The American Diabetes Association (ADA) releases clinical practice recommendations every January in their monthly publication, Diabetes Care. These guidelines, Standards of Medical Care in Diabetes, are updated to include new information, medication, and research that has been made available over the prior year. The most recent update to these standards was published in January 2015.

**Key Changes**

There were several changes made to the 2015 Standards including, but not limited to:

* All individuals (with and without diabetes) should remain sedentary for no more than 90 minutes at a time.
* E-cigarettes are not recommended as a substitution for tobacco use, or as a smoking cessation aid.
* Immunization recommendations were updated to reflect the new pneumonia vaccine recommendations from the CDC.
* Pre-meal blood glucose targets were updated to 80-130 mg/dL. (Previously 70-130 mg/dL)
* Additional guidance is provided on initiating patients on continuous glucose monitoring (CGM).
* Therapy algorithms were updated to include newly available medications, including the new SGLT2 inhibitor drug class.
* The diastolic blood pressure goal was updated to 90 mmHg. (Previously 80 mmHg)
* Statin treatment and lipid monitoring recommendations were updated to reflect the new ACC/AHA treatment guidelines.
* A new section was added regarding pregnancy and diabetes

**Comprehensive Care**

The 2015 standards emphasize providing comprehensive care to patients in a patient-centered manner. This approach assesses each patient individually, taking into consideration their individual needs and preferences. It also emphasizes that treatment should not only focus on diabetes, but other comorbidities including:

* Hypertension
* Hyperlipidemia
* Smoking Cessation
* Weight Management

The standards also endorse the use of a multidisciplinary chronic care team model to care for patients with diabetes. Coordinated delivery of services helps improve the quality of diabetes care, and facilitates appropriate diabetes self-management by patients.

**Objectives:**

- Identify the new recommendations in the 2015 ADA Standards of Medical Care in Diabetes.
- Recognize treatment goals for patients with diabetes.
- Describe the unique properties of the first and second line agents used to treat type 2 diabetes.
- Discuss the differences between exenatide and liraglutide, and how to successfully transition patients from exenatide to liraglutide.
Hypertension Goals
A blood pressure goal of 140/90 mmHg is recommended for patients diagnosed with diabetes and hypertension. Patients currently controlled to a blood pressure less than 140/90 mmHg should maintain their current blood pressure.

Patients with diabetes should receive appropriate hypertension medications including ACE inhibitors (ACE-I), angiotensin receptor blockers (ARB), thiazide diuretics, and calcium channel blockers (CCB). ACE-I and ARB therapies may have additional advantages in patients with diabetes.

Hyperlipidemia Goals
Under the new ACC/AHA lipid guidelines patients should be placed on statin medications based upon risk stratification and statin intensities. The new 2015 ADA standards recommends the following for patients with diabetes:

* All patients with cardiovascular disease (CVD) should receive high intensity statin therapy.
* It should be considered that patients <40 years of age with additional CVD risk factors receive moderate to high intensity statin therapy.
* It should be considered that patients >40 years of age without additional CVD risk factors receive moderate intensity statin therapy.
* It should be considered that patients 40-75 years of age with additional CVD risk factors receive high intensity statin therapy.
* It should be considered that patients >75 years of age with additional CVD risk factors receive moderate or high intensity statin therapy.
* Statin therapy should be adjusted based on individual patient response to medication including side effects, tolerability, and LDL cholesterol levels.

Immunizations
The new standards provide the following recommendations regarding immunizations for individuals with diabetes:

* Routine vaccinations should be provided to both children and adults.
* Annual influenza vaccines should be administered to all patients ≥ 6 months of age.
* The pneumococcal polysaccharide vaccine 23 (PPSV23) should be administered to all patients ≥ 2 years of age.
* Adults ≥ 65 years of age who have not been previously vaccinated for pneumonia should receive the pneumococcal conjugate vaccine 13 (PCV13), followed by the PPSV23 6-12 months later.
* Adults ≥ 65 years of age who have been previously vaccinated with PPSV23 should receive the PCV13 ≥ 12 months later.
* Administer the hepatitis B vaccine series to unvaccinated adults that are 19-59 years of age.

Treatment of Type 1 Diabetes
The new standards provide the following recommendations for the treatment of type 1 diabetes:

* Utilize multiple-dose insulin (MDI) injections or continuous subcutaneous insulin infusion (CSII)
* Match prandial insulin to carb intake, pre-meal blood glucose, and anticipated physical activity
* Use insulin analogs for most patients
  * Long acting (Glargine, Detemir)
  * Rapid acting (Lispro, Aspart, Glulisine)
**Treatment of Type 2 Diabetes**

The 2015 standards provide the following recommendations for the treatment of type 2 diabetes:

* Most patients should begin treatment with diabetes-focused education on lifestyle changes including diet, exercise, and weight management
* Metformin is the preferred first line agent for treatment. It should be added at diagnosis unless there are contraindications for use.
* If the Hgba1C target is not reached within 3 months of therapy initiation one of six treatment options may be added to metformin therapy. An agent should be chosen based on patient specific factors and preferences.
* If the patient’s A1C is >9% at diagnosis consider initiating the patient on dual diagnosis therapy.
* If the patient’s A1C is ≥10-12% at diagnosis consider initiating the patient on insulin therapy.

**Insulin**

* Due to the progressive nature of diabetes many patients will eventually benefit from insulin therapy.
* Avoid referring to insulin as a threat, punishment, or treatment failure option.

### Non-Insulin Agents

<table>
<thead>
<tr>
<th>Representative Medications</th>
<th>Actions</th>
<th>Advantages</th>
<th>Disadvantages</th>
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</thead>
<tbody>
<tr>
<td><strong>Biguanides</strong></td>
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<td></td>
</tr>
<tr>
<td>Metformin</td>
<td>↓ glucose production</td>
<td>↓ Weight</td>
<td>No hypoglycemia</td>
</tr>
<tr>
<td>Sulfonylureas</td>
<td></td>
<td></td>
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<tr>
<td>Glipizide, Glyburide,</td>
<td>↑ insulin secretion</td>
<td>Low cost</td>
<td>Hypoglycemia, ↑ Weight</td>
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<tr>
<td><strong>TZDs</strong></td>
<td></td>
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<tr>
<td>Pioglitazone, Rosiglitazone</td>
<td>↑ insulin sensitivity</td>
<td>No hypoglycemia</td>
<td>Edema, ↑ Weight</td>
</tr>
<tr>
<td><strong>DPP-4 Inhibitors</strong></td>
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<td></td>
</tr>
<tr>
<td>Sitagliptin, Saxagliptin</td>
<td>↑ insulin secretion and ↓ glucagon secretion</td>
<td>No hypoglycemia</td>
<td>Well tolerated, Rare: angioedema</td>
</tr>
<tr>
<td><strong>SGLT2 Inhibitors</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Canagliflozin, Empagliflozin</td>
<td>Blocks renal glucose reabsorption</td>
<td>No hypoglycemia</td>
<td>UTI, yeast infections, ↑ Scr</td>
</tr>
<tr>
<td><strong>GLP-1 Agonists</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exenatide, Liraglutide</td>
<td>Slows gastric emptying, ↑ insulin secretion, ↓ glucagon secretion</td>
<td>No hypoglycemia</td>
<td>GI side effects, Training requirements</td>
</tr>
</tbody>
</table>

### References

On April 21, 2015 ANMC’s Pharmacy and Therapeutics Committee approved a formulary change that replaced Byetta (Exenatide) with Victoza (Liraglutide) as the formulary GLP-1 agonist.

GLP-1 Agonists

GLP-1 (glucagon-like peptide-1) agonists are subcutaneous injections that are FDA approved for the treatment of type 2 diabetes. These agents work in three ways:

- In the gut to slow gastric emptying
- In the pancreas to increase insulin secretion and reduce glucagon production
- In the liver to reduce glucose production

GLP-1 agonists are second line agents that may be added as adjunct therapy to metformin and other therapies. Dose reductions of basal insulin or sulfonylureas may be required when used in conjunction with GLP-1 agonists. Common side effects of GLP-1 agonists include GI upset and weight loss. Rare side effects include hypersensitivity reactions and pancreatitis. Liraglutide also carries a black box warning for thyroid tumors that were seen during animal studies.

Switching from Exenatide to Liraglutide

A 2010 Study published in *Diabetes Care* found that transitioning patients from exenatide to liraglutide was well tolerated and resulted in modestly improved glycemic control. When patients switched to Victoza they had a drop in A1C of about 0.3%, allowing additional patients to reach an A1C goal of 7%.

Utilize the following titration schedule when transitioning patients to liraglutide from exenatide to reduce the risk of GI related adverse events:

1. START 0.6 mg for 1 week to improve GI tolerability
2. MAINTAIN 1.2 mg for 1 week
   - 1.8 mg if further glycemic control is needed

Exenatide vs. Liraglutide

<table>
<thead>
<tr>
<th></th>
<th>Maintenance Dose</th>
<th>Meal Considerations</th>
<th>A1C Reduction</th>
<th>Warfarin Interactions</th>
<th>Average Weight Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exenatide</td>
<td>10 mcg SQ BID</td>
<td>Use within 60 minutes of meals</td>
<td>~1%</td>
<td>Increases INR</td>
<td>2 kg</td>
</tr>
<tr>
<td>Liraglutide</td>
<td>1.2 or 1.8 mg SQ daily</td>
<td>None</td>
<td>~1.5%</td>
<td>None</td>
<td>2.5 kg</td>
</tr>
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</table>

References


Goal-The goal of the Diabetes Dispatch is to increase the reader’s knowledge of diabetes treatments and technologies and to provide the most current information on new drugs, therapies, and devices.

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- Release date: 5/14/15
- ANMC HED Activity # 13-30010
- Expiration Date: 5/14/18

The speakers/authors disclose that they do not have significant financial interests in any product or class of products discussed directly or indirectly in this activity, including research support.
1. What is the recommended blood glucose target for patients with diabetes according to the 2015 ADA Standards of Care?
   a. 70-130 mg/dL
   b. 80-130 mg/dL
   c. 70-140 mg/dL
   d. 80-140 mg/dL

2. What is the blood pressure goal for patients with diabetes according to the 2015 ADA Standards of Care?
   a. 130/80 mmHg
   b. 140/80 mmHg
   c. 130/80 mmHg
   d. 140/80 mmHg

3. Who should be considered for high intensity statin therapy according to the ADA Standards of Medical Care?
   a. Patients 40-75 years of age with diabetes and other risk factors for CVD
   b. Patients > 40 years of age with diabetes and without other risk factors for CVD
   c. Patients with diabetes and existing CVD
   d. Both A and C

4. According to the ADA Standards of Medical Care, which of the following is a correct recommendation on vaccinations in patients with diabetes?
   a. Flu vaccines should be provided to everyone ≥1 year
   b. The PCV13 vaccine should be provided to everyone ≥2 years
   c. The hepatitis B vaccine series should be provided to unvaccinated adults 19-59 years of age
   d. The PCV13 and PPSV23 vaccine administration should be separated by at least 24 months

5. Which of the following is true?
   a. Pioglitazone is associated with an increase in weight
   b. Saxagliptin is associated with hypoglycemia
   c. Canagliflozin is associated with an increase in weight
   d. Exenatide is associated with hypoglycemia

6. Which of the following is true about insulin therapy in patients with type 2 diabetes?
   a. Patients with type 2 diabetes should rarely be placed on insulin therapy
   b. Insulin should be utilized as a threat to keep patients motivated to take oral diabetes medication
   c. Patients with type 2 diabetes should take no more than 1 insulin injection daily
   d. Insulin can be used as adjunct therapy with metformin and possibly one other oral agent

7. Which of the following is a disadvantage of the new SGLT2 Inhibitor class of medications?
   j. They may cause vaginal yeast infections
   k. They may increase a patient's weight
   l. They may cause hypoglycemia
   m. They may cause edema

8. Which of the following is a mechanism of action of Victoza (Liraglutide)?
   a. Activity in the gut increases gastric emptying
   b. Activity in the pancreas increases insulin
   c. Activity in the pancreas increases glucagon
   d. Activity in the liver increases glucose

9. Which of the following is true regarding Victoza (Liraglutide)?
   a. It is typically dosed twice a day
   b. It should be used within 60 minutes of a meal
   c. It has a black box warning for thyroid tumors
   d. It can cause increase in INR

10. What is the titration schedule for Victoza (Liraglutide)?
    a. 0.6 mg daily for 1 week followed by 1.2 mg daily
    b. 0.6 mg daily for 1 month followed by 1.2 mg daily
    c. 5 mcg BID for 1 week followed by 10 mcg BID
    d. 5 mcg BID for 1 month followed by 10 mcg BID

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2) The activity met every learning objective* 1 2 3 4 5
3) The author was knowledgeable in the topic 1 2 3 4 5
4) The educational materials were useful 1 2 3 4 5
5) Teaching and learning methods were effective 1 2 3 4 5

*If a particular objective was not met, please explain: ______________________________________________________

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