Diabetes Education Services Online University Presents:

ADA Standards of Care Updates 2024 Level 2

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Pronouns: She, her, hers
President, Diabetes Education Services

Bryanna is here to Help!

Bryanna Sabourin

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Certification Pathway Coach &
Customer Happiness Expert

If you have questions, you can chat with Bryanna at www.DiabetesEd.net or call 530 / 893-8635 or email at info@diabetesed.net

Land Acknowledgment

- We acknowledge and are mindful that Diabetes Education Services stands on lands that were originally occupied by the first people of this area, the Mechoopda, and we recognize their distinctive spiritual relationship with this land, the flora, the fauna, and the waters that run through this area.

Diabetes Education Services Inclusion Statement

Based on the IDEA Initiative

- Inclusion
- Diversity
- Equity
- Access

- We are committed to promoting diversity and inclusion in our educational offerings.
- We recognize, respect, and include differences in ability, age, culture, ethnicity, gender, gender identity, sexual orientation, size, and socioeconomic characteristics.
- Our goal is to promote equity and access, acknowledging historical and institutional inequities.
- We offer a safe space when approached with cultural humility and an openness to the cultivation of cultural competence. Beliefs, experiences, identities, and differences in abilities, age, size, socio-cultural / socioeconomic characteristics, and political affiliations are considered and respected.

Coach Bev has no Conflict of Interest

- She’s not on any speaker's bureau
- Does not invest or have any financial relationships with diabetes related companies.
- Gathers information from reading package inserts, research and articles
- The ADA Standards of Medical Care is main resource for course content

Outcomes and Objectives

Learning Outcome:

Participants will identify updates and articulate recommendations from the 2024 ADA Standards of Care that can be applied to their practice.

- **Objectives:**

1. State the changes and updates to the annual ADA Standards of Medical Care in Diabetes.
2. Identify key elements of the position statement.
3. Discuss how diabetes care and education specialists can apply this information in their clinical setting

Standards Coupled with Compassion

17. Diabetes Advocacy

- People living with diabetes deserve to be free from the burden of discrimination.
- We need to all be a part of advocating to ensure a healthy and productive life for people living with diabetes.
- Decrease barriers to diabetes self-management.

Diabetes Care needs to meet outlined standards in all settings.

- In school setting
- Young children in childcare
- For occupational drivers
- In work settings
- In Correctional Institutions

17. Diabetes Advocacy: *Standards of Care in Diabetes—2024*

FREE

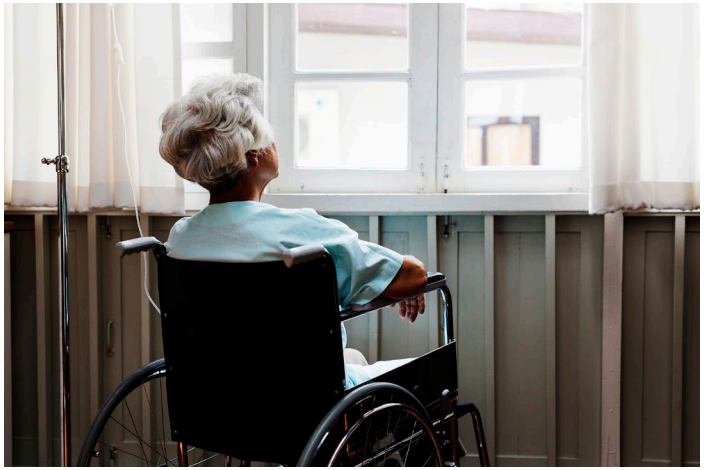
1. Improving Care and Promoting Health in Populations

- "Health outcomes of a group of individuals -
  - including the distribution of health outcomes within the group"
- These outcomes can be measured in terms of health:
  - mortality, morbidity, health, and functional status
  - disease burden
    - (incidence and prevalence)
  - behavioral and metabolic factors
    - (exercise, diet, A1C, etc.)

ADA Standards 2024

Cost of Diabetes in 2022

- $413 billion, including $307 billion in direct health care costs and $106 billion in reduced productivity.
- People living with diabetes also face financial hardship, which is correlated with higher A1C, diabetes distress, and depressive symptoms .



1. Improving Care and Promoting Health in Populations: *Standards of Care in Diabetes—2024* FREE

American Diabetes Association Professional Practice Committee

Abstracts | View article | PDF

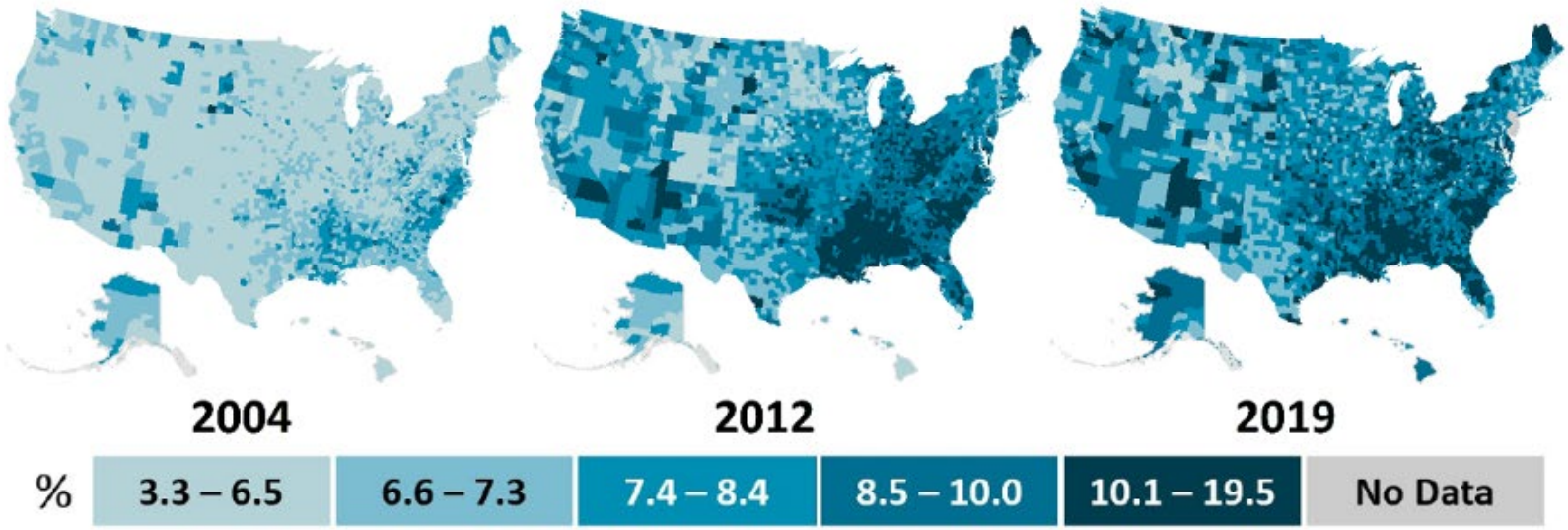
Topics: chronic care, chronic disease, food insecurity, guidelines, health personnel

Diabetes Care December 2023, Vol.47, S11-S19. doi:https://doi.org/10.2337/dc24-S001

Type 2 Diabetes in America 2024

- 11.3% with Diabetes - 37 million adults
  - 23% don't know they have it
- 38% with Prediabetes – 96 million adults

Figure 3. Age-adjusted, county-level prevalence of diagnosed diabetes among adults aged 20 years or older, United States, 2004, 2012, and 2019

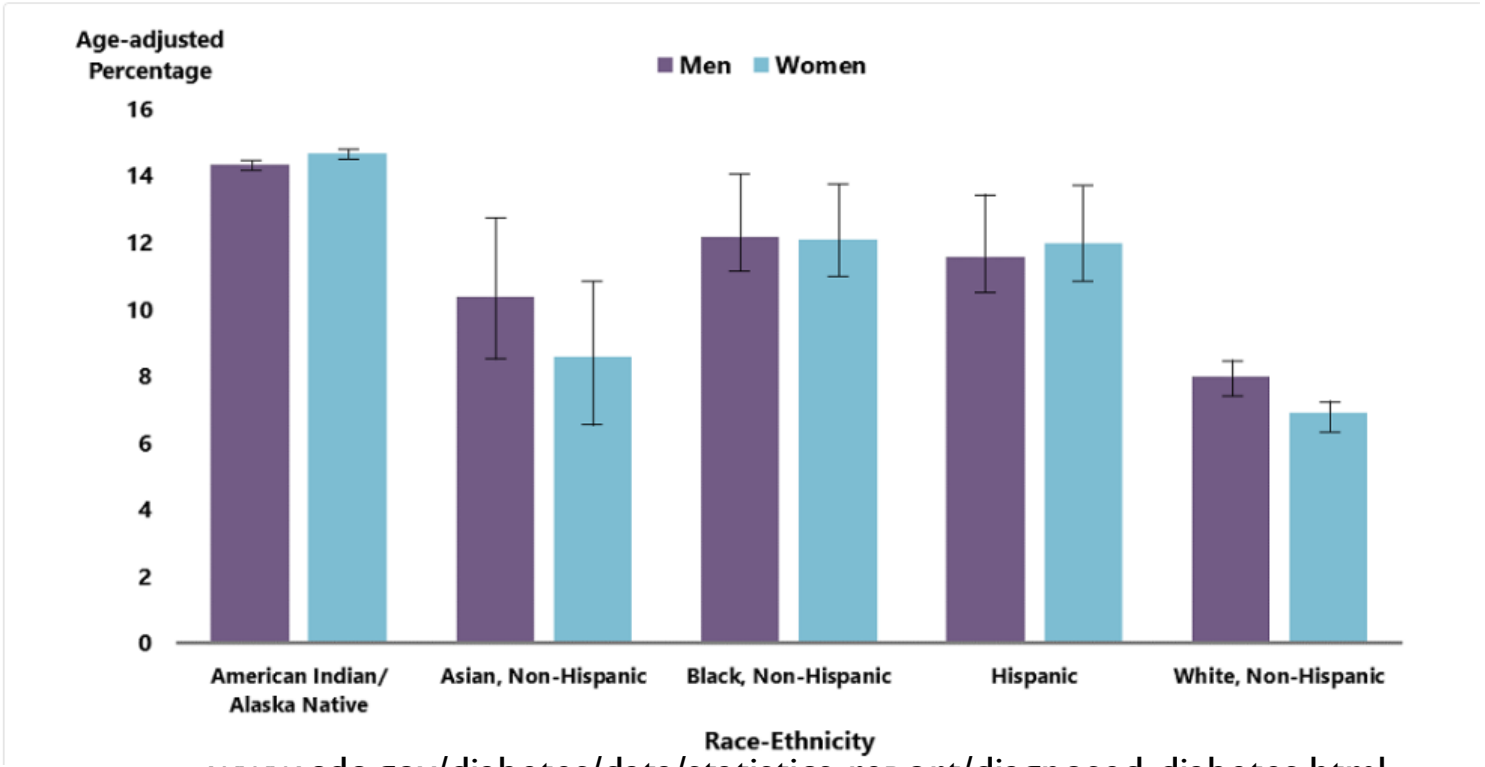


Data sources: US Diabetes Surveillance System; Behavioral Risk Factor Surveillance System.

Diabetes Prevalence by Ethnic Group

- For adults, diabetes prevalence highest among:
  - American Indians and Alaska Natives (14.5%),
  - Non-Hispanic Blacks (12.1%),
  - People of Hispanic origin (11.8%),
  - Non-Hispanic Asians (9.5%)

Figure 2. Age-adjusted estimated prevalence of diagnosed diabetes by race/ethnicity group and sex for adults aged 18 years or older, United States, 2018–2019



www.cdc.gov/diabetes/data/statistics-report/diagnosed-diabetes.html

Status of Diabetes Care

- In 2015–2018, U.S. community-dwelling adults with diabetes achieved:
  - A1C <7% by 50.5%
    - 75.4% achieved A1C <8%.
  - BP target of <130/80 achieved by 47.7%
    - 70.4% achieved blood pressure <140/90 mmHg.
  - Lipid control (non-HDL cholesterol) <130 mg/dL, achieved by 55.7%
- 22.2% met targets for all three risk factors
- Many not receiving adequate lifestyle or pharmacotherapy.

1. Improving Care and Promoting Health in Populations: *Standards of Care in Diabetes—2024*

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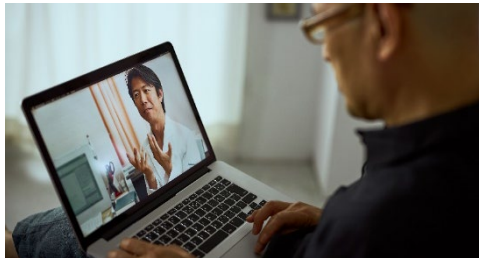
Address Barriers to Self Management

- Design and deliver DSMES with ultimate goal of **health equity** across all populations.
- **Barriers exist** within health system, payer, health care professional & individual.
- **Address barriers** through innovation, including community health workers, telehealth, other digital health solutions.
- **Consider social determinants of health** in the target population when designing care.

Source: Institute for Clinical Systems Improvement, Going Beyond Clinical Walls: Solving Complex Problems (October 2014)



5. Facilitating Positive Health Behaviors and Well-being to Improve Health Outcomes: *Standards of Care in Diabetes—2024* FREE

American Diabetes Association Professional Practice Committee

Social Determinants of Health

- The conditions in which people:
  - Play
  - Live
  - Work
  - Learn
  - Pray
- Directly affects their health risks and outcome and *is often out of the control of the individual.*

AADE Population Health & Diabetes Educators Evolving Role 2019

What is Type 2 Diabetes?

- Complex metabolic disorder ….

  (Insulin resistance and deficiency)

with social, behavioral and environmental risk factors unmasking the effects of genetic susceptibility.

New Diagnosis?
Call 800 – DIABETES to request "Getting Started Kit"
www.Diabetes.org

American Diabetes Association

Poll Question 1

- LS has type 1 diabetes and has lost weight. LS appears distraught and says that their work hours are dramatically reduced and paying bills has been a struggle. They are on the verge of being evicted. What is the most important action by the diabetes specialist?

- A. Provide a depression screening.
- B. Connect LS with social services.
- C. Reassure LS that they can do this.
- D. Ask about disordered eating.

Food Insecurity impact on self care

- Lower medication adherence
- Depression, distress
- Elevated glucose
- More hospital visits
- Interventions
  - Food prescription programs
  - Food banks & other


1. Improving Care and Promoting Health in Populations: *Standards of Care in Diabetes—2024*

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- Treatment priorities
  - Decrease severe hyper and hypoglycemia
  - Affordable medication plan
  - Connect with social services programs

Assess for Food Insecurity

- Any member of the health care team can screen for food insecurity using The Hunger Vital Sign.
- Households are considered at risk if they answer either or both of the following statements as “often true” or “sometimes true”


1. Improving Care and Promoting Health in Populations: *Standards of Care in Diabetes—2024*

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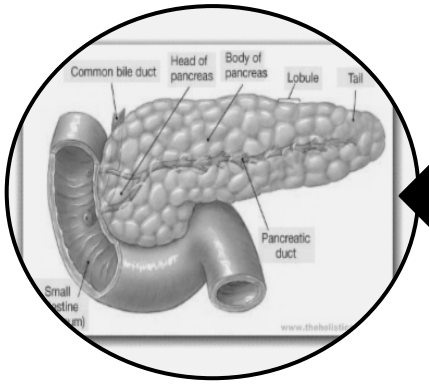
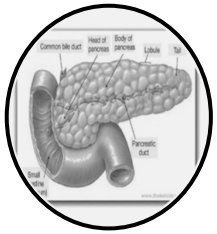
- “Within the past 12 months, we worried whether our food would run out before we got money to buy more.”
- “Within the past 12 months, the food we bought just didn’t last, and we didn’t have money to get more.”

2. Diagnosis and Classification and of Diabetes Natural History of Diabetes



Yes!



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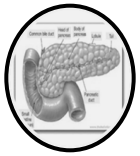

No diabetes

FBG <100

Random <140

A1c <5.7%

Prediabetes

FBG 100-125

Random 140 - 199

A1c ~ 5.7- 6.4%

50% working pancreas

Diabetes

FBG 126 +

Random 200 +

A1c 6.5% or +

20% working pancreas

Development of type 2 diabetes happens over years or decades

Poll Question 2

- The clinic where JR works as a Diabetes Specialist wants to set up a screening program to identify people with undiagnosed prediabetes or diabetes based on risk status. According to the 2024 ADA Standards of Care, which of the following indicates that an individual is at increased risk of having prediabetes and diabetes and needs further testing?

A. A 14-year-old whose cousin with type 1 diabetes.
B. A 24-year-old who leads a sedentary lifestyle and father has history of heart disease.
C. A 26-year-old who just delivered a baby three weeks early.
D. A 29-year-old newly started on antipsychotic therapy.

Pre Diabetes & Type 2- Screening Guidelines (ADA 2024 Clinical Practice Guidelines)

1. Start screening all people at age 35.
2. Screen at any age if BMI ≥ 25 (Asians BMI ≥ 23) plus one or > additional **risk factor**:

- First-degree relative w/ diabetes
- Member of a high-risk ethnic population
- Habitual physical inactivity
- *PreDiabetes
- History of heart disease
- *Taking high risk meds; antiretrovirals, 2nd generation antipsychotics or steroids
- History of pancreatitis

2. Diagnosis and Classification of Diabetes: *Standards of Care in Diabetes—2024* FREE

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Second-Generation Antipsychotic Meds and Diabetes Risk

- People taking these meds require frequent monitoring due to increased risk of hyperglycemia and other metabolic effects.
- There is a range of effects across second-generation antipsychotic medications;
  - Olanzapine, haloperidol, clozapine, quetiapine, and risperidone tend to have *more* metabolic effects.
  - Aripiprazole and ziprasidone tend to have *fewer* metabolic effects.
  - It taking these agents, screen for prediabetes or diabetes at baseline, rescreen at 12–16 weeks after medication initiation, and screened annually thereafter ADA 2024

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Diabetes 2 - Who is at Risk?

(ADA 2024 Clinical Practice Guidelines)

Screen using A1C, Fasting Blood Glucose or OGTT.

Repeat screening at least every 3 years if negative.

*If prediabetes or on high risk meds, recheck yearly

Risk factors cont'd

- HTN - BP > 130/80
- HDL < 35 or triglycerides > 250
- History of Gestational Diabetes Mellitus
- Polycystic ovary syndrome (PCOS)
- Other conditions associated w/ insulin resistance:
  - Elevated BMI, acanthosis nigricans (AN)

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Recommendations for Diagnosis and Classification of Diabetes – 2024

Criteria for Testing for Diabetes and PreDiabetes in Asymptomatic Adults – Table 1

DIABETES TYPE	RISK FACTORS and FREQUENCY OF SCREENING and TESTING FOR DIABETES
Type 1	Screen for presymptomatic type 1 diabetes, by testing autoantibodies to insulin, GAD, islet antigen 2, or ZnT8 is recommended. Also test antibodies for those with type 1 phenotypic risk (younger age, ketoacidosis , etc.)
Type 2	1. Test all adults starting at age **35** for prediabetes and diabetes using Fasting Plasma Glucose, A1C or OGTT. 2. Perform risk-based screening if BMI ≥ 25 or BMI ≥ 23 in Asian Americans with 1 or more risk factors: • History of cardiovascular disease • First or second degree relative with diabetes • HDL ≤ 35 mg/dl or triglyceride ≥ 250 mg/dl • If taking antipsychotic, antiretroviral meds* • Other conditions associated with insulin resistance (PCOS, Acanthosis Nigricans) • High risk ethnicity (African American, Latino, Native American, Asian American, Pacific Islanders) • Physical inactivity • History of GDM (repeat test at least every 3 years) • Hypertension ≥ $^{130}/_{80}$ or on therapy for HTN • A1c ≥ 5.7% or Impaired Fasting Glucose (test yearly) 3. If results normal, repeat test at a minimum of 3-year intervals or more frequently based on risk status. 4. *Screen people with HIV, exposure to high-risk medicines, history of pancreatitis and re-check annually.

Tests to Diagnose Diabetes - Table 2

STAGE	For all the below tests, in the absence of unequivocal hyperglycemia, Confirm results by repeat testing.			
	A1C *NGSP certified & standardized assay*	**Fasting* Plasma Glucose (FPG)** **No intake 8 hrs.*	**Random Plasma Glucose**	**Oral Glucose Tolerance Test (OGTT) 75-g** (Carb intake of ≥ 150 g/day for 3 days prior to test.)
Diabetes	A1C ≥ 6.5%	FPG ≥ 126 mg/dl	Random plasma glucose ≥ 200 mg/dl plus symptoms[1] [1]Random = any time-of-day w/out regard to time since last meal; symptoms include usual polyuria, polydipsia, and unexplained wt. loss.	Two-hour plasma glucose (2hPG) ≥ 200 mg/dl
Prediabetes	A1C 5.7 – 6.4%	Impaired Fasting BG (IFG) = FPG 100-125 mg/dl		Impaired Glucose Tolerance (IGT) = 2hPG 140 -199 mg/dl
Normal	A1C < 5.7%	FPG < 100 mg/dl		2hPG < 140 mg/dl

Screening in early Pregnancy

- Checking glucose levels before 15 weeks of gestation:
  - Can find undetected diabetes or hyperglycemia
  - Prevent fetal exposure to hyperglycemia
  - Allows providers and pregnant people to take action to prevent complications
- Use standard diabetes diagnostic criteria.
  - If positive, diagnosis “Diabetes complicating pregnancy”
- If fasting BG 110+ or A1C 5.9%+
  - At higher risk of adverse outcomes and more likely to experience GDM and need insulin.

See Diabetes and Pregnancy Level 2

Screening and Diagnosis of Diabetes Cheat Sheet

GESTATIONAL DIABETES (GDM)*

PREGNANCY SCREENING	TEST	DIAGNOSTIC CRITERIA
Screen to identify abnormal glucose metabolism before 15 weeks gestation Test those w/ risk factors (table 1) to identify undiagnosed prediabetes or diabetes at first prenatal visit.	Standard Diagnostic Testing and Criteria as listed in Diagnosing Diabetes –Table 2	Standard Diagnostic Testing and Criteria as listed in Diagnosing Diabetes –Table 2 Those with fasting of 110-125 or A1C of 5.9% to 6.4% are at higher risk of adverse outcomes (GDM, need insulin, preeclampisa and other)
Screen for GDM at 24–28 wks gestation for those without known diabetes. Screen those with GDM for diabetes 4 - 12 wks postpartum with 75-g OGTT. Lifelong screening at least every 3 yrs. **Please see reference below for complete guidelines.*	Can use either IADPSG consensus: **"One Step" 75-g OGTT** fasting and at 1 and 2 h (perform after overnight fast of at least 8 h) **"Two step" NIH Consensus – Step 1:** 50gm glucose load (non fasting) w/ plasma BG test at 1 hr. If BG ≥ 130-140*, go to **Step 2 >**	**One Step:** GDM diagnosis when ANY of following BG values are exceeded: • Fasting ≥92 mg/dl, • 1 h ≥180 mg/dl • 2 h ≥153 mg/dl **Two Step -Step 2** - 100g OGTT (fasting) GDM diagnosis if at least 2 of 4 BG measured at fasting, 1h, 2h, 3h after OGTT meet or exceed 95, 180, 155, 140 mg/dL respectively.

***Reference** – Diagnosis & Classification of Diabetes. American Diabetes Association Standards of Medical Care in Diabetes. Diabetes Care 2024 Jan; 47 (Supplement 1): S20-S42. **Compliments of Diabetes Education Services www.DiabetesEd.net**

Risk-Based Screening for PreDiabetes or Type 2 in Children and Youth

- Test youth with excess weight (BMI >85% percentile)
- Plus any ONE of following risk factors:
  - Maternal diabetes or GDM during child's gestation
  - Family history type 2 in 1st or 2nd degree relative
  - Native American, African American, Latin, Asian, Pacific Islander
  - Signs of insulin resistance (acanthosis nigricans, HTN, dyslipidemia, Polycystic Ovary Syndrome – PCOS or small for gestational age birth weight

2. Diagnosis and Classification of Diabetes: *Standards of Care in Diabetes—2024* FREE

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- Test at 10 yrs or puberty (whichever is first) and at least every 3 yrs or more frequently if indicated. Consider earlier screening if multiple risk factors.

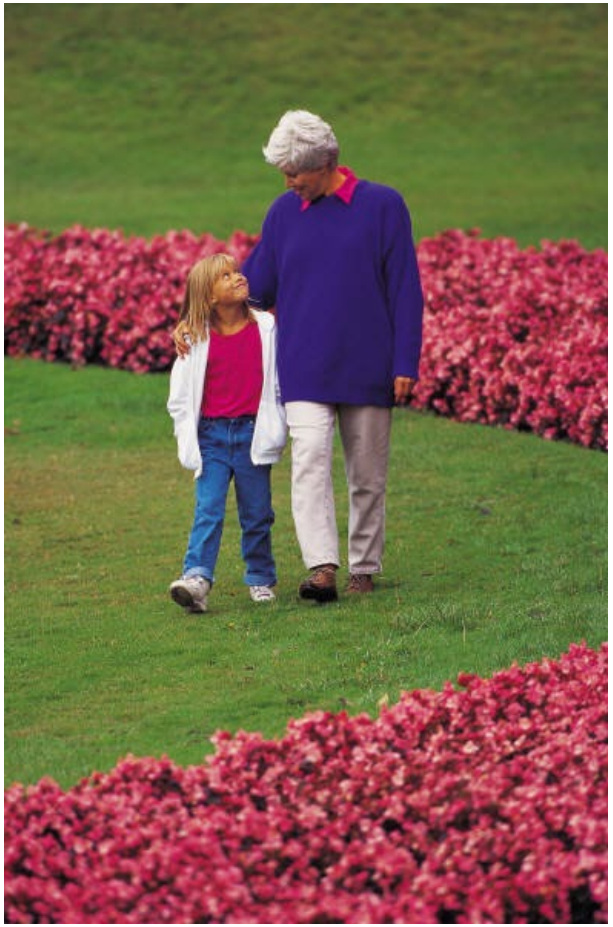
Poll Question 3

JR's mom has type 1 diabetes and JR's dad has type 2 diabetes. JR is 28 years old and in the emergency room with a glucose of 482 mg/dl. Besides checking glucose, ketones and A1C levels, which of the following lab test can be used to determine if someone has autoimmune diabetes?

1. Endogenous insulin titer
2. Glutamic Acid Decarboxylase
3. Beta cells auto antibodies
4. Langerhan's antibody

How do we know someone has Type 1 vs Type 2?

- Type 1 - Positive antibodies
  - GAD - glutamic acid decarboxylase (primary)
  - IA2 - islet antigen 2, or
  - ZnT8 - zinc transporter 8
- Can also check C-peptide levels to determine endogenous insulin production
- Younger people develop quickly
- Older people take longer to develop
- "misdiagnosis is common and can occur in ~40% of adults with new type 1 diabetes"



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Determine if Type 1 - Use AABBCC Approach

- **A**ge
  - e.g., for individuals <35 years old, consider type 1 diabetes
- **A**utoimmunity
  - e.g., personal or family history of autoimmune disease or polyglandular autoimmune syndromes
- **B**ody habitus
  - e.g., BMI <25 kg/m2
- **B**ackground
  - e.g., family history of type 1 diabetes
- **C**ontrol
  - e.g., level of glucose control on noninsulin therapies
- **C**omorbidities
  - e.g., treatment with immune checkpoint inhibitors for cancer can cause acute autoimmune type 1 diabetes

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Type 1 Diabetes Features?

- For JR, a 28 admitted to the ICU with a blood glucose of 476 mg/dl, pH of 7.1, anion gap of 15. Recently lost 13 pounds.

Type 1 Most Discriminative Features

- Younger than 35 years at diagnosis
- Lower BMI (<25 kg/m^2)
- Unintentional weight loss
- Ketoacidosis
  Glucose 360 mg/dl or greater.

CONSENSUS REPORT | OCTOBER 18 2021

The Management of Type 1 Diabetes in Adults. A Consensus Report by the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD) FREE

3. Prevention or Delay of Diabetes and Associated Comorbidities: *Standards of Care in Diabetes—2024*

Type 1 Diabetes Progression

	Stage 1	Stage 2	Stage 3
Characteristics	• Autoimmunity	• Autoimmunity	• Autoimmunity
	• Normoglycemia	• Dysglycemia	• Overt hyperglycemia
	• Presymptomatic	• Presymptomatic	• Symptomatic
Diagnostic criteria	• Multiple islet autoantibodies - GAD, glutamic acid decarboxylase (primary) - islet antigen 2, or - Zinc transporter 8 (ZnT8)	• Islet autoantibodies Dysglycemia: Elevated IFG and/or IGT • FPG 100–125 mg/dL • 2-h PG 140–199 mg/dL • A1C 5.7–6.4% or ≥10% increase in A1C	• Autoantibodies may disappear over time (5-10% may not express antibodies) • Diabetes diagnosed by standard criteria

2. Diagnosis and Classification of Diabetes: *Standards of Care in Diabetes—2024* FREE

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3. Prevention or Delay of Diabetes and Associated Comorbidities (for Preclinical Type 1 Diabetes)

- Positive Antibodies with Prediabetes:
  - A1c 5.7 – 6.4% or fasting BG 100 -125mg/dl
- Action:
  - Screen A1C every 6 months
  - 75- OGTT every year
  - Modify screening based on antibodies and glycemic metrics.
  - May benefit from CGM to monitor progression

Trialnet.org

3. Prevention or Delay of Diabetes and Associated Comorbidities: *Standards of Care in Diabetes—2024*

Type 1 & Lifestyle Prevention

- Observational studies in those with antibodies, shed light on factors that ***increase*** β-cell demand:
  - Less physical activity
  - Consuming higher glycemic index foods
  - Sugar intake.
- Factors that **reduced risk** of progression from TEDDY study:
- Daily minutes spent doing vigorous physical exercise.
- More info needed

3. Prevention or Delay of Diabetes and Associated Comorbidities: *Standards of Care in Diabetes—2024*

Pharmacologic Intervention to Delay Symptomatic Type 1 (in Stage 2)

- Teplizumab-Tzield (CD3-monoclonal antibody)
- 14-day infusion can delay the onset of symptomatic type 1 diabetes (stage 3)
- An option in selected individuals aged ≥8 years with stage 2 type 1 diabetes.

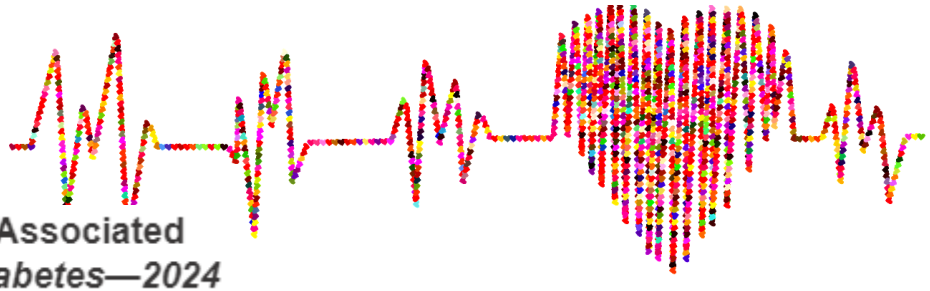
- In a single trial, 44 individuals received 14-day course of teplizumab vs 32 placebo.
- The median time to stage 3 diagnosis of type 1
  - 48.4 months in tep group
  - 24.4 months placebo

3. Prevention or Delay of Diabetes and Associated Comorbidities: *Standards of Care in Diabetes—2024*

126. Herold KC, Bundy BN, Long SA, et al.; Type 1 Diabetes TrialNet Study Group. An anti-CD3 antibody, teplizumab, in relatives at risk for type 1 diabetes. *N Engl J Med* 2019;381:603–613

3. Detecting PreDiabetes Matters

- Given the cost-effectiveness of lifestyle behavior modification programs for diabetes prevention:
  - Offer diabetes prevention programs to adults at high risk of type 2 diabetes
  - Should be covered by third-party payers,
  - Address inconsistencies in access
- Screening guidelines for people with Type 1



3. Prevention or Delay of Diabetes and Associated Comorbidities: *Standards of Care in Diabetes—2024*

3. Prevent or Delay Diabetes for those with Prediabetes

- Prediabetes defined as:
  - A1c 5.7 – 6.4% or fasting BG 100 -125mg/dl
- Action:
  - Screen yearly for diabetes
  - For adults with BMI 23/25
    - Refer to DPP approved programs
    - Includes intensive behavioral lifestyle interventions with 7% wt reduction goal + 150 min exercise week
    - Provide in person or certified assisted programs

3. Prevention or Delay of Diabetes and Associated Comorbidities: *Standards of Care in Diabetes—2024*

3. Diabetes Prevention Program (DPP)

- Refer all people with prediabetes to DPP – reduces risk of getting diabetes by 58%
- Lost 7% of body weight (1-2 lbs a week)
  - Includes food diary, weekly weighing, coaching, high fiber, low fat, avoid sugar sweetened beverages, reduce total caloric intake
- Attain 150 mins exercise a week
  - Exercise without wt loss reduced risk by 44%
- 16 group lifestyle sessions in 24 weeks
- Then monthly for next 6 months
- Ongoing follow-up and data collection
- Taught by certified DPP Lifestyle coaches

3. Prediabetes Pharmacologic Intervention

- No FDA approved med for prevention (off label)
- Consider Metformin Therapy for Prediabetes
- Especially for ages 25-59
  - BMI of 35+
  - If A1c is ~6.0 or FPG is 110mg/dL
  - Women with history of GDM
- Monitor B12 level (esp with neuropathy or anemia)

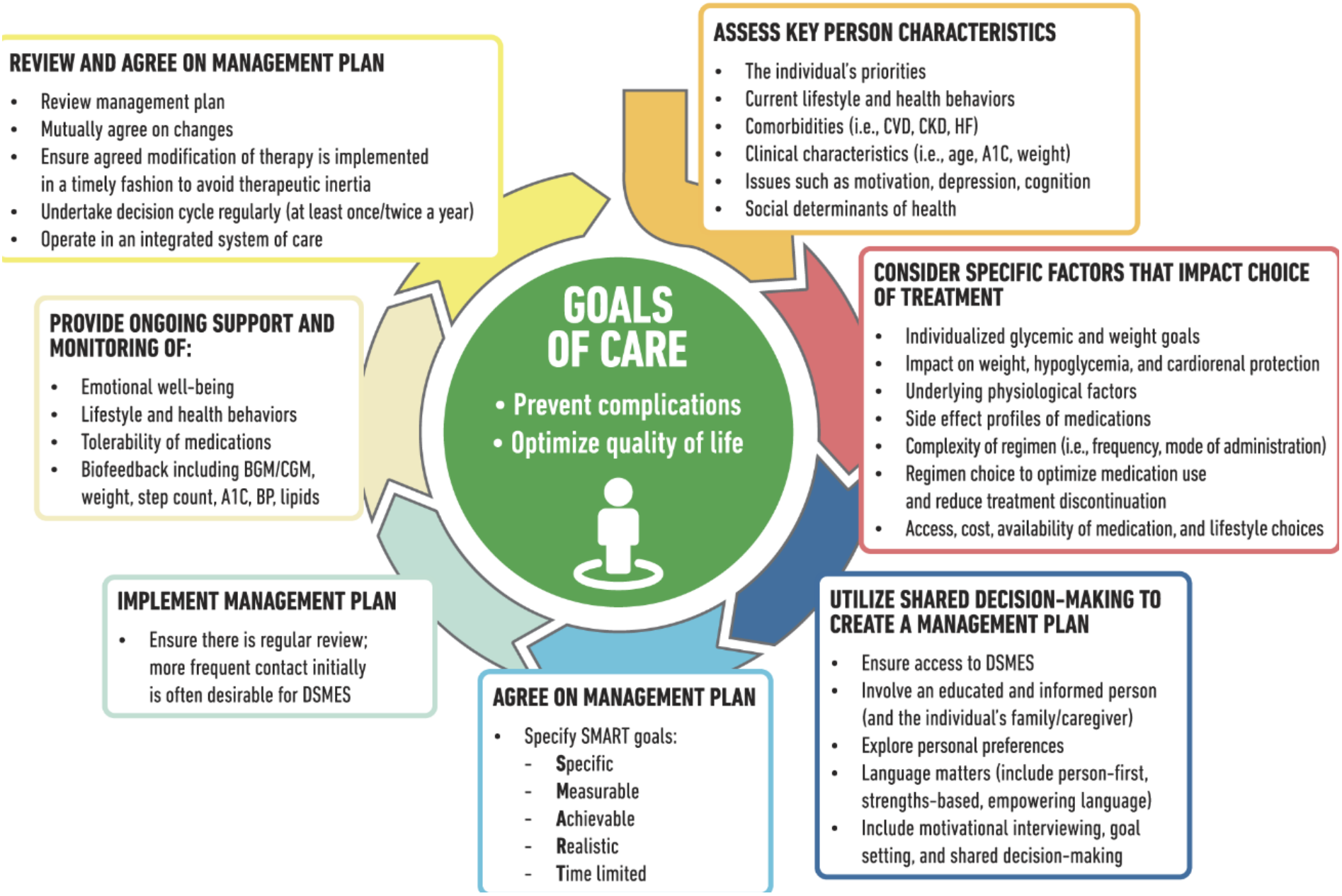
- CV Risk Mitigation important.
- Statin can increase BG, stop if notice elevation
- Consider low dose pioglitazone (Actos) if history of stroke.

3. Prevention or Delay of Diabetes and Associated Comorbidities: *Standards of Care in Diabetes—2024*

4. Comprehensive Medical Evaluation and Assessment of Comorbidities

- Use person-centered communication, culturally sensitive, strength-based language and active listening;
- Elicit individual preferences and beliefs; and assesses literacy, numeracy, and potential barriers.
- Diabetes Care coordinated by multi disciplinary team:
  - CDCES, Providers, nurses, dietitians, exercise specialists, pharmacists, dentists, podiatrists, and behavioral health professionals.
- Goal is to optimize health outcomes and quality of life.

DECISION CYCLE FOR PERSON-CENTERED GLYCEMIC MANAGEMENT IN TYPE 2 DIABETES



4. Comprehensive Medical Evaluation and Assessment of Comorbidities: *Standards of Care in Diabetes—2024* FREE

Immunization Schedule for Diabetes 2024

Vaccine	Who by Age	Series and Frequency
Hepatitis B Vaccine	Less than 60 years*	2-3 dose series
RSV	Adults ≥ 60 years	Single dose
Influenza (avoid live attenuated vaccine)	All	Annually
Tetanus, diphtheria, pertussis (TDAP)	All adults; extra dose during pregnancy	Booster every 10 years.
Zoster	50+	2 dose Shingrix
COVID-19	Starting at age 6 mo's	Initial vaccination and boosters
Pneumonia (PPSV23) Pneumovax	Adults19-64*	See Standards for schedule and details and for those 65 or older.
*Pneumococcal Conjugate Vaccine (PCV15, PCV20)	19-64 with underlying risk factors or no previous vaccination*.	May need PPSV23 follow-up vaccine ≥1 year.* If 65+, discuss with provider.

2024 ADA Standards, Vol.47, S52-S76.

*See ADA Standards, Table 4.4 for detailed info/considerations.

Referrals for Initial Care Mgmt

- Eye professional – annual check
- Family planning
- RD for nutrition therapy
- DSMES - Diabetes Self-Management Education Support
- Dentist for comprehensive dental examination
- Behavioral health professional & audiology, if indicated
- Social worker/community resources
- Rehab medicine for cog/disability eval

4. Comprehensive Medical Evaluation and Assessment of Comorbidities: *Standards of Care in Diabetes—2024* FREE

NEW Bone Health Recommendations

- Diabetes associated with increased fractures
- Take preventive action:
  - For high-risk older adults (aged >65 years) and younger individuals with multiple risk factors.
    - Monitor bone mineral density using dual-energy X-ray absorptiometry every 2–3 years.
  - Avoid medications that increase fractures in high risk
  - Problem solve to prevent falls
  - Adequate calcium and vita D intake
  - Consider antiresorptive meds, osteoanabolic agents for those with low bone mineral density score.

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Risk Factors for Fracture

- General risk factors
  - Prior osteoporosis fracture
  - Age > 65 years
  - Low BMI
  - Sex
  - Malabsorption
  - Recurrent falls
  - Glucocorticoid use
  - Family history
  - Alcohol /tobacco abuse
  - Rheumatoid arthritis
- Diabetes Specific Risk Factors
  - Lumbar spine or hip T-score ≤ -2.0
  - Frequent hypoglycemia
  - Diabetes >10 years
  - Diabetes meds: TZDs or sulfonylureas, insulin
  - A1C > 8%
  - Peripheral autonomic neuropathy
  - Retinopathy and nephropathy

Liver Nomenclature Update

Old Terms	New Terms
Fatty Liver Disease	Steatotic Liver Disease
Non-Alcoholic Steatohepatitis (NASH)	Metabolic Dysfunction-Associated Steatohepatitis (MASH)
Non-Alcoholic Fatty Liver Disease (NAFLD)	Metabolic Dysfunction-Associated Steatotic Liver Disease (MASLD)

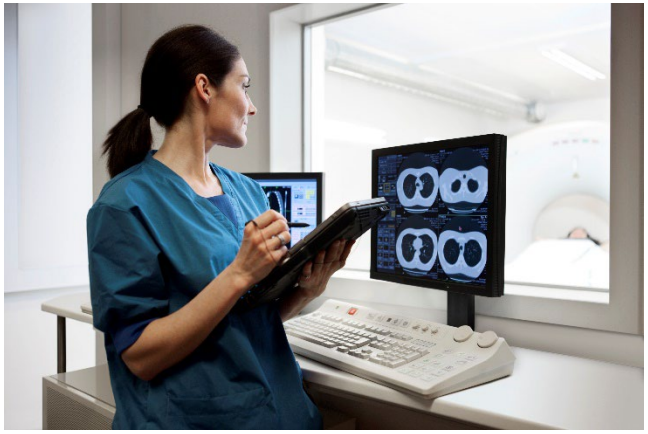
Poll Question 4

The provider referred RT, a 72-year-old with type 2 diabetes and non-alcoholic fatty steatohepatitis (NASH), for an appointment with the diabetes care and education specialist. RT is frightened because their brother died of liver cancer. Which of the following is the most accurate statement regarding NASH and diabetes?

A. About 30% of people with diabetes have MASLD.
B. Risk of MASH is greater in people who consume excess alcohol and processed foods.
C. MASH is when intrahepatic fat is equal to or greater than 5% of liver weight.
D. There are standardized medication algorithms to guide treatment of MASH.

Nonalcoholic Fatty Liver Disease or Steatotic Liver Disease

- Recent studies estimate that MASLD is prevalent in >70% of adults with type 2 diabetes.



- In type 2 diabetes or prediabetes with cardiometabolic risk factors
- Screen for liver fibrosis using FIB 4 Index
  - Uses liver enzymes (ALT & AST), platelet count plus age
  - If positive, follow-up with imaging or ultrasound

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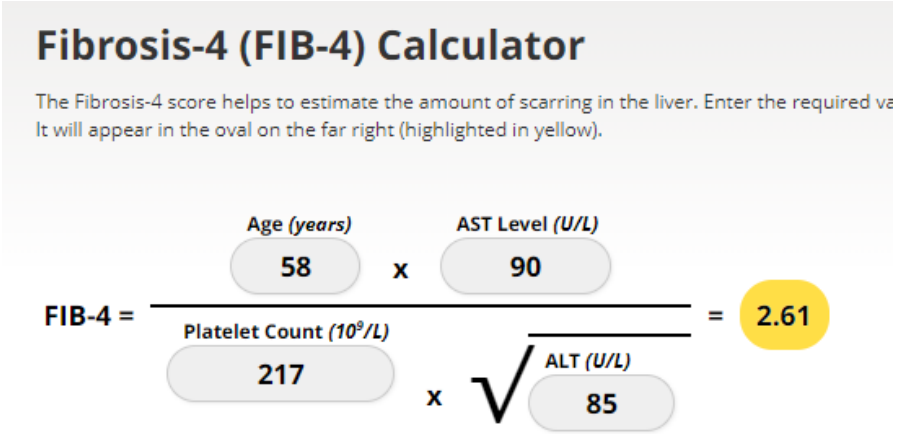
Screening for NASH – FIB-4



- The American College of Gastroenterology considers Upper limit of normal ALT levels:
- 29–33 units/L for males
- 19–25 units/L for female individuals

(mdcalc.com/calc/2200/fibrosis-4-fib-4-index-liver-fibrosis).

FIB-4 estimates risk of hepatic cirrhosis (age 35+):

- Calculated by imputing:
  - Age
  - plasma aminotransferases (AST and ALT)
  - and platelet count
- FIB-4 Risk Levels
  - Lower risk is <1.3
  - Intermediate 1.3 to 2.67
  - High risk >2.67
    - considered as having a high probability of advanced fibrosis (F3–F4).

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Mr. J - What are Your Recommendations?

Mr. J Profile

67 yr old with newly type 2. History of stroke, BMI 26.

Meds: Metoprolol, metformin, lovastatin 20mg.

Labs:

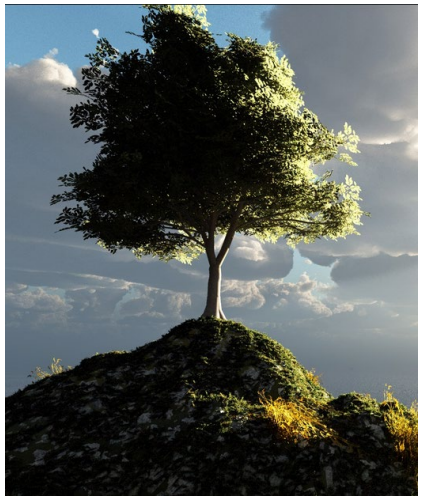
- A1c 9.3%
- LDL 136 mg/dl
- Triglycerides 260mg/dl
- GFR 58, UACR 32
- B/P 142/79
- Liver enzymes in normal range

Self-Care Skills

- Goes to gym 2-3 times a week
- Plays golf on occasion.
- Eats out 2 times a week.
- Met with RD, signed up for DSMES.

5. Facilitating Positive Health Behaviors and Well-Being to Improve Health Outcomes

- Education – DSMES
  - Setting Up Successful Diabetes Ed Program – Online University Level 2
- Nutrition –
  - Diabetes Ed Training Program
  - April, Virtual
  - October, San Diego
- Physical Activity
  - Nutrition and Exercise Course – Level 1 & 3
- Smoking Cessation
- Psychosocial Care



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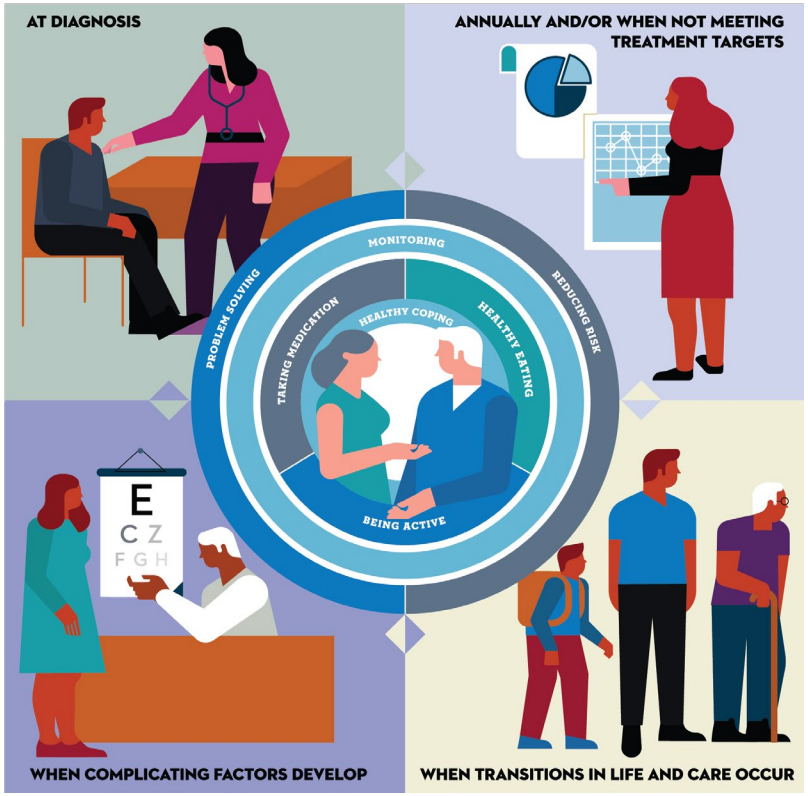
FIVE critical times to provide and modify DSMES



1) At diagnosis.
2) When not meeting treatment goals.
3) Annually
4) When complicating factors develop (medical, physical, psychosocial).
5) When transitions in life and care occur.

Powers MA, Bardsley JK, et al. DSMES Consensus Report, The Diabetes Educator, 2020
ADCES. AADE7 Self-Care Behaviors, The Diabetes Educator, 2020

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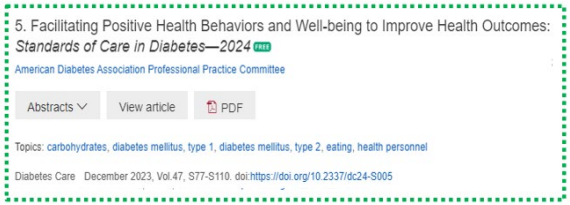
(cdc.gov/diabetes/professional-info/training.html)

DSMES is underutilized

Despite the benefit of DSMES, data from the 2017 and 2018 Behavioral Risk Factor Surveillance System of 61,424 adults with self-reported diabetes indicate that

53% of individuals eligible for DSMES through their health insurance receive it.


5. Facilitating Positive Health Behaviors and Well-being to Improve Health Outcomes: *Standards of Care in Diabetes—2024*

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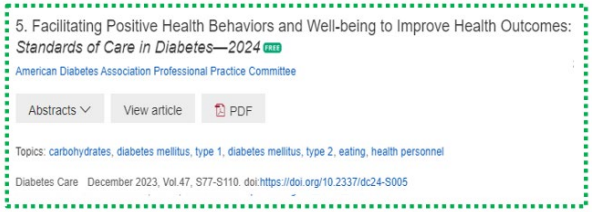
Abstracts | View article | PDF

Topics: carbohydrates, diabetes mellitus, type 1, diabetes mellitus, type 2, eating, health personnel

Diabetes Care December 2023, Vol.47, S77-S110. doi:https://doi.org/10.2337/dc24-S005

DSMES is for Everyone

- All people with diabetes benefit from diabetes self-management education and support to facilitate the knowledge, decision-making, and skills mastery for diabetes self-care.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- Assess clinical outcomes, health status, well being and support.
- Person centered
- Digital coaching
- Identify barriers
- Eval SDOH
- Consider barriers

Goals of Diabetes Self Management Education and Support (DSMES)

- Facilitates knowledge and decision making
- Promotes skill mastery needed for optimal self care.
- Consider treatment burden.

Incorporates needs, goals, and life experiences of the individual

Supports informed decision making, self-care behavior, problem solving and active collaboration.

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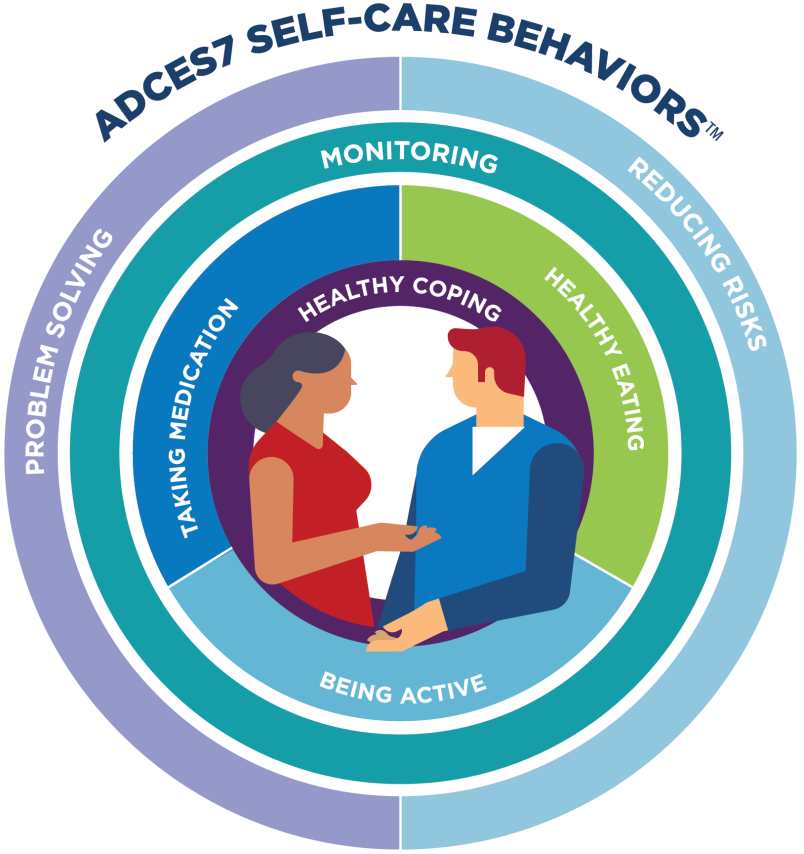
Foundations of Care – Well Being

ADCES7™

ADCES7 SELF-CARE BEHAVIORS™

PROBLEM SOLVING
REDUCING RISKS
MONITORING
TAKING MEDICATION
HEALTHY EATING
HEALTHY COPING
BEING ACTIVE



Also known as the ADCES 7 Self-Care Behaviors

Psychosocial Assessment – Screen for:

- Integrate psychosocial care using a collaborative, person centered approach for all people with diabetes, to optimize health outcomes and health-related quality of life

- Assess for:
  - Diabetes Distress annually
  - Depression
  - Anxiety
  - Disordered eating
  - Cognitive capacities
- Use validated tools
- Initial visit & periodically
- If over 65, screen for depression & cognitive impairment
- Refer to behavioral health specialist if warranted

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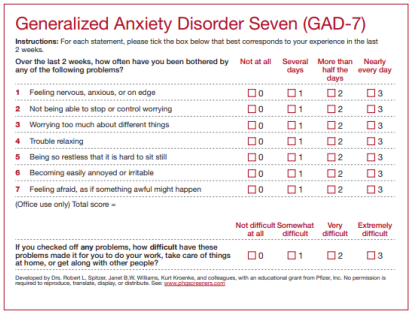
Diabetes Distress & Screening Tools

- Screen people with diabetes, caregivers, and family members for diabetes distress at least annually.
  - Consider more frequent monitoring when treatment targets are not met, at transitional times, and/or in the presence of diabetes complications.
- Health care professionals can address diabetes distress
- May consider referral to a qualified behavioral health professional, ideally one with experience in diabetes, for further assessment and treatment if indicated.

professional.diabetes.org/sites/default/files/media/ada_mental_health_toolkit_questionnaires.pdf

5. Facilitating Positive Health Behaviors and Well-being to Improve Health Outcomes: *Standards of Care in Diabetes—2024* FREE

- The ADA provides access to tools for screening specific psychosocial topics, such as diabetes distress, fear of hypoglycemia, and other relevant psychological symptoms



Generalized Anxiety Disorder Seven (GAD-7)

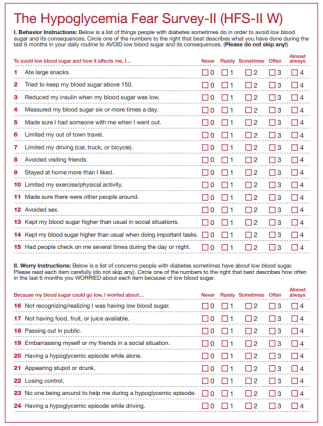
Instructions: For each statement, please tick the box below that best corresponds to your experience in the last 2 weeks.

Over the last 2 weeks, how often have you been bothered by any of the following problems?	Not at all	Several days	More than half the days	Nearly every day
1 Feeling nervous, anxious, or on edge	☐0	☐1	☐2	☐3
2 Not being able to stop or control worrying	☐0	☐1	☐2	☐3
3 Worrying too much about different things	☐0	☐1	☐2	☐3
4 Trouble relaxing	☐0	☐1	☐2	☐3
5 Being so restless that it is hard to sit still	☐0	☐1	☐2	☐3
6 Becoming easily annoyed or irritable	☐0	☐1	☐2	☐3
7 Feeling afraid, as if something awful might happen	☐0	☐1	☐2	☐3

(Office use only) Total score =

	Not difficult at all	Somewhat difficult	Very difficult	Extremely difficult
If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?	☐0	☐1	☐2	☐3

Developed by Drs. Robert L. Spitzer, Janet B.W. Williams, Kurt Kroenke, and colleagues, with an educational grant from Pfizer, Inc. No permission is required to reproduce, translate, display, or distribute. See: www.phqscreeners.com/



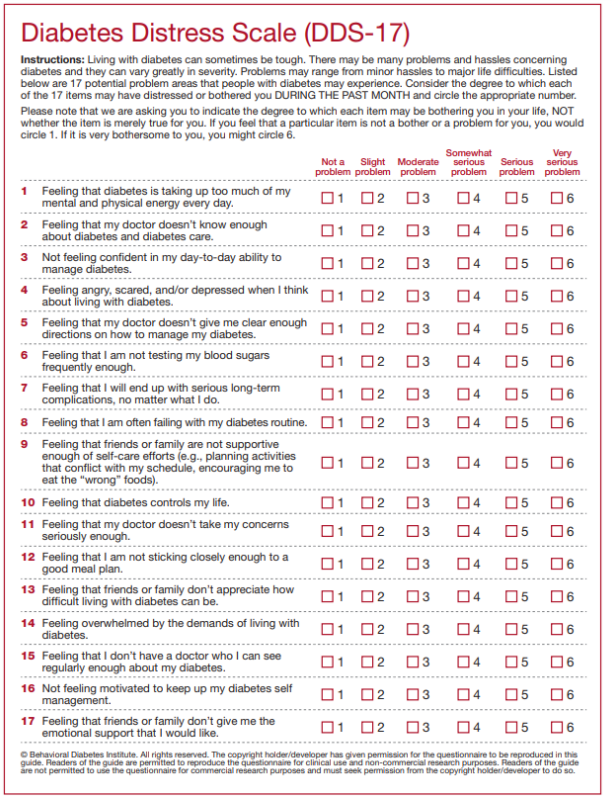
The Hypoglycemia Fear Survey-II (HFS-II W)

I. Behavior Instructions: Below is a list of things people with diabetes sometimes do in order to avoid low blood sugar and its consequences. Circle one of the numbers to the right that best describes what you have done during the last 6 months in your daily routine to AVOID low blood sugar and its consequences. **(Please do not skip any!)**

To avoid low blood sugar and how it affects me, I...	Never	Rarely	Sometimes	Often	Almost always
1 Ate large snacks.	☐0	☐1	☐2	☐3	☐4
2 Tried to keep my blood sugar above 150.	☐0	☐1	☐2	☐3	☐4
3 Reduced my insulin when my blood sugar was low.	☐0	☐1	☐2	☐3	☐4
4 Measured my blood sugar six or more times a day.	☐0	☐1	☐2	☐3	☐4
5 Made sure I had someone with me when I went out.	☐0	☐1	☐2	☐3	☐4
6 Limited my out of town travel.	☐0	☐1	☐2	☐3	☐4
7 Limited my driving (car, truck, or bicycle).	☐0	☐1	☐2	☐3	☐4
8 Avoided visiting friends.	☐0	☐1	☐2	☐3	☐4
9 Stayed at home more than I liked.	☐0	☐1	☐2	☐3	☐4
10 Limited my exercise/physical activity.	☐0	☐1	☐2	☐3	☐4
11 Made sure there were other people around.	☐0	☐1	☐2	☐3	☐4
12 Avoided sex.	☐0	☐1	☐2	☐3	☐4
13 Kept my blood sugar higher than usual in social situations.	☐0	☐1	☐2	☐3	☐4
14 Kept my blood sugar higher than usual when doing important tasks.	☐0	☐1	☐2	☐3	☐4
15 Had people check on me several times during the day or night.	☐0	☐1	☐2	☐3	☐4

II. Worry Instructions: Below is a list of concerns people with diabetes sometimes have about low blood sugar. Please read each item carefully (do not skip any). Circle one of the numbers to the right that best describes how often in the last 6 months you WORRIED about each item because of low blood sugar.

Because my blood sugar could go low, I worried about...	Never	Rarely	Sometimes	Often	Almost always
16 Not recognizing/realizing I was having low blood sugar.	☐0	☐1	☐2	☐3	☐4
17 Not having food, fruit, or juice available.	☐0	☐1	☐2	☐3	☐4
18 Passing out in public.	☐0	☐1	☐2	☐3	☐4
19 Embarrassing myself or my friends in a social situation.	☐0	☐1	☐2	☐3	☐4
20 Having a hypoglycemic episode while alone.	☐0	☐1	☐2	☐3	☐4
21 Appearing stupid or drunk.	☐0	☐1	☐2	☐3	☐4
22 Losing control.	☐0	☐1	☐2	☐3	☐4
23 No one being around to help me during a hypoglycemic episode.	☐0	☐1	☐2	☐3	☐4
24 Having a hypoglycemic episode while driving.	☐0	☐1	☐2	☐3	☐4



Diabetes Distress Scale (DDS-17)

Instructions: Living with diabetes can sometimes be tough. There may be many problems and hassles concerning diabetes and they can vary greatly in severity. Problems may range from minor hassles to major life difficulties. Listed below are 17 potential problem areas that people with diabetes may experience. Consider the degree to which each of the 17 items may have distressed or bothered you DURING THE PAST MONTH and circle the appropriate number.

Please note that we are asking you to indicate the degree to which each item may be bothering you in your life, NOT whether the item is merely true for you. If you feel that a particular item is not a bother or a problem for you, you would circle 1. If it is very bothersome to you, you might circle 6.

	Not a problem	Slight problem	Moderate problem	Somewhat serious problem	Serious problem	Very serious problem
1 Feeling that diabetes is taking up too much of my mental and physical energy every day.	☐1	☐2	☐3	☐4	☐5	☐6
2 Feeling that my doctor doesn't know enough about diabetes and diabetes care.	☐1	☐2	☐3	☐4	☐5	☐6
3 Not feeling confident in my day-to-day ability to manage diabetes.	☐1	☐2	☐3	☐4	☐5	☐6
4 Feeling angry, scared, and/or depressed when I think about living with diabetes.	☐1	☐2	☐3	☐4	☐5	☐6
5 Feeling that my doctor doesn't give me clear enough directions on how to manage my diabetes.	☐1	☐2	☐3	☐4	☐5	☐6
6 Feeling that I am not testing my blood sugars frequently enough.	☐1	☐2	☐3	☐4	☐5	☐6
7 Feeling that I will end up with serious long-term complications, no matter what I do.	☐1	☐2	☐3	☐4	☐5	☐6
8 Feeling that I am often failing with my diabetes routine.	☐1	☐2	☐3	☐4	☐5	☐6
9 Feeling that friends or family are not supportive enough of self-care efforts (e.g., planning activities that conflict with my schedule, encouraging me to eat the "wrong" foods).	☐1	☐2	☐3	☐4	☐5	☐6
10 Feeling that diabetes controls my life.	☐1	☐2	☐3	☐4	☐5	☐6
11 Feeling that my doctor doesn't take my concerns seriously enough.	☐1	☐2	☐3	☐4	☐5	☐6
12 Feeling that I am not sticking closely enough to a good meal plan.	☐1	☐2	☐3	☐4	☐5	☐6
13 Feeling that friends or family don't appreciate how difficult living with diabetes can be.	☐1	☐2	☐3	☐4	☐5	☐6
14 Feeling overwhelmed by the demands of living with diabetes.	☐1	☐2	☐3	☐4	☐5	☐6
15 Feeling that I don't have a doctor who I can see regularly enough about my diabetes.	☐1	☐2	☐3	☐4	☐5	☐6
16 Not feeling motivated to keep up my diabetes self management.	☐1	☐2	☐3	☐4	☐5	☐6
17 Feeling that friends or family don't give me the emotional support that I would like.	☐1	☐2	☐3	☐4	☐5	☐6

Eating Patterns
ADA MNT Standards 2024

Until there is more evidence:

- Emphasize non-starchy vegetables
- Choose whole foods, including ”power carbs”, nuts/seeds
- Minimize meat, added sugars, sugary beverages, refined grains and ultra-processed foods
- Any approach should consider:
  - Individualize based on “health status, personal and cultural preferences, ability to sustain recommendations and ultimately food access and nutrition security”

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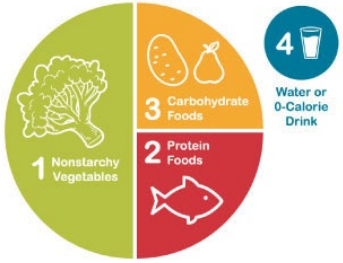
Healthy Eating Patterns/Approaches

Eating Patterns:

- Carb-Restricted
- Mediterranean Diet
- Plant based eating
- DASH (Dietary Approaches to Stop Hypertension)
- Structured low-calorie

Approaches:

- Diabetes Plate Method
- Carbohydrate Counting
- Intermittent fasting/time restricted
- Meal replacements



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Plan Your Portions

What Can I Eat?®

Carbs and Lowering Glucose

- Reducing overall carb intake has demonstrated most evidence for improved glycemia
- **Low carb** = Definition Varies
  - **25% or less,** Cals from carbs
  - Most people consume 44-46% of Cals from carb
  - Emphasize non-starchy vegetables, fruits, and whole grains, as well as dairy products, with minimal added sugars

A systematic review found:
- Each 10% decrease in carb intake reduced A1C, fasting plasma glucose levels, weight, lipids, BP at 6 months.

But favorable effects diminished and were not maintained at follow-up or at greater than 12 months.

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Low Carb Meal Plan Not Recommended for:

- Women who are pregnant or lactating or children
- People with or at risk for disordered eating
- People who have renal disease
- Use with caution if taking SGLT-2 Inhibitor due to potential risk of ketoacidosis

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Poll Question 5

- For people with an elevated BMI and new prediabetes, which best reflects ADA Standard recommendations?

  A. Avoid desserts and processed foods

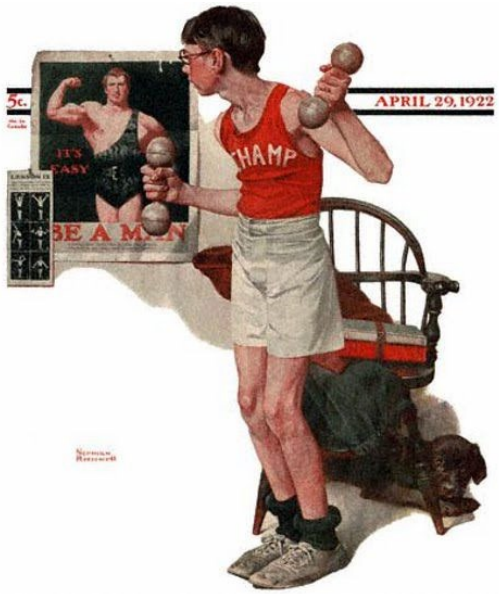
  B. Lose >7% of body weight to prevent prediabetes progression.

  C. Eat less than 7% saturated fat

  D. Consume about 30-45 gms of carb at each meal.

Exercise Standards

- Adults – 150 min/wk moderate intensity
  - over 3 days a week.
  - Don’t miss > 2 consecutive days w/out exercise
  - Get up every 30 mins - Reduce sedentary time
  - T1 and T2 – resistance training 2 -3 xs a week
  - Flexibility and balance training 2-3 xs a week (Yoga and Tai Chi)



ABCs of Diabetes – ADA 2024

- A1c less than 7%
  - Pre-meal BG 80-130
  - Post meal BG <180
  - Time in Range (70-180) 70% of time
    - Time below range | Low, less than 70mg/dL <4% of time &
    - Very low, less than 54 mg/dL <1% of time

Glycemic targets need to be woven into the overall person-centered strategy.

- Blood Pressure < 130/80
- Cholesterol
  - Statin therapy based on age & risk status
  - If 40+ with ASCVD Risk, decrease 50%, LDL <70
  - If 40+ with ASCVD, decrease 50%, LDL <55

Ambulatory Glucose Profile

- Standardized report with visual cues for those on CGM devices

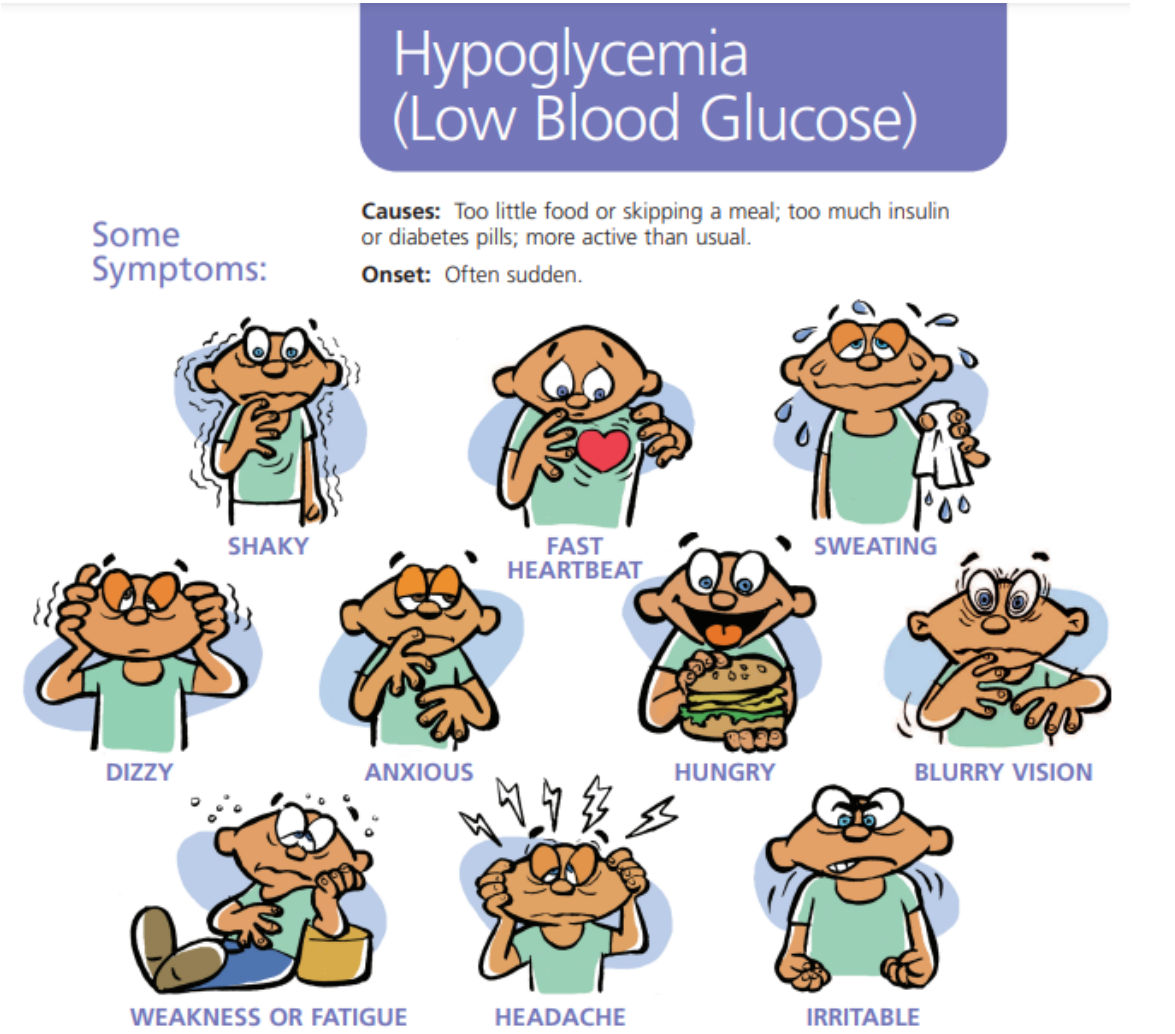
- For most with type 1 or type 2 diabetes
  - > 70% of readings within BG range of 70-180mg/dL
  - < 4% of readings < 70 mg/dL
  - < 1% of readings < 54 mg/dL
  - < 25% of readings > 180 mg/dL
  - < 5% of readings > 250 mg/dL

For those with frailty or at high risk of hypoglycemia recommend:

- Target of 50% time in range
- Less than1% time below range

6. Glycemic Goals and Hypoglycemia: *Standards of Care in Diabetes—2024* FREE

Hypoglycemia – A Big Deal



6. Glycemic Goals and Hypoglycemia: *Standards of Care in Diabetes—2024* FREE

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Hypoglycemia (Glucose) Alert Values

- **BG <70mg/dl – Level 1**
- Follow 15/15 rule and contact provider to make needed changes. At increased hypo risk.

- **BG < 54mg/dl – Level 2**
- Indicates serious hypo. Reassess BG Goals. Consider med decrease. Predictive of Level 3 Hypo. Needs Glucagon Emergency Kit

- **Severe Hypoglycemia – Level 3**
- Altered mental, physical functioning.
- Requires external assistance – no threshold

6. Glycemic Goals and Hypoglycemia: *Standards of Care in Diabetes—2024* FREE

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Hypoglycemia: Clinical Risk Factors

Table 6.5

Assessment of hypoglycemia risk among individuals treated with insulin, sulfonylureas, or meglitinides

Clinical/biological risk factors	Social, cultural, and economic risk factors
Major risk factors • Recent (within the past 3–6 months) level 2 or 3 hypoglycemia • Intensive insulin therapy* • Impaired hypoglycemia awareness • End-stage kidney disease • Cognitive impairment or dementia	Major risk factors • Food insecurity • Low-income status§ • Homelessness • Fasting for religious or cultural reasons
Other risk factors • Multiple recent episodes of level 1 hypoglycemia • Basal insulin therapy* • Age ≥75 years‡ • Female sex • High glycemic variability‡ • Polypharmacy • Cardiovascular disease • Chronic kidney disease (eGFR <60 mL/min/1.73 m^2 or albuminuria) • Neuropathy • Retinopathy • Major depressive disorder	Other risk factors • Low health literacy • Alcohol or substance use disorder

6. Glycemic Goals and Hypoglycemia: *Standards of Care in Diabetes—2024* FREE

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Components of hypoglycemia prevention for high-risk individuals at initial, follow-up, and annual visits

Hypoglycemia prevention action 6. Glycemic Goals and Hypoglycemia: *Standards of Care in Diabetes—2024* FREE American Diabetes Association Professional Practice Committee	Initial visit	Follow-up visit	Annual visit
Hypoglycemia history assessment	✓	✓	✓
Hypoglycemia awareness assessment	✓		✓
Cognitive function and other hypoglycemia risk factor assessment	✓		✓
Structured education for hypoglycemia prevention and treatment	✓	✓*	✓*
Consideration of continuous glucose monitoring needs	✓	✓	✓
Reevaluation of diabetes treatment plan with deintensification, simplification, or agent modification as appropriate	✓	✓†	✓†
Glucagon prescription and training for close contacts for insulin-treated individuals or those at high hypoglycemic risk	✓		✓
Training to reestablish awareness of hypoglycemia	✓		✓

Tx of Level 2 & 3 Hypoglycemia

- If can swallow w/out risk of aspiration, try gel, honey, etc. inside cheek
- If unable to swallow, D50 IV or Glucagon
- Glucagon injection (need Rx)
  - Inform and instruct caregivers, school personnel, family, coworkers of hypo signs and appropriate action
  - Dosing: Adults 1mg, Children <20kg 0.5mg
  - Glycemic effect 20 - 30mg, short lived
  - Must intake carb as soon as able
- If on Insulin or level 2 or 3 hypo, (<54), get Glucagon ER Kit. Re-evaluate diabetes med treatment plan.

Glucagon Rescue Medications for Diabetes-Related Hypoglycemia

Name/Delivery	Supplied	Dose Range		Age / Route / Storage
		Adult	Peds / Age WT Dosing	
Glucagon Emergency Kit Injection requires mixing glucagon powder	1mg / 1mL vial + syringe	1mg	0.03mg/kg or < 6yrs or < 25 kgs | 0.5mg ≥ 6yrs or > 25kgs | 1mg	All ages approved SubQ or IM admin Expires in 2 years at room temp.
Baqsimi Nasal glucagon powder	3 mg intranasal device	3 mg	< 4 yrs: not recommended 4 yrs or older | 3mg dose	Approved Age 4+ Nasal admin Expires ~ 2 years at room temp (keep in shrink-wrapped tube).
Gvoke Injectable liquid stable glucagon solution	0.5mg or 1.0mg in -Prefilled syringe -HypoPen auto-injector -Kit with vial and syringe	1 mg	< 2yrs: not recommended 2- 12 yrs < 45kg | 0.5mg ≥ 45kg | 1mg 12 yrs or older | 1mg	Approved Age 2+ SubQ admin in arm, thigh, abdomen Expires in 2 years at room temp (keep in foil pouch).
Dasiglucagon (Zegalogue) Stable liquid glucagon analog	0.6mg/0.6mL Prefilled syringe Autoinjector	0.6mg	< 6yrs: not recommended 6 yrs or older | 0.6mg	Approved Age 6+ SubQ in abdomen, buttocks, thigh outer upper arm Expires in 1 year at room temp. (store in red protective case).

All raise BG 20+ points. Can cause nausea, vomiting. After admin, roll person on side. Seek medical help. If no response after 1st dose, give 2nd dose in 15 mins. When awake, give oral carbs ASAP when safe to swallow. Please consult package insert for detailed info.

All PocketCard content is for educational purposes only. Please consult prescribing information for detailed guidelines.

Hypoglycemia: Identify, Treat, & Prevent

PocketCards are updated twice yearly. Scan QR code to download or order the latest version.

Step 1

Identify your signs of hypoglycemia or low blood sugar:

- Sweaty
- Shaky
- Hungry
- Can't think straight
- Headache
- Irritated, grouchy
- Other

Step 2

If have signs of hypo, treat with carbs until glucose reaches 70+, then eat usual meal.

- Sugary drink, 4–8oz
- Piece of fruit
- Raisins, handful
- Glucose tabs, 4+
- Honey/glucose gel
- Skittles candy, 15+

Step 3

Have glucagon rescue meds available.

In case of severe hypo, identify someone (ahead of time) who can get medical help & give a glucagon rescue medication.

Notify your provider of low blood sugar events.

Hypoglycemia Levels:

Level 1 – Glucose less than 70
Level 2 – Glucose less than 54
Level 3 - Severe, needs assistance

Identify Causes of Hypo & Problem Solve to Prevent Future Episodes

» Low carb meal
» Extra activity
» Drinking alcohol
» Delayed, missed meal
» Too much insulin/meds
» Insulin timing

Poll Question 7

- JL is 78 and drinks a “few cocktails” every night. Lives with partner and takes basal insulin at night and bolus insulin as needed. Checks BG a few times a week. Most recent A1c was 5.9%. What is the BG target for JL?

- A. A1c less than 6.5%
- B. Fasting BG 100 +
- C. Ask JL to determine their A1c target.
- D. A1c less than 7% based on the Legacy Trial results.

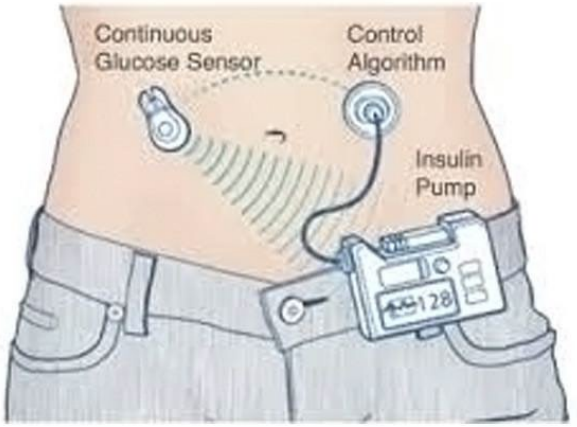
Poll Question 8

- JL is 78 and drinks a “few cocktails” every night. Lives with partner and takes basal insulin at night and bolus insulin as needed. Has had a few low blood glucose levels in past week of 62, 49 and 51. What is the most important recommendation?

- A. Decrease alcohol intake
- B. Check BG at least 4 times a day.
- C. Double check injection sites.
- D. Get glucagon rescue medication.

7. Diabetes Technology

- Individualize tech based on person's needs, desires, skill level and availability of devices.
- Advances in technology will continue to revolutionize and improve the way diabetes care is delivered.



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7. Diabetes Technology Considered

- Diabetes technology, when coupled with education, follow-up, and support, can improve lives.
- However, the complexity and rapid evolution of the diabetes technology landscape can also be a barrier to implementation
  - for people with diabetes,
  - their care partners
  - and the health care team.

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No One-Size-Fits-All for Tech

- Insurance coverage can lag behind device availability
- People's interest in devices and willingness for adoption can vary
- Health care teams are challenge in keeping up with newly released technology.
- ADA consumerguide.diabetes.org, can help health care professionals and people with diabetes make decisions on initial devices.

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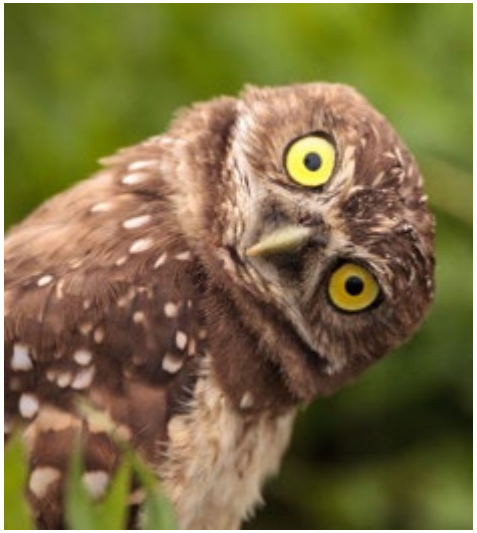
Poll Question 9

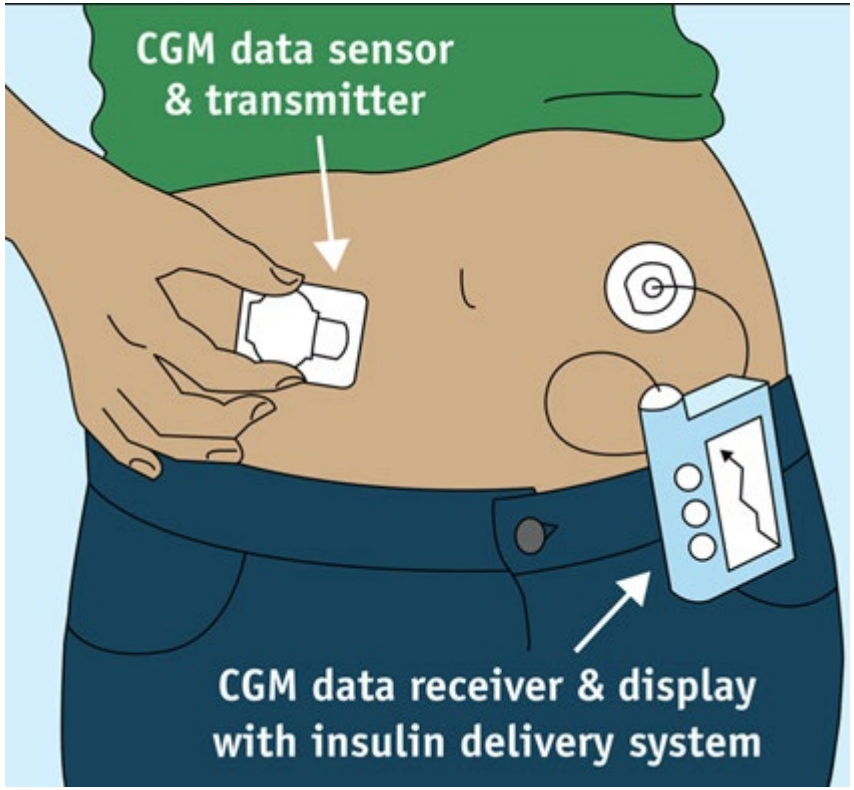
Based on the 2024 ADA guidelines, which one of the following individuals needs to be offered continuous glucose monitoring to manage their diabetes?



A. AL, a 54-year-old on a sulfonylurea plus metformin.
B. ZR, a 23-year-old with diabetes secondary to HIV retroviral therapy.
C. AW, an 18-year-old with prediabetes.
D. RT, a 68-year-old who has had several episodes of level 2 hypoglycemia.

Continuous Glucose Monitors

- Measures interstitial fluid to determine BG
- Can lag when BG levels rapidly rising/falling
- Tiny sensor under skin sends BG levels wirelessly to a pump, smartphone or other device.
- Adhesive can cause skin irritation.
- Substances that can affect accuracy: Tylenol, vitamin C, hydroxyurea, aspirin



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Continuous Glucose Monitoring (CGM)

- All people with type 1 diabetes
- Consider CGM in children to adults on insulin
- *Indicated during pregnancy
- *CGM indication has been expanded to include pregnancy for:
  - Dexcom G7,
  - FreeStyle Libre 2
  - FreeStyle Libre 3,
- which will enhance care in this population.

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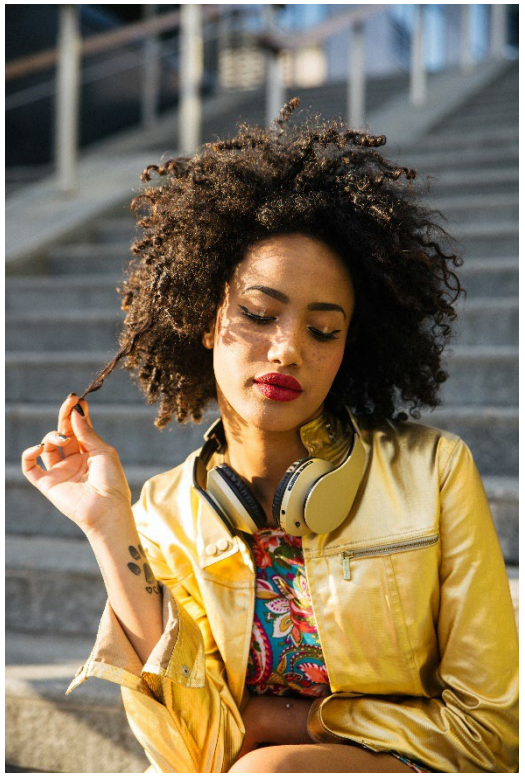
Benefits of CGM

- Generally reduce A1C if participants regularly wore device.
- Significant reductions in hypoglycemia Type 1
  - 38% reduction of overall hypo
  - 40% reduction of nighttime hypo
- Type 2 less hypo too
  - 43% reduction overall hypo
  - 54% reduction in nighttime hypo
- People using CGM devices must also have access to BGM at all times.



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AADE Practice Paper; The Diabetes Educator Role in Continuous Glucose Monitoring, July 2018

Automated Insulin Delivery Systems (AIDS)

- Offer AIDS to youth and adults with type 1 diabetes.
- Can be used for type 2 on multiple daily injections.
- Lowers A1C by 0.3%
- Reduces hypoglycemia rates
- Pump complications can include;
  - Dislodgement or occlusion (DKA), lipohypertrophy, lipoatrophy and pump site infection
  - People rarely stop pump therapy due to overall satisfaction

Online University
- Technology Toolkit
- Virtual DiabetesEd Specialist Course in April
- DANA Website (ADCES)

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Diabetes Wise – Non-Profit Site

DiabetesWise.org BETA Check Up Sensors Devices Wisdom Guides

Helping You Find The Right Diabetes Devices For Your Life.

CHECKUP

DO YOUR DEVICES STILL WORK FOR YOUR LIFE?

Take a quick quiz to see what might be your next diabetes care upgrade.

Check Up

Participant Situation 10

- JL left the office visit 6 wks ago with a new CGM.
- When JL returns, you download the AGP and you notice morning glucose levels are very low 6% of time.
- JL is on basal insulin plus metformin.
- JL tells you they have been increasing exercise for an hour before bed to help with evening glucose spikes.
- What do you recommend?

A. Add Bedtime snack
B. Reduce insulin to carb ratio.
C. Decrease basal insulin by 50%.
D. Explore fears around glucose spike.

8. Obesity and Weight Management for Prevention & Treatment of Type 2 Diabetes

- Provides cost information for pharmacologic treatment of obesity
- *Once a year, calculate BMI and assess weight trajectory to inform approach*
- *Be sensitive and allow for privacy when weighing*
- Use person centered language

8. Obesity and Weight Management for the Prevention and Treatment of Type 2 Diabetes: *Standards of Care in Diabetes–2024* FREE

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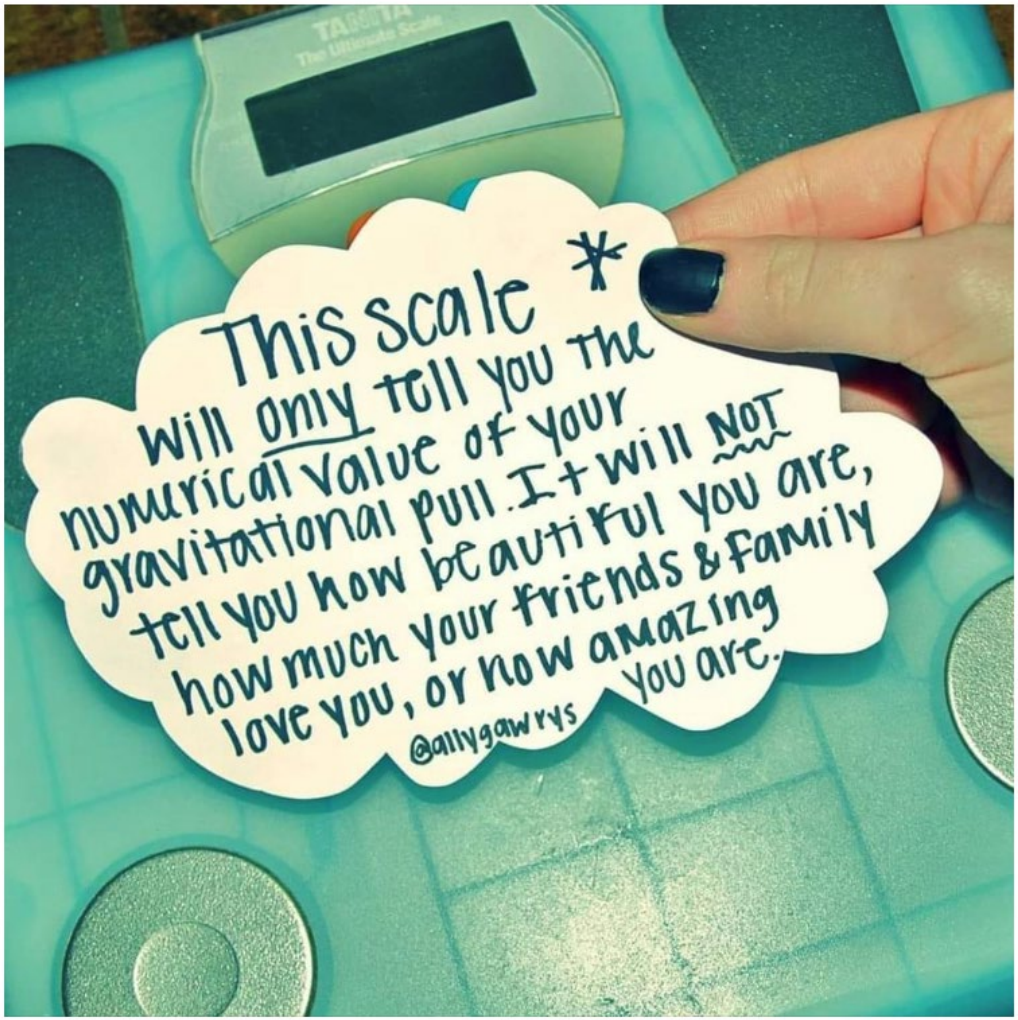
Person-centered communication

- Use inclusive and nonjudgmental language and active listening
- Elicit individual preferences and beliefs and assesses potential barriers to optimize health outcomes and health-related quality of life.
- Use person-first language (e.g., “person with obesity” rather than “obese person”) to avoid defining people by their condition.

Weight is a Heavy Issue



Use of BMI and Other Assessments

- WHO defines Obesity as: *abnormal or excessive fat accumulation that presents a risk to health*
- BMI poor indicator for ”excessive fat” and health risk

Overall - assess individual’s
- adipose tissue mass
- distribution (using waist circumference, waist-to-hip ratio, or waist-to-height ratio),
- function and
- presence of associated health or well-being consequences: metabolic, physical, or psychological well-being

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Weight Loss is Helpful

- Prediabetes weight loss goal is > 7% for preventing diabetes progression.
- Diabetes: Strong evidence that
  - Weight loss of 3–7% improves glycemia & intermediate CVD risk
  - >10% loss, may lead to remission of type 2 diabetes, CVD, & reduced mortality
  - Reduces need for medications
- Optimal goal is healthy weight maintenance

"People with diabetes and overweight or obesity may benefit from any magnitude of weight loss."

"Nutrition, physical activity, and behavioral therapy to achieve and maintain ≥5% weight loss are recommended for people with type 2 diabetes and overweight or obesity"

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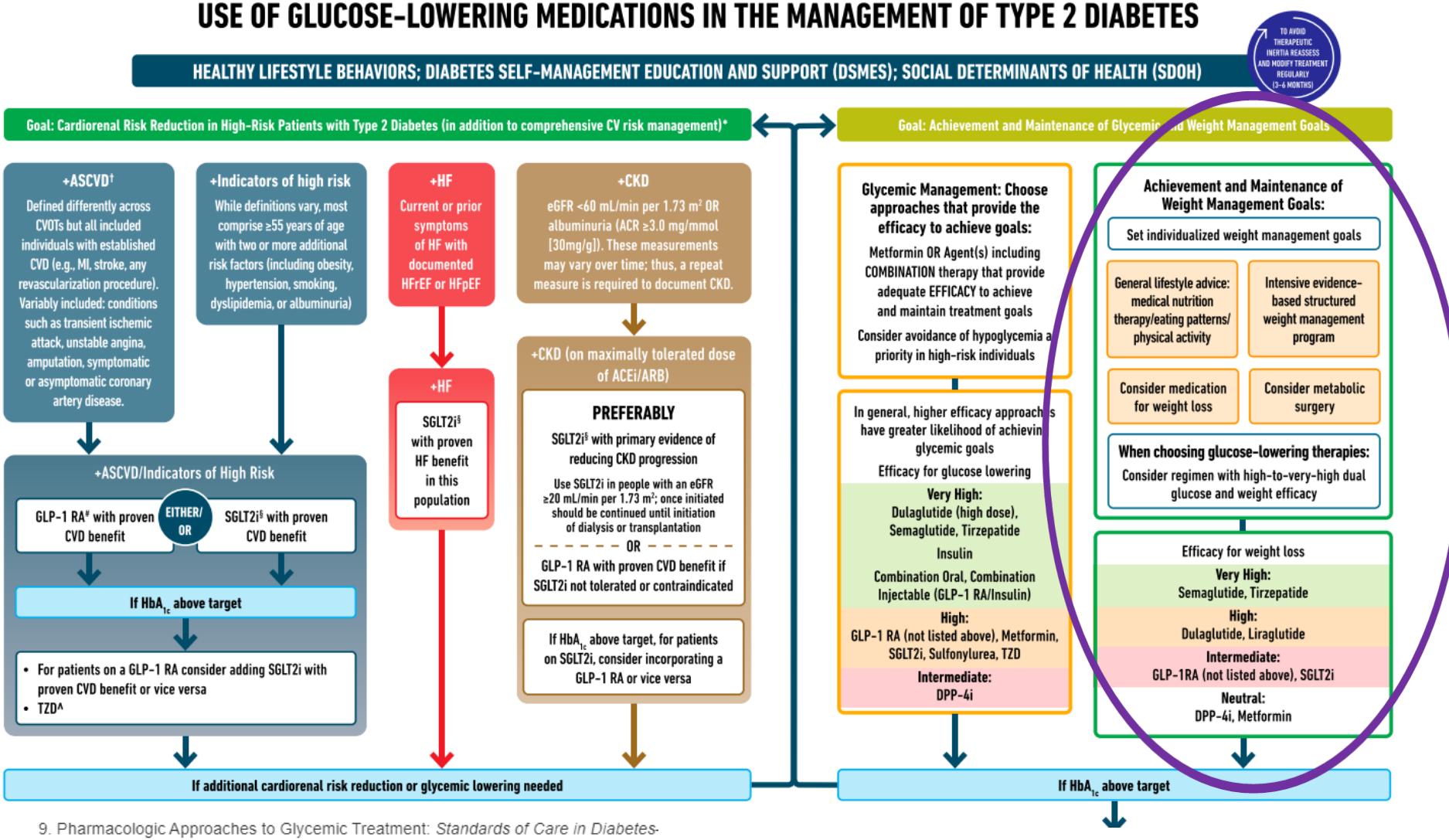
ADA Meds Algorithm



9. Pharmacologic Approaches to Glycemic Treatment: *Standards of Care in Diabetes-2024* FREE

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GLP-1 & GIP Receptor Agonists

Class/Main Action	Name	Dose Range	Considerations
GLP-1 RA - Glucagon Like Peptide Receptor Agonist **"Incretin Mimetic"** • Increases insulin release with food • Slows gastric emptying • Promotes satiety • Suppresses glucagon	exenatide (Byetta)	5 and 10 mcg BID	**Side effects:** nausea, vomiting, weight loss, injection site reaction. Report signs of acute pancreatitis or intestinal blockage (ileus) and stop med. Increase dose monthly to achieve targets. **Black box warning:** Thyroid C-cell tumor warning (avoid if family history of medullary thyroid tumor). *Significantly reduces risk of CV death, heart attack, and stroke. †Approved for pediatrics 10-17 yrs Lowers A1C 0.5 – 1.6% Weight loss: 4-6% body weight loss.
	exenatide XR† (Bydureon)	2 mg 1x a week Pen injector - Bydureon BCise	
	liraglutide (Victoza)*†	0.6, 1.2 and 1.8 mg daily	
	dulaglutide* (Trulicity)†	0.75, 1.5, 3.0 and 4.5 mg 1x a week pen injector	
	semaglutide* (Ozempic)	0.25, 0.5, 1.0 and 2.0 mg 1x a week pen injector	
	(Rybelsus) Oral tablet	3, 7, and 14 mg daily in a.m. Take on empty stomach with sip of water	
GLP-1 & GIP Receptor Agonist Activates receptors for GLP-1 (see above) & Glucose-dependent Insulinotropic Polypeptide (GIP).	Tirzepatide (Mounjaro)	2.5, 5.0, 7.5, 10, 12.5 and 15 mg 1x a week prefilled single dose pen Increase dose by 2.5 mg once monthly to reach targets.	**Side effects:** nausea, diarrhea, injection site reaction. Report pancreatitis, signs of intestinal blockage. **Black box warning:** Avoid if family history of medullary thyroid tumor. Lowers A1C ~ 1.8 - 2.4% Weight loss: 7-13% body weight loss at max dose.

GLP-1 /GIPs Approved for Weight Loss

- Liraglutide:
  - Victoza 1.8 mg (diabetes)
  - Saxenda 3 mg (wt loss)
  - 6% wt loss, $1349 a mo
- Semaglutide:
- Ozempic 2mg (diabetes)
  - Wegovy 2.4mg (wt loss)
  - 6% wt loss, $1349 a mo
- Tirzepatide
  - Mounjaro 15mg (diabetes)
  - Zepbound (wt loss)
  - 13% wt loss - $1056 a mo

All 3 Approved for use in adults with a:

- BMI of ≥ 30 or
- BMI of ≥ 27 or greater who have hypertension, type 2 diabetes, or dyslipidemia.

Treatment options for BMI 25+

Treatment options for overweight and obesity in type 2 diabetes

Treatment	BMI category (kg/m^2)		
	25.0–26.9 (or 23.0–24.9*)	27.0–29.9 (or 25.0–27.4*)	≥30.0 (or ≥27.5*)
Diet, physical activity, and behavioral therapy	+	+	+
Pharmacotherapy		+	+
Metabolic surgery			+

Consider using diabetes medications that contribute to weight loss, including GLP-1 RAs and SGLT-2 inhibitors.

Metabolic Surgery Stats

- Surgical Treatment and Medications Potentially Eradicate Diabetes Efficiently (STAMPEDE) trial, randomized 150 participants with diabetes to receive either metabolic surgery or medical treatment.
  - A1C of 6.0% or lower after 5 years - 29% of those treated with RYGB and 23% treated with vertical sleeve gastrectomy (vs 5% med mgmt)
  - Avg wt loss 25 -30% plus decreased CV mortality & improved QoL
- Erosion of diabetes remission over time
  - at least 35–50% of individuals who initially have remission eventually experience recurrence.
  - Median disease-free period among such individuals following RYGB is 8.3 years
  - Majority of those who undergo surgery maintain substantial improvement of glycemia from baseline for at least 5–15 yrs

Section 9- Pharmacologic Approaches to Glycemic Treatment

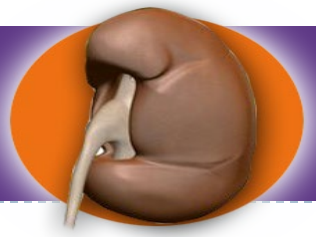
- Same Algorithm for Oral Meds and Insulin Therapy as 2023
- Ongoing attention to considering CVD, Heart failure and CKD, weight loss when choosing diabetes medication
- Updated chart on cost and attributes of different meds

Poll Question 11

Based on the ADA Management of Hyperglycemia in Type 2 diabetes, which of the following is an accurate recommendation?

A. Initiate treatment with metformin for most individuals, including those with cardiovascular disease.
B. Prioritize the use of organ protective medications in those with cardiorenal disease.
C. If A1C not at target with 2 or more oral agents, add on basal insulin therapy.
D. Avoid the use of SGLT-2 Inhibitors in those with an eGFR of less than 25.

SGLT2 Inhibitors- "Glucoretics"



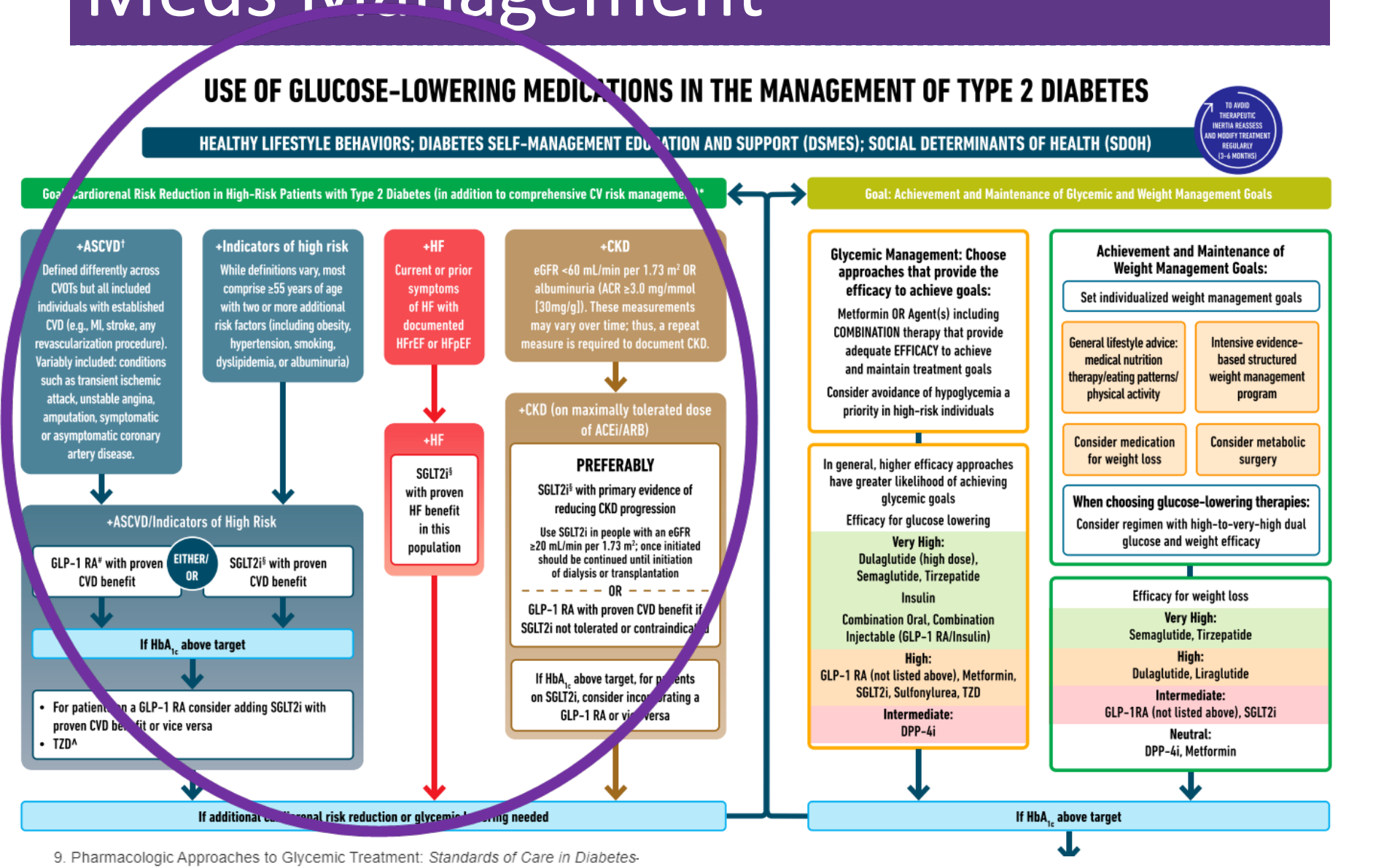
- **Action**: "Glucoretic" decreases renal reabsorption in the proximal tubule of the kidneys (reset renal threshold and increase glucosuria). Risk of ketoacidosis, Fournier's gangrene

Common Oral Diabetes Meds

Class/Main Action	Name(s)	Daily Dose Range	Considerations
SGLT2 Inhibitors "Glucoretic" • Decreases glucose reabsorption in kidneys	Canagliflozin* (Invokana) Dapagliflozin* (Farxiga) Empagliflozin*† (Jardiance) Ertugliflozin (Steglatro) Bexagliflozin (Brenzavvy)	100 - 300 mg 1x daily 5 - 10 mg 1x daily 10 - 25 mg 1x daily 5 – 15 mg 1x daily 20 mg 1x daily	**Side effects:** hypotension, UTIs, genital infections, increased urination, weight loss, ketoacidosis. **Heart Failure, CV & Kidney Protection:** 1st line therapy for Heart Failure (HF), Kidney Disease (CKD), Cardiovascular Disease, before or with metformin. **Considerations:** See Package Insert (PI) for GFR cut-offs, dosing. Limited BG lowering effect if GFR < 45, still benefits kidneys & heart at lower GFR. If CKD & GFR ≥20, use SGLT-2 to reduce CVD, HF, preserve renal function. (ADA/EASD) **Benefits:** SGLT-2s* reduce BG, CV death & HF, slow CKD. †Approved for peds, 10 yrs +. Lowers A1C 0.6% to 1.5%.

PocketCards updated annually. Download FREE CDCES Coach App for latest updates and notifications.

Meds Management



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Poll Question 12

- JR is newly diagnosed with type 2. A1C is 7.9. GFR is 63. UACR 26 mg/g. History of CHF. According to 2024 ADA Standards, what med along with lifestyle should be started first?

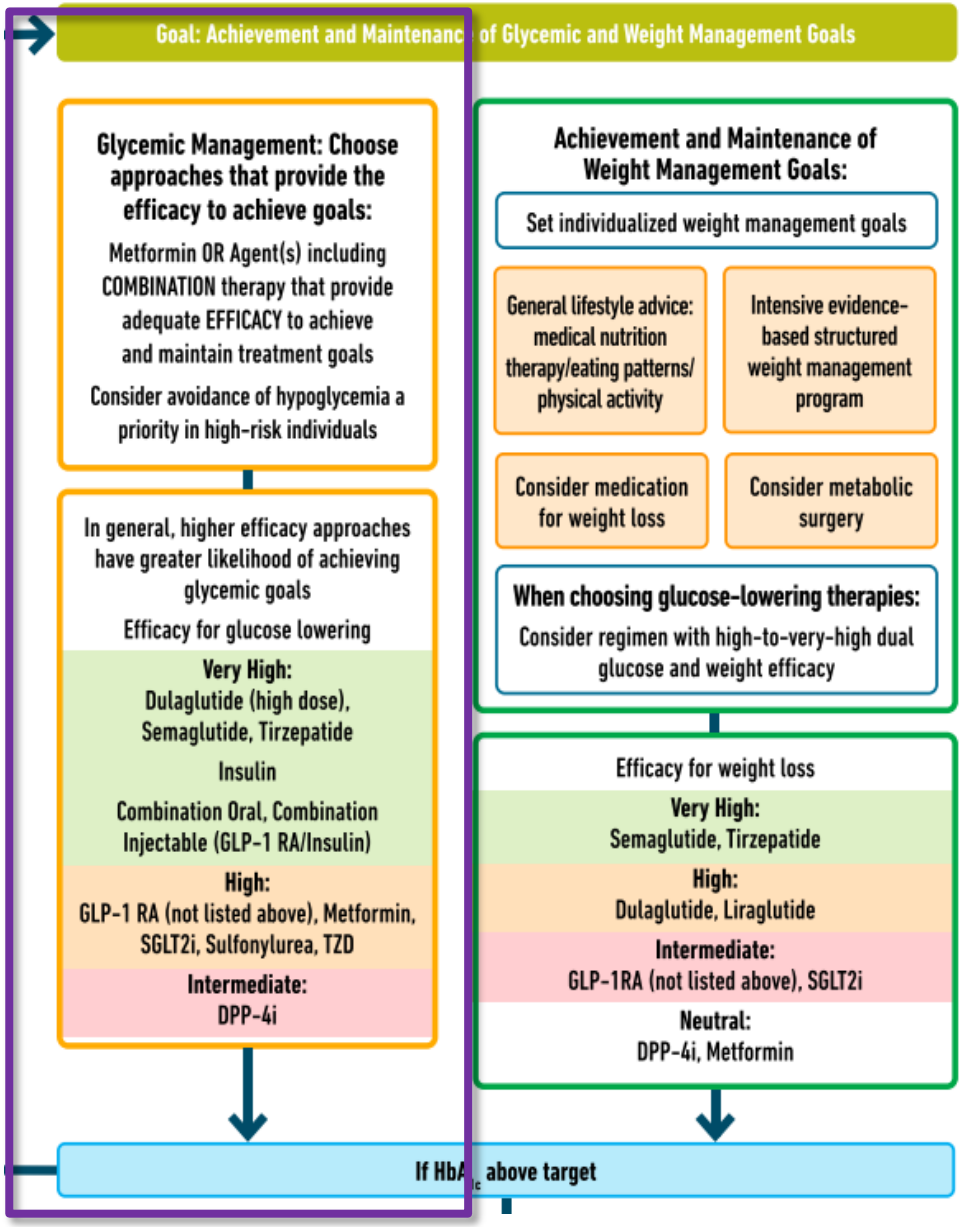
  a. Only Metformin, since A1c is close to target.

  b. Metformin or SGLT-2

  c. Sulfonylurea

  d. GLP-1 or Metformin

Metformin is "Usually" 1st Line



- Why metformin?
  - Longstanding evidence
  - High efficacy and safety
  - Inexpensive - 3 months for $12
  - Weight neutral

- If ASCVD, HF or CKD or high ASCVD risk, use SGLT2i or GLP-1 RA +/- metformin
- If A1C ≥ 8.5%, consider combo therapy.

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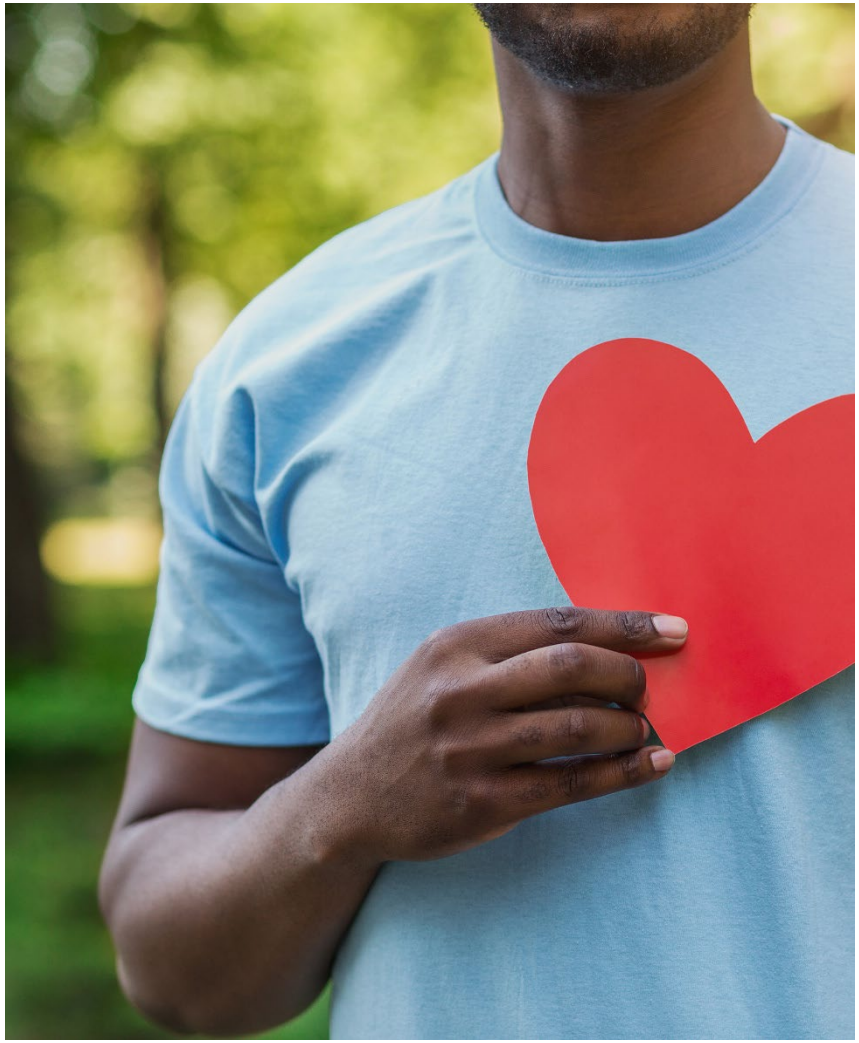
Diabetes Meds Lower CV Risk

- If diabetes plus ASCVD risk factors
  - SGLT-2s* and GLP-1s* reduce risk of major adverse CV events
  - Plus ACE or ARB
  - Post MI, continue beta blockers for 3 years.
- If type 2 diabetes and heart failure
  - SGLT-2s reduce risk of heart failure and hospitalization.
  - Also consider beta blocker



10. Cardiovascular Disease and Risk Management: *Standards of Care in Diabetes—2024* FREE

10. Cardiovascular Disease and Risk Management

- Atherosclerotic cardiovascular disease (ASCVD) and Heart Failure are leadings causes of morbidity and mortality in diabetes.
- ASCVD includes:
  - coronary heart disease (CHD),
  - cerebrovascular disease, or
  - peripheral arterial disease
- $39.4 billion in cardiovascular-related spending per year

Large benefits are seen when multiple CV risk factors are addressed simultaneously

With more aggressive goals, rates of CVD have decreased over past decade

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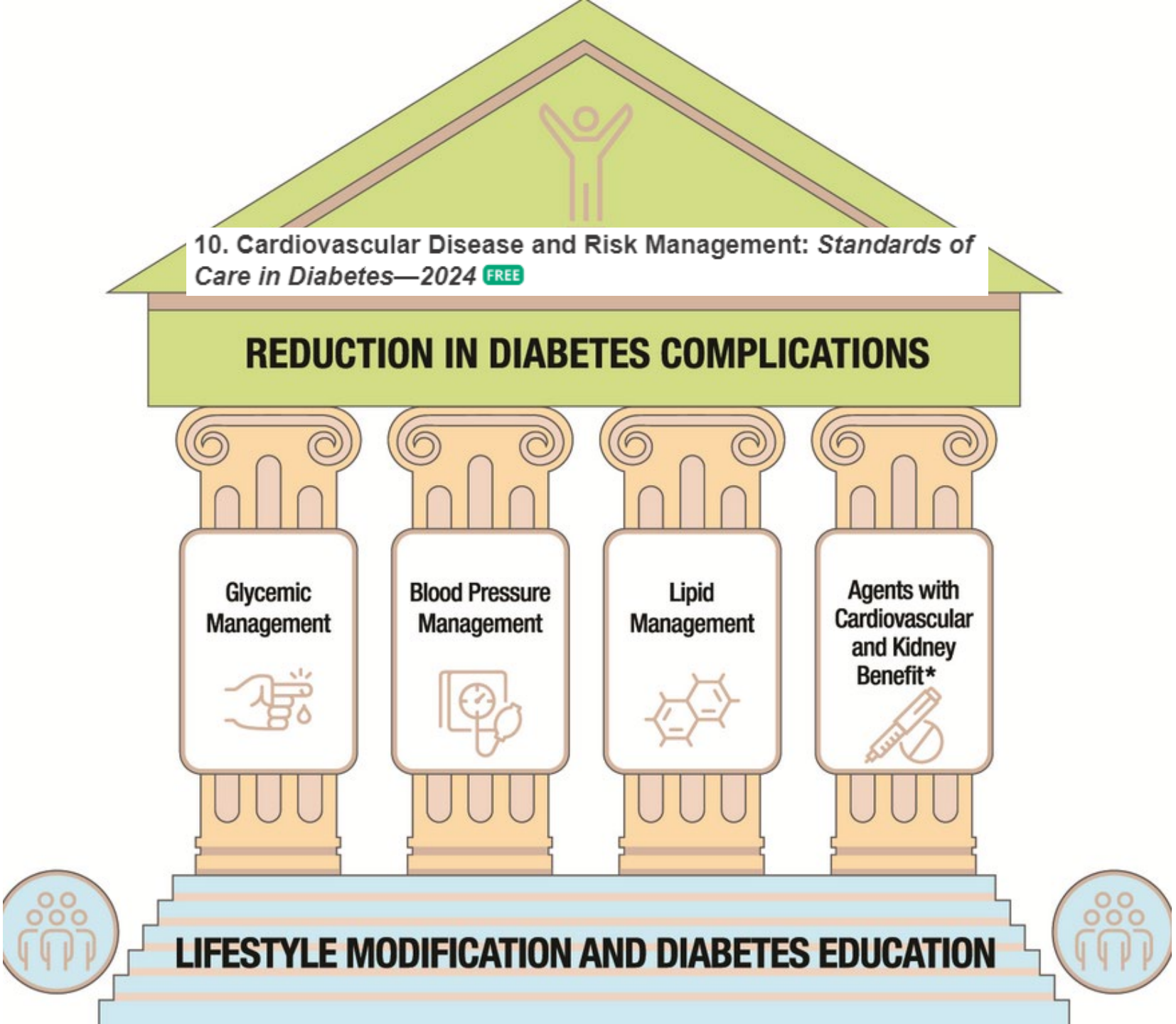

Assess ASCVD and Heart Failure Risk Yearly

- Duration of diabetes
- BMI
- Hypertension
- Dyslipidemia
- Smoking
- Family history of premature coronary disease
- Chronic kidney disease – presence of albuminuria

Treat modifiable risk factors as described in ADA guidelines.

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Poll Question 13

- RJ is a healthy 52 yr old with diabetes. RJ takes an ACE Inhibitor, insulin and a statin. According to ADA Standards of Care 2024, what is the blood pressure target for RJ?
- A. Less than 120/70
- B. Less than 130/80
- C. Less than 140/90
- D. Less than 135 /85

BP and Diabetes Targets

- **BP target <130/80 (if it can be safely attained)**

- Confirm systolic BP ≥ 130 or diastolic BP ≥ 80 using multiple readings, including measurements on a separate day, to diagnose hypertension.
- If BP ≥ 180/110, can be diagnosed at single visit
- BP target based on ind assessment, shared decision making and potential adverse effects
- Monitor BP at home and at each visit
- During pregnancy, with previous history of HTN
  - B/P Target of 110 -135/85

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Lipid and HTN Meds Cheat Sheets

Cholesterol Medications

LDL Lowering Medications

Class / Action	Generic / Trade Name	Usual Daily Dose Range	LDL % Lowering	Considerations
"Statins" HMG- CoA Reductase Inhibitors Inhibits enzyme that converts HMG-CoA to mevalonate - limits cholesterol production	Atorvastatin / Lipitor*	10 – 80 mg	20- 60	Lowers TGs 7-30% Raise HDL 5-15% Take at night. **Side effects**: weakness, muscle pain, elevated glucose levels. Review package insert for specific dosing adjustments based on drug, food interactions (ie grapefruit).
	Fluvastatin / Lescol* Lescol XL	20 – 80 mg 80 mg	20- 35	
	Lovastatin* Mevacor Altoprev XL	 20 - 80 mg 10 - 60 mg	20- 45	
	Pravastatin / Pravachol*	10 - 80 mg	20- 45	
	Rosuvastatin / Crestor	5 – 40 mg	20- 60	
	Simvistatin / Zocor*	20 – 80 mg	20- 55	
	Pitavastatin / Livalo	2 – 4 mg		
Bile Acid Sequestrants **Action:** Bind to bile acids in intestine, decreasing cholesterol production. Secondary action – raise HDL	Cholestyramine/ Questran*	4 to 16 g per day powder – 1 scoop 4g	Lower LDL by 15-30%	May raise TG levels. Raise HDL 3-5%. Avoid taking in same timeframe w/ other meds – may affect absorption (see package insert). Side effects: GI in nature
	Colesevelam / Welchol **Lowers A1c 0.5%**	3.75 x 1 daily 1.875 x 2 daily (625mg tablets)		
	Colestipol / Colestid	2 - 16 gms per day tabs Powder – 1 scoop = 5g 5 to 20 gm per day Mix w/ fluid		
Cholesterol Absorption Inhibitors	Ezetimibe / Zetia	10 mg – 1x daily	15-20%	Usually used in combo w/statin. Headache, rash.
Plant Stenols	Benecol	3 servings daily	14%	Well tolerated
Plant Sterols	Take Control	2 servings daily	17%	

Triglyceride Lowering / HDL Raising Medications

If TG> 500, lower TG first, then reduce LDL.

Antihypertensive Medications

ACE and ARBs are preferred therapy for diabetes with hypertension and albuminuria – If B/P not at goal with either of these agents, add a diuretic or other class. Do not use during pregnancy or in persons w/ renal or hepatic dysfunction. Start w/ low dose, gradually increase. If one class is not tolerated, the other should be substituted. For those treated with an ACE inhibitor, angiotensin receptor blocker, or diuretic, serum creatinine/estimated glomerular filtration rate and serum potassium levels should be monitored at least annually. ADA Standards CV Disease Risk Management

Class / Action	Generic / Trade Name	Usual Daily Dose Range	Frequency	Considerations
ACE Inhibitors Angiotensin Converting Enzyme **Action** - Block the conversion of AT-I to AT-II. Also stimulates release of nitric oxide causing vasodilation.	benazepril / Lotensin†	10 – 40 mg	1 x a day	Try to take same time each day. Effects seen w/in 1 hr of admin, max effects in 6 hrs. **Side effects**: Can cause cough (due to increased bradykinin) – can try different med in same class. Also can cause fatigue, dizziness, hypotension. †These meds are also available as a combo w/ low dose HCTZ (hydrochlorothiazide). ‡These meds are also available as a combo w/ CCB (calcium channel blocker) usually amlodipine
	captopril /Capoten*†	12.5 - 100 mg	2-3 x a day	
	Enalopril/ Vasotec*†	2.5 - 40 mg	1-2 x a day	
	Fosinopil / Monopril†	10- 40 mg	1 x a day	
	Lisinopril *† Prinivil Zestril	 10 – 40 mg 10 - 40 mg		
	Ramipril / Altace*†	2.5 – 10 mg		
	Moexipril / Univasc†	3.75 - 15 mg		
	Perindopril/Aceon‡	2-16 mg		
	Perindopril/ Indapamide combo (Coversyl)	2 - 8 mg 0.625 - 2.5 mg		
	Quinapril /Accupril†	5 – 40 mg		
	Trandolapril/ Mavik	1.0 – 4 mg		
	Trandolapril/ Verapamil combo (TARKA)	1-4 mg 180 to 240 mg		
ARBs -Angiotensin Receptor Blockers **Action** -Block AT-I receptor which reduces aldosterone secretion and vasoconstriction	Azilsartan/Edarbi	40 - 80 mg	1 x daily	Try to take same time each day **Side effects**- Can cause dizziness, drowsiness, diarrhea, hyperkalemia, hypotension.
	Azilsartan/ Chlorthalidone combo (Edarbyclor)	40 mg 12.5 - 25 mg		
	Candesartan/Atacand†	8 – 32 mg		
	Eprosartan/Teveten†	400 - 600 mg		

Website: https://diabetesed.net/coach-bevs-diabetes-cheat-sheets/

On CDCES Coach App too

For exam, know major classes, when used, side effects and considerations.

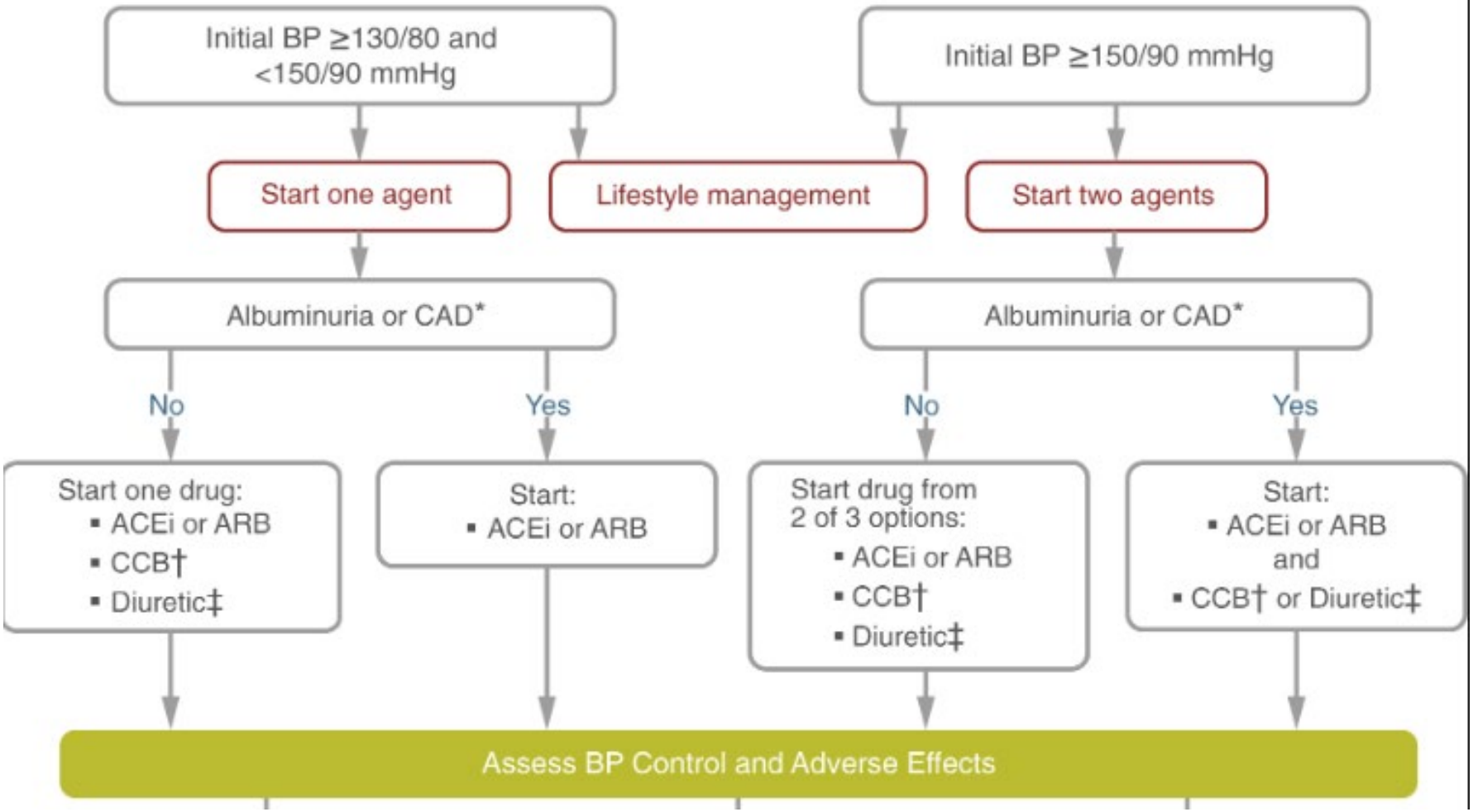
BP Treatment in addition to Lifestyle

- **First Line B/P Drugs if 130/80 +**
  - With albuminuria* or ASCVD
    - Start either ACE or ARB
  - No albuminuria - Any of the 4 classes of BP meds can be used:
    - *ACE Inhibitors, *ARBs, *thiazide-like diuretics or calcium channel blockers.
    - *Monitor K+ 7-14 days after start/annually
  - Avoid ACE and ARB at same time
  - Multiple Drug Therapy often required
- **If B/P ≥ 150 /90 start 2 drug combo**

*Albuminuria = Urinary albumin creatinine ratio of 30+

10. Cardiovascular Disease and Risk Management: *Standards of Care in Diabetes—2024* FREE

Recommendations for the Treatment of Confirmed Hypertension in Nonpregnant People With Diabetes



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Poll Question 14

RZ is 47 years old with type 2 diabetes and hypertension. RZ takes metformin 1000 mg BID, plus lisinopril 20mg daily. RZs LDL is 130 mg/dL. Based on the most recent ADA Standards, what is the LDL Cholesterol target for RZ?

A. LDL less than 100 mg/dL.

B. Lower LDL by 30%.

C. LDL target of 65 mg/dL or less.

D. Determine LDL target based on ASCVD risk.

ADA 2024 Summary for Exams

A1c less than 7% (individualize)

- Pre-meal BG 80-130
- Post meal BG <180
- Time in Range (70-180) 70% of time

Blood Pressure <130/80

Cholesterol

- Statin therapy based on age & risk status
- If 40+ with ASCVD Risk, decrease LDL by 50%, LDL <70
- If 40+ with ASCVD, decrease LDL by 50%, LDL <55

Lipid Monitoring and Lifestyle Treatment Strategies

- Lipid Goals
  - LDL < 70 or 55 based on risk
  - HDL >40
  - Triglycerides <150

Monitoring:
If **not** taking statins and underage of 40.
- check at time of diagnosis and every 5 yrs.

On statin
Monitor lipids at diagnosis and yearly.
Monitor lipids 4-12 weeks after statin dose adjustment.

- Weight loss if indicated
- Mediterranean or DASH Diet
- Reduction of saturated fat intake
- Increase of omega-3 fatty acids, viscous fibers and plant stanols/sterols
- Increase activity level
- BG lowering helps lower triglycerides and increase HDL

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Statin Therapy

- Moderate intensity (lowers LDL 30-50%)
  - atorvastatin (Lipitor) 10-20mg
  - rosuvastatin (Crestor) 5-10mg
  - simvastatin (Zocor) 20-40mg
  - pravastatin (Pravachol) 40 – 80mg
  - lovastatin (Mevacor) 40 mg
  - fluvastatin (Lescol) XL 80mg
  - pitavastatin (Livalo) 1-4mg
- High intensity statins (lowers LDL 50%):
  - atorvastatin (Lipitor) 40-80mg
  - rosuvastatin (Crestor) 20-40mg

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New Lipid Lowering Medications

Contributor: Diana Isaacs, PharmD, BCPS, BCACP, BC-ADM, CDCES, FADCES, FCCP 2022

PCSK9 Inhibitors Lipid Medications

Proprotein convertase subtilisin/kexin type 9

	Alirocumab (Praluent)	Evolocumab (Repatha)
FDA-approved indications	• Primary hyperlipidemia (HLD) • Homozygous familial hypercholesterolemia (HoFH) • Secondary prevention of cardiac events	
Dosing	• **HoFH**: 150 mg SC q2 weeks • **HLD or secondary cardiac prevention**: 75 mg SC q2 weeks or 300 mg SC q4 weeks; if adequate LDL response not achieved, may increase to max of 150 mg q2 weeks	• **HoFH**: 420 mg SC q4 weeks; may increase to 420 mg q2 weeks if meaningful response not achieved in 12 weeks • **HLD or secondary cardiac prevention**: 140 mg q2 weeks or 420 mg q4 weeks
Dosage forms	• Auto-injector 75 mg/mL or 150 mg/mL	• Repatha Sure Click (auto-injector) 140 mg/mL • Repatha Pushtronex System (single use infusor with pre-filled cartridge) 420 mg/3.5 mL – administered over 9 minutes
Storage	• Store in refrigerator in outer carton until used • Once used, keep at room temperature, use within 30 days	
Injection clinical pearls	• Do not shake or warm with water • Administer by SC injection into thigh, abdomen, or upper arm • Rotate injection site with each injection	
Drug interactions	• No known significant interactions	
Monitoring parameters	• Lipid panel before initiating therapy, 4-12 weeks after initiating, and q3-12 months thereafter	
Side effects	• Injection site reaction (4-17%) • Hypersensitivity reaction (9%) • Influenza (6%) • Myalgia (4-6%) • Diarrhea (5%)	• Nasopharyngitis (6-11%) • Upper respiratory tract infection (9%) • Diabetes mellitus (9%) • Influenza (8-9%) • Injection site reaction (6%) • Myalgia (4%)

From Meds Cheat Sheet Page

Lipid Therapy in Diabetes by Age

- All ages 20+ *with* ASCVD, add high-intensity statin to lifestyle
- 20–39 and additional ASCVD risk factors
  - may be reasonable to initiate statin therapy in addition to lifestyle.
- 40-75 years
  - Moderate to high intensity statin based on risk (see previous slides)
- 75 years or older and already on statin
  - it is reasonable to continue statin treatment.
- 75 years or older
  - it may be reasonable to initiate moderate-intensity statin therapy after discussion of potential benefits and risks.

10. Cardiovascular Disease and Risk Management: *Standards of Care in Diabetes—2024* FREE

Coronary Vessel Disease Meds

- In those with CVD or at higher risk:
  - Get blood glucose to goal
  - Statin therapy with addition of ezetimibe or a PCSK9 inhibitor recommended if goals not achieved on maximum tolerated statin therapy.
  - B/P Med (ACE or ARB)
  - Beta blocker after MI or CHF
  - Aspirin (or another agent)
  - Diabetes Meds that significantly decrease CV events:
    - *SGLT-2i's
      - Empagliflozin (Jardiance), canagliflozin (Invokana), dapagliflozin (Farxiga)
    - *GLP-1 RA's
      - Semaglutide (Ozempic), liraglutide (Victoza), dulaglutide (Trulicity)

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Standard 11 - Chronic Kidney Disease and Risk Management

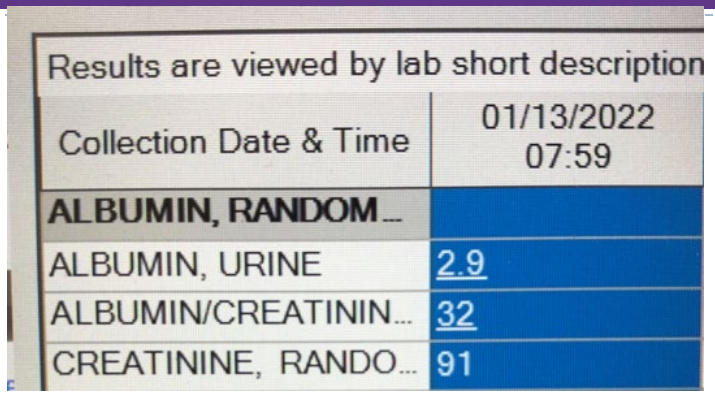
- Optimize glucose and B/P to protect kidneys
- Screen Urine Albumin Create ratio, GFR
  - Type 2 at dx then yearly
  - Type 1 with diabetes for 5 years, then yearly
  - If established CKD, screen 1-4 times a year to guide therapy.
- Treat hypertension with ACE or ARB and for elevated albumin-to-creatinine ratio of 30 -299.
- Monitor serum creat and K+
  - if on ACE, ARB or diuretics or MRAs

See Level 2 Course, Microvascular Complications

11. Chronic Kidney Disease and Risk Management: *Standards of Care in Diabetes—2024*

Evaluating Kidney Function - Albumin

- Urinary Albumin Creatinine Ratio (UACR)
- UACR can be assessed with a urinary spot collection.
  - Evaluates ratio of urine albumin /creatinine in mg/g
  - Target range < 30mg/g
  - If elevated, repeat test to verify
- Check at diagnosis in T2D and within 5 years in T1D



Results are viewed by lab short description	
Collection Date & Time	01/13/2022 07:59
ALBUMIN, RANDOM...	
ALBUMIN, URINE	2.9
ALBUMIN/CREATININ...	32
CREATININE, RANDO...	91

2.9 / 91 = 0.0318 mg/mg or 31.8 (32) in mg/g

Albuminuria Categories	Urinary Albumin Creatine Ratio (UACR)
Normal to mildly increased – A1	< 30 mg/g
Moderately increased – A2	30 – 299 mg/g
Severely increased – A3	300 mg/g +

Evaluating Kidney Function - GFR

- Glomerular Filtration Rate (GFR)– target is 60 or greater
  - Stage 3 indicates progressive renal failure
    - GFR 30 to 59
  - Stage 4 and 5 indicates severe loss and failure
    - GFR 29 or less

Kidney Disease Stage	GFR
Stage 1 – Normal	90+
Stage 2 – Mild loss	89 - 60
Stage 3a – Mild to Mod	59 - 45
Stage 3b – Mod to Severe	44 - 30
Stage 4 – Severe loss	29 -15
Stage 5 – Kidney failure	14 - 0

Poll Question 15

- Evaluating kidney function is important to determine most beneficial treatment interventions. Which of the following measurements would indicate that JR has healthy kidney function?

A. Urinary albumin creatinine ratio of 30-299 mg/g with GFR of 45.
B. GFR of 60 or greater and urinary albumin creatinine ratio of 12 mg/g.
C. Urinary albumin creatinine ratio less than 30 mg/g and GFR of 30-45.

- Creatinine of 1.5 and urinary albumin creatinine ratio of 300 mg/g or greater.

11. Chronic Kidney Disease and Risk Management: *Standards of Care in Diabetes—2024*

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CKD is classified based on:
- **Cause (C)**
- **GFR (G)**
- **Albuminuria (A)**

GFR categories (mL/min/1.73 m²) Description and range				Albuminuria categories Description and range		
				A1	**A2**	**A3**
				Normal to mildly increased	Moderately increased	Severely increased
				<30 mg/g <3 mg/mmol	30–299 mg/g 3–29 mg/mmol	≥300 mg/g ≥30 mg/mmol
	G1	Normal or high	≥90	Screen 1	Treat 1	Treat and refer 3
	G2	Mildly decreased	60–89	Screen 1	Treat 1	Treat and refer 3
	G3a	Mildly to moderately decreased	45–59	Treat 1	Treat 2	Treat and refer 3
	G3b	Moderately to severely decreased	30–44	Treat 2	Treat and refer 3	Treat and refer 3
	G4	Severely decreased	15–29	Treat and refer* 3	Treat and refer* 3	Treat and refer 4+
	G5	Kidney failure	<15	Treat and refer 4+	Treat and refer 4+	Treat and refer 4+

Low risk (if no other markers of kidney disease, no CKD)

Moderately increased risk

High risk

Very high risk

Standard 11 – Protect Kidneys

- Diabetes with a
  - GFR ≥20 and
  - UACR ≥200 mg/g
- Start SGLT2 to reduce chronic kidney disease progression and cardiovascular events.

- If type 2 diabetes and established Chronic Kidney Disease (CKD)
  - Start nonsteroidal mineralocorticoid receptor antagonist (finerenone) and/or GLP-1 RA recommended for cardiovascular risk reduction.

11. Chronic Kidney Disease and Risk Management: *Standards of Care in Diabetes—2024*
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Finerenone

New nonsteroidal MRAs for Type 2 and Chronic Kidney Disease

Nonsteroidal Selective Mineralocorticoid Antagonist

Indicated for people with chronic kidney disease (CKD) associated with Type 2 diabetes. Reduces the risk of kidney function decline, kidney failure, cardiovascular death, non-fatal heart attacks, and hospitalization for heart failure in adults with chronic kidney disease associated with type 2 diabetes. The mineralocorticoid receptor antagonist blocks the effects of aldosterone and reduces the risk of kidney function decline as well as heart failure.

Class / Action	Generic / Trade Name	Daily Dose	Frequency	Considerations
Nonsteroidal, selective mineralocorticoid antagonist. Blocks mineralocorticoid receptor mediated sodium reabsorption and mineralocorticoid overactivation in epithelial (for example kidneys) and nonepithelial (for example heart, blood vessels) tissues.	**Finerenone / Kerendia**	**10-20 mg**	**Once daily**	Monitor potassium 4 weeks after initiation or dose adjustment (although impact on potassium is much less than non-slective mineralocorticoid antagonists like spironolactone). Since medication is a CYP3A4 substrate, avoid taking with other strong cype3A4 inhibitors. Avoid grapefruit or grapefruit juice. May take with or without food.

Contributor: Diana Isaacs, PharmD, BCPS, BCACP, BC-ADM, CDCES, FADCES, FCCP 2022

See Diabetes Cheat Sheets – Medications Cheat Sheets

A 67 yr old man, smokes ppd

- A1c 8.9% (down from 10.4%)
- B/P 139/76 AM BG 100, 2 hr pp 190
- Chol – TG 54, HDL 46, LDL 98
- GFR 47, UACR 34 mg/g

- Meds:
  - Insulin – 28 units basaglar insulin
  - Losartan 25mg – ARB for blood pressure
  - Metoprolol 50mg – Beta blocker
  - Glyburide 5mg BID - Sulfonylurea

Any special instructions? Any meds missing? Stop any meds?

Special instruction – sweating may indicate hypoglycemia

Standards 12-15

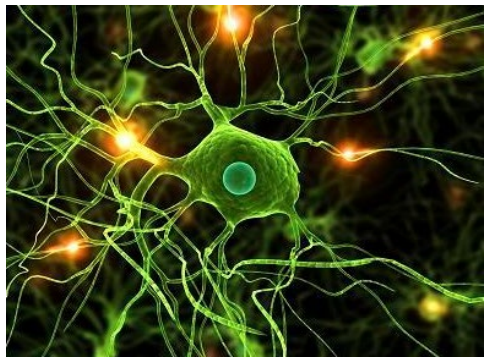
- Important highlights of Goals and Targets for Microvascular disease, Older adults, Pediatrics and Pregnancy.
- Please join Level 2 Courses for detailed content.

12. Microvascular Complications - Eyes

- Optimize BG and B/P Control to protect eyes
- Screen with initial dilated and comprehensive eye exam by ophthalmologist or optometrist
  - Type 2 at diagnosis, then every year*
  - Type 1 within 5 years of dx, then every year*
  - *If **no** evidence of retinopathy **and** glycemic indicators within goal range, then screening every 1–2 years may be considered.
- Appropriate to use retinal photography with remote reading or U.S. FDA of approved artificial intelligence algorithms to improve access to diabetes retinopathy screening.
- Promptly refer people with macular edema, severe non-proliferative disease to trained specialist.

12. Retinopathy, Neuropathy, and Foot Care: *Standards of Care in Diabetes—2024* FREE

12. Microvascular Complications Nerves



- Nerve Disease
  - Tight glycemic control
  - Screen for nerve disease using simple tests, such as a monofilament, pinprick & vibration
    - Type 2 at diagnosis, then annually
    - Type 1 diabetes 5 years, then annually
  - Assess and treat to reduce pain and symptoms to improve quality of life.

12. Retinopathy, Neuropathy, and Foot Care: *Standards of Care in Diabetes—2024* FREE

13. Older Adults
Healthy & Good Functional Status

- Set more intensive goals if:
  - Good cognitive and physical function
  - Expected to live long enough to reap benefits of intensive management,
- Ongoing follow-up to eval safety, hypoglycemia frequency, neurocognition
- If on insulin or hx of hypo, eval for CGM or AIDS

- **Goals:**
  - Reasonable A1c goal <7.0 - 7.5%
  - Fasting BG 80 – 130
  - Bedtime Glucose 80-180
  - Blood Pressure < 130/80
  - Statin unless contraindicated or not tolerated

65 or older
- 25% have diabetes
- 50% have prediabetes

Older Adults with Complications and Reduced Functionality - Less Intense Goals

- Intermediate remaining life expectancy, high treatment burden, hypo and fall risk.
- Consider DE-Intensification
- Goals:
  - Reasonable A1c goal <8.0%
  - Fasting BG 90 – 150
  - Bedtime BG 100-180
  - Blood Pressure < 130/80
  - Statin unless contraindicated or not tolerated

13. Older Adults: *Standards of Care in Diabetes—2024* FREE

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14. Children & Adolescents: Glycemic Targets

- **A1c goal 6.5 – 8.0% for Type 1**
  - Generally, goal is <7.0%
  - Individualization is encouraged.
  - A goal <6.5% may be considered for those at low risk of excessive hypoglycemia
  - A goal of 7.5 - 8.0 % may be needed
  - CGM / Insulin pump important tools.

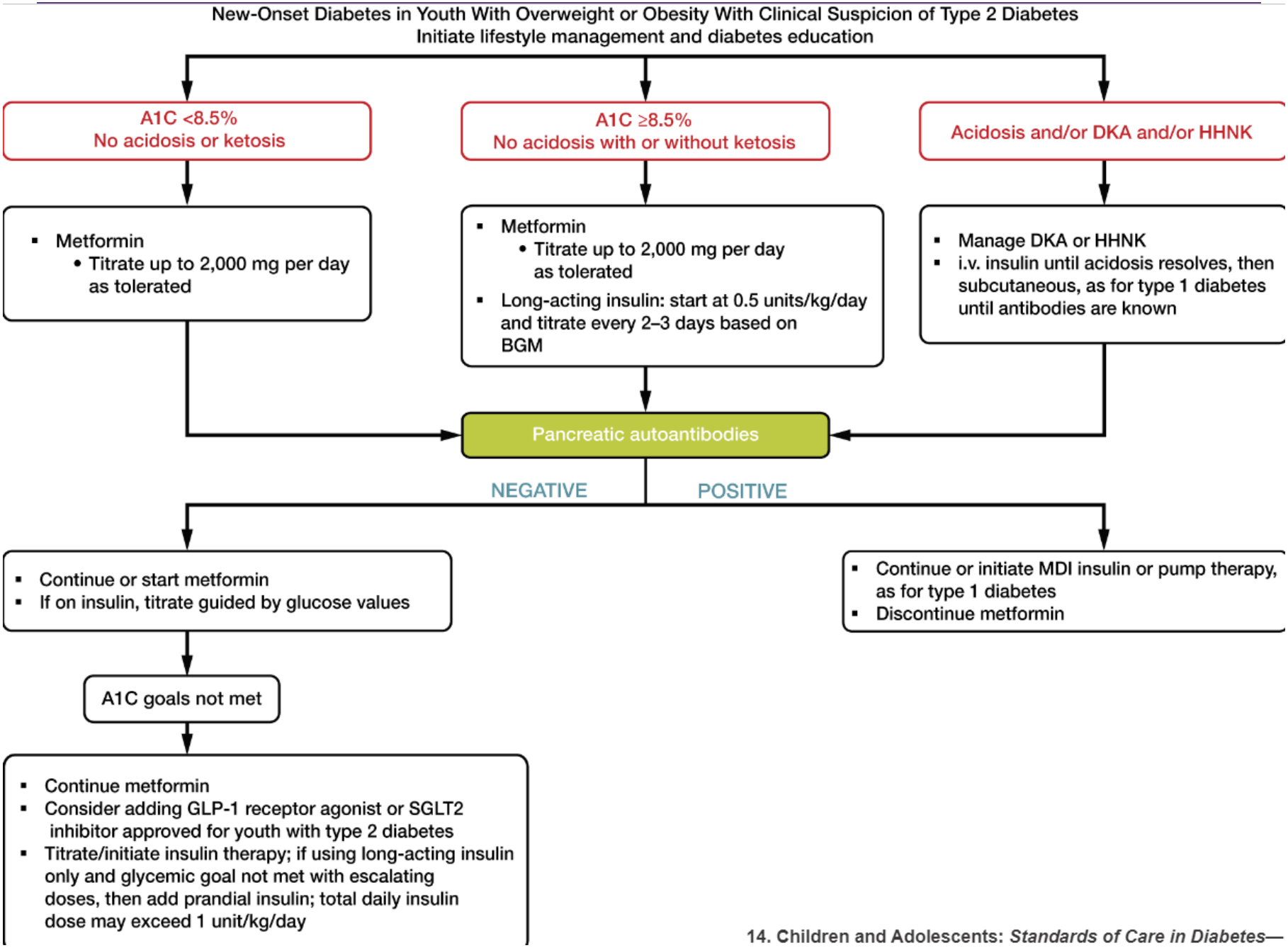
14. Children and Adolescents: *Standards of Care in Diabetes—2024* FREE

Type 2 and Kids Goals

- A1c goal of 7% if on oral meds alone
- A1c goal of 7.5% if at risk for hypoglycemia
- Some children may benefit from A1c of 6.5% or less

- Initiate pharmacologic therapy, in addition to lifestyle therapy, at diagnosis
- Confirm diagnosis with antibody testing
- Treat glucose, B/P and lipids
- Engage in lifestyle coaching
- **Please see Kids and Diabetes Level 2 Course**

14. Children and Adolescents: *Standards of Care in Diabetes—2024* FREE



14. Children and Adolescents: *Standards of Care in Diabetes—2024* FREE

15. Management of Diabetes in Pregnancy - Glycemic Targets

- Type 1 or type 2 diabetes targets are as follows:
- A1c < 6-6.5%
  - (closer to 6 in 2nd/3rd tri)
- Fasting glucose 70–95 mg/dL and either
- One-hour postprandial glucose 110–140 mg/dL or
- Two-hour postprandial glucose 100–120 mg/dL

15. Management of Diabetes in Pregnancy: *Standards of Care in Diabetes—2024* FREE

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AGP Glucose Targets During Pregnancy

Selection of CGM device should be based on an individual's circumstances, preferences, and needs.

- Target sensor glucose range 63–140 mg/dL (3.5–7.8 mmol/L): TIR, goal >70%
- Time below range (<63 mg/dL [<3.5 mmol/L]): level 1 TBR, goal <4%
- Time below range (<54 mg/dL [<3.0 mmol/L]): level 2 TBR, goal <1%
- Time above range (>140 mg/dL [>7.8 mmol/L]): TAR, goal <25%

- The international consensus on TIR (37) endorsed the same sensor glucose target ranges for individuals with type 2 diabetes in pregnancy and GDM but could not quantify the goal of amount of time spent within each category because of insufficient data.

15. Management of Diabetes in Pregnancy: *Standards of Care in Diabetes—2024* FREE

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16. Diabetes Care in the Hospital - What's the Big Deal?

- Hyperglycemia is associated with increased morbidity and mortality in hospital settings.
  - Acute Myocardial Infarction
  - Stroke
  - Cardiac Surgery
  - Infection
  - Longer lengths of stay

16. Diabetes Care in the Hospital: *Standards of Care in Diabetes—2024* FREE

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BG Above Normal = Trouble

- Hyperglycemia in Hospital
  - BG 140 or greater (check A1C)
  - If A1C 6.5% or above, indicates preexisting diabetes
- Check A1C on all pts admitted with diabetes not checked in past 3 months
- If BG 180 or greater on 2 different occasions within 24 hours, start or intensify insulin or other therapies

16. Diabetes Care in the Hospital: *Standards of Care in Diabetes—2024* FREE

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ADA Goals and Treatments For Critically Ill (ICU) Hospitalized Patients

Once insulin therapy initiated, blood glucose goal is 140-180

- Individualize based on pt status
- More stringent goals of 110 -140 may be appropriate in ICU, with careful consideration of preventing hypoglycemia.

- Critical Care:
  - Basal bolus or Insulin drip

16. Diabetes Care in the Hospital: *Standards of Care in Diabetes—2024* FREE

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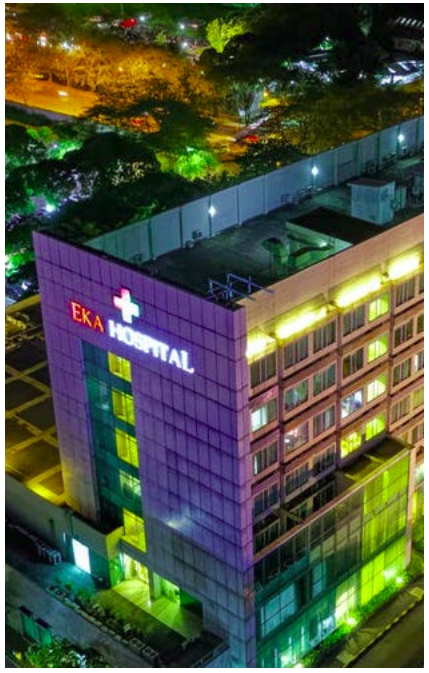
Glucose Monitoring & CGM

- If using a personal continuous glucose monitoring (CGM) device
  - Continue CGM during hospitalization if clinically appropriate
  - Use confirmatory point-of-care (POC) glucose measurements for insulin dosing decisions and hypoglycemia assessment
  - According to an institutional protocol.
- Monitor BG before meals and hs if eating
- If on Parenteral nutrition, monitor Q 4-6 hours

SGLT-2's in Hospital Setting?

- Recommended if type 2 diabetes and heart failure.
  - Initiate use of a SGLT-2 or continue during hospitalization and upon discharge, if no contraindications and after recovery from the acute illness.
- Avoid SGLT2 inhibitors in cases of severe illness, in people with ketonemia or ketonuria, and during prolonged fasting and surgical procedures
- Hold SGLT-2's 3 days (4 days for Ertugliflozin) before surgery



16. Diabetes Care in the Hospital: *Standards of Care in Diabetes—2024* FREE

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