, jellybeans, or gumdrops (see package to determine how many to consume)

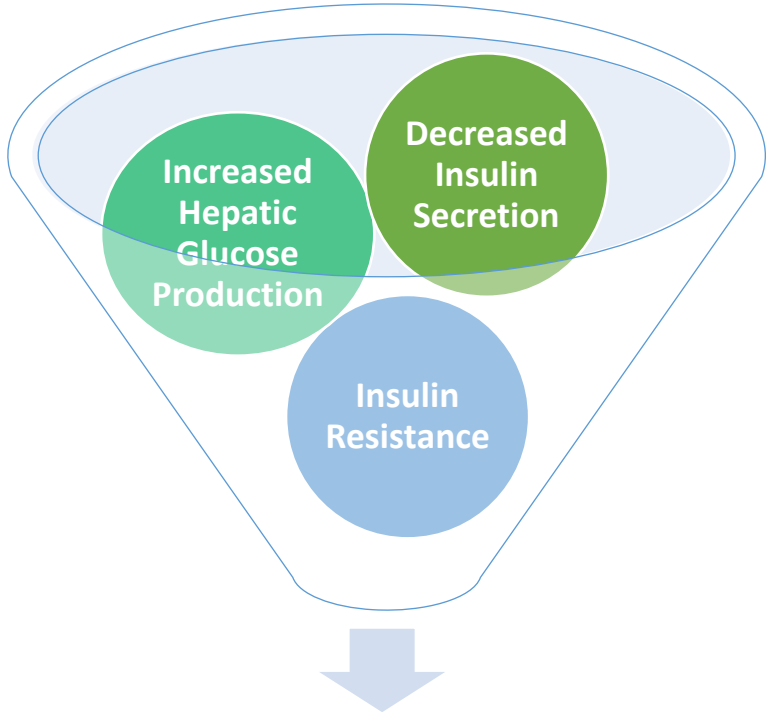
Recheck your blood glucose after 15 minutes

If hypoglycemia continues, repeat

Once blood glucose returns to normal, **eat a small snack** if your next planned meal or snack is more than an hour or two away

Drug-Induced Hyperglycemia

For Awareness



- Thiazide diuretics
  (e.g., hydrochlorothiazide [HCTZ])
- Atypical antipsychotics
  (e.g., quetiapine)
- Glucocorticoids
  (e.g., prednisone)
- Select beta-blockers
  (e.g., metoprolol)

Robertson RP and Udler MS. Pathogenesis of type 2 diabetes mellitus. In: UpToDate, Mulder JE (Ed), UpToDate, Waltham, MA, 2022.

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Approach to INITIAL Therapy

When to initiate therapy

- The earlier, the better
- Preferably at the time of diagnosis for most patients presenting with A1C at or above target levels
- A 3-month trial of lifestyle modification prior to initiation may be warranted for select patients

Considerations

- Patient presentation – symptoms, comorbidities, baseline A1C
- Treatment goals
- Patient preferences
- Medication efficacy, tolerability, and cost

Wexler DJ. Initial management of hyperglycemia in adults with type 2 diabetes mellitus. In: UpToDate, Mulder JE (Ed), UpToDate, Waltham, MA, 2022.
Standards of Medical Care in Diabetes – 2022 Abridged for Primary Care Providers. American Diabetes Association. Available from: https://diabetesjournals.org/clinical/article/40/1/10/139035/Standards-of-Medical-Care-in-Diabetes-2022. Accessed May 14, 2022..

Comprehensive Lifestyle Modification

Where Does it Fit?

Prevention

- Recommended first-line therapy

Treatment

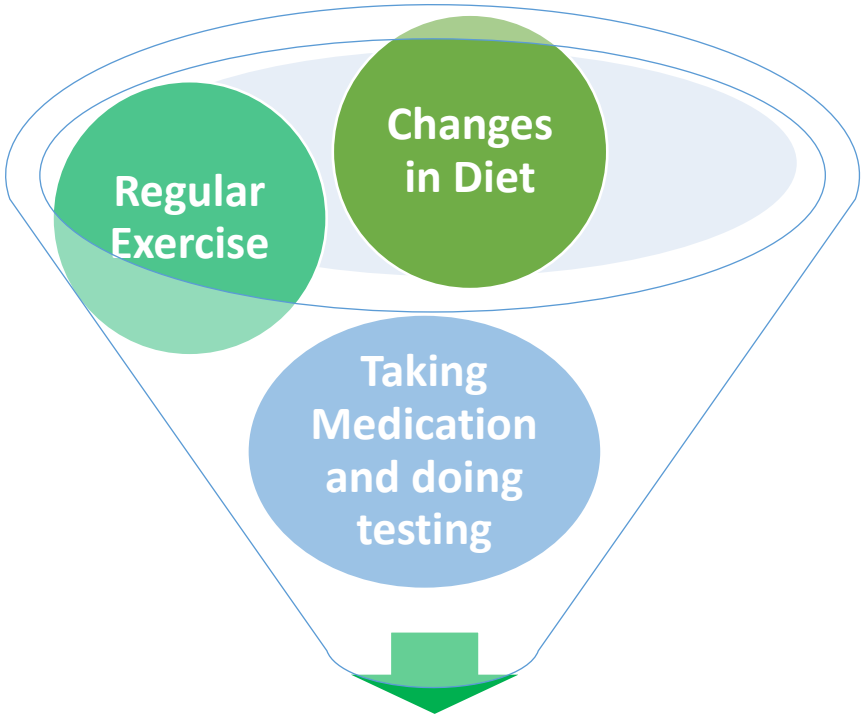
- A 3-month trial of lifestyle modification prior to initiation of pharmacotherapy may be appropriate for select patients

Logistics

- ≥ 5% weight loss
- ≥ 150 min/week moderate- to vigorous-intensity physical activity

Wexler DJ. Initial management of hyperglycemia in adults with type 2 diabetes mellitus. In: UpToDate, Mulder JE (Ed), UpToDate, Waltham, MA, 2022.
Standards of Medical Care in Diabetes – 2022 Abridged for Primary Care Providers. American Diabetes Association.
Available from: https://diabetesjournals.org/clinical/article/40/1/10/139035/Standards-of-Medical-Care-in-Diabetes-2022. Accessed May 14, 2022..
Robertson RP. Prevention of type 2 diabetes mellitus.. In: UpToDate, Mulder JE (Ed), UpToDate, Waltham, MA, 2022.

Potential Lifestyle Changes and Self-management Goals



Maintaining

- Healthy blood sugar levels
- Healthy weight
- Blood pressure below 140/90 mmHg

Getting regular

- Foot exams to check for neuropathy
- Eye exams to check for retinopathy

Care team members can help patients by asking
“ Is there anything you would like to do for your health in the next week or two? ”

Barriers to Lifestyle Changes

- Financial Limitations
- Health Literacy
- Emotional Impact and Conflict
- Lack of Social Support
- Language and Cultural Differences
- Environment and Physical Surroundings
- Job Flexibility

Case holder Role Addressing Barriers

Health literacy

Use plain language and inquire how consumers learn best

Be sensitive to literacy and health literacy challenges

How to identify challenges

- Making excuses, not attending appointments, not taking medications as prescribed

Open the door to and normalize questions

- “Many consumers have questions about their diabetes, what questions do you have?”

Use consumer friendly communication styles

- Slow down and pace your discussions
- Demonstrate curiosity
- Limit the amount of new information. (1-2 new, no more than 3 at a time)

Case Holder and Consumer Check-in

Be inquisitive – inquire on the consumers understanding of what diabetes is and how have they have managed so far.

Include:

- **How to take medications** by mouth, injections (removing the internal cap from the insulin pen), how often, and when.
- Has the consumer had **any challenges with filling their prescription** (financial challenges, getting it renewed)?
- Does the consumer **understand the importance of regular blood pressure checks** and what their blood pressure should be?

Preparing For Appointments

Review with the consumer actions to prepare for their health care appointment to include:

Importance of scheduling an appointment and arranging transportation

Does the patient understand how often they should be seen for the diabetes, and the need to schedule appointments for preventive care?

What to bring

1. List of all medications they are taking

   All prescribed and others
2. Blood sugar readings

   Prepare the consumer to share any challenges with low or high blood sugars
3. Any equipment they use

   If they are unsure, have the consumer review this with the provider team

How to ask about concerns

Making sure the consumer understands their diagnosis and what the treatment is

If there is a knowledge gap, encourage the patient to review this with their primary care provider team

Identifying and Managing Risk & Safety

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Inquire on the consumers understanding

Do they know what diabetes is and how they have managed their diabetes so far?

Where there is a knowledge deficit or concern

Direct them to the person who can assist them and update the primary care provider of the concern.

Identify risk or safety concerns

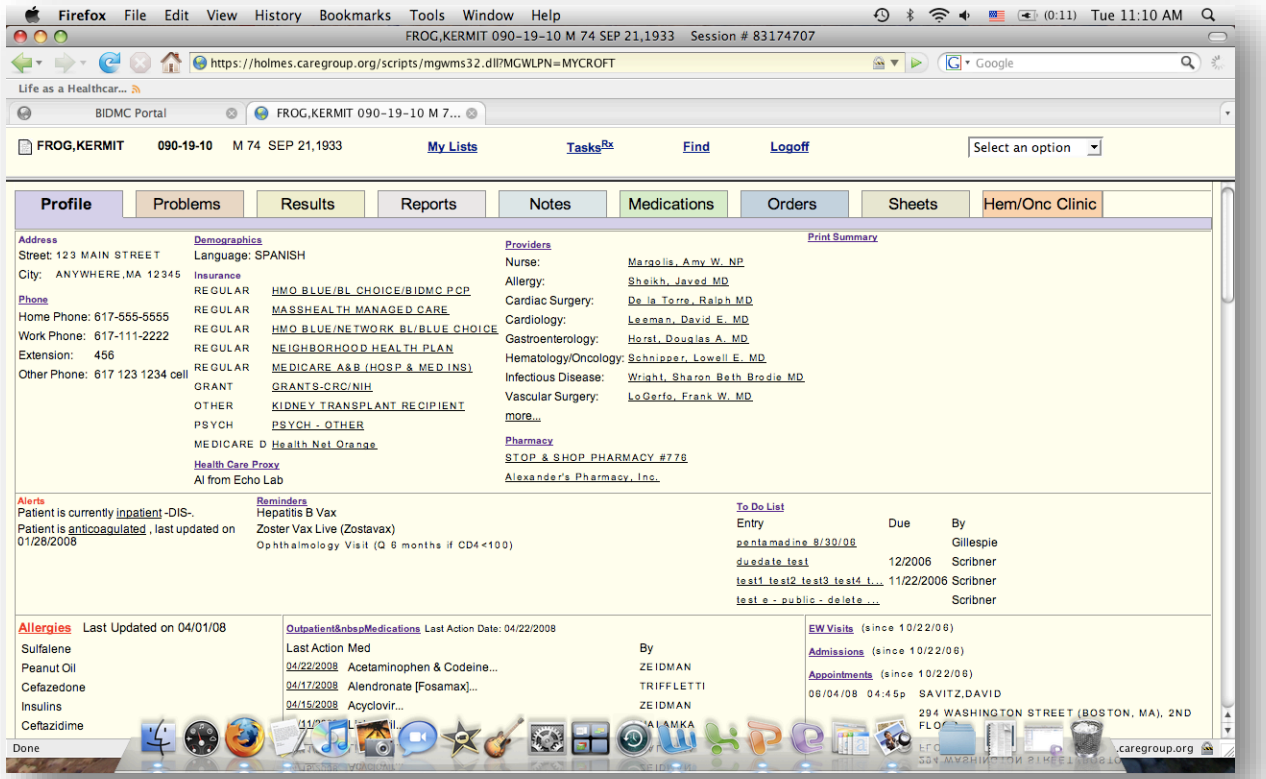
Inquire with the consumer how they recognize when they have low blood sugars, and what do they do.

Does the consumer know when and how to contact their primary care provider? If not, provide guidance.

Quality Metrics in the Practice

Frequency	Test	Impact
Annual	Micro-albumin testing, to detect protein in the urine	The first indication of kidney disease
	Foot exam for neuropathy, to detect foot sores	Foot sores could result in amputation if not managed
	Retinal eye exam by ophthalmologist or optometrist	Diabetes is most common cause of blindness and exams are necessary to avoid complications
Every Visit	A1C measurement (goal below 6.5)	Gives good estimate of blood sugar control over past 2-3 months
	Blood pressure (goal systolic below 140; diastolic below 90)	This is as important as controlling blood sugar in patients with diabetes.

How does the patient's primary care provider manage diabetes in the practice?



Use of the registry tool

Pre-visit planning

How can care teams support process for diabetes management?

Previsit Planning	Plan 1 to 2 weeks ahead of the visit to ensure all vital tests are completed and referrals placed to ensure the provider has the vital results to support for the best care for the patient and avoid additional visits and rework.
Morning Huddles	Highlight with provider the exams that are pending and need to be completed and additional ways to support the provider
Support with Foot Exam	If patient is overdue for the foot-exam, please ask patient to take off their shoes. Your practice manager and provider will help you gain competency in the foot exam as appropriate.
Eye Exam Referral	If patient is overdue for the eye exam, please work with your provider to ensure the referral is made to ophthalmology/optometry
Support patients in their Self-Management Goals	After the provider has come up with the plan of care – care team member asks “Is there anything you would like to do for your health in the next week or two?
Debrief	Huddle with the provider and care team members to ensure we provide continuously improve the process and provide feedback on patient care questions

Resources

- American Diabetes Association
  - Diabetes Food Hub
  - Blog
- Centers for Disease Control and Prevention
  - Fact Sheets
- Association of Diabetes Care & Education Specialists
- http://www.mqic.org/guidelines.htm

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Thank You

Please email Sue.Vos@miccsi.org with any questions.