



Body System: Endocrine		
Session Topic: Diabetes Treatment Update		
Educational Format		Faculty Expertise Required
REQUIRED	Interactive Lecture	Expertise in the field of study. Experience teaching in the field of study is desired. Preferred experience with audience response systems (ARS). Utilizing polling questions and engaging the learners in Q&A during the final 15 minutes of the session are required.
OPTIONAL	Problem-Based Learning (PBL)	Expertise teaching highly interactive, small group learning environments. Case-based, with experience developing and teaching case scenarios for simulation labs preferred. Other workshop-oriented designs may be accommodated. A typical PBL room is set for 50-100 participants, with 7-8 each per round table. <u>Please describe your interest and plan for teaching a PBL on your proposal form.</u>
Professional Practice Gap	Learning Objective(s) that will close the gap and meet the need	Outcome Being Measured
<ul style="list-style-type: none"> Physicians have statistically significant and meaningful gaps in the medical skill necessary to efficaciously manage treatment; and management of those at risk for developing diabetes, such as patients who are obese, have hypertension, hyperlipidemic and have a history of prediabetes. Patients fail to direct ambitious and timely therapeutic interventions which have been demonstrated to reduce the risk and/or progression of long term diabetes related complications. Physicians have knowledge gaps related to utilizing a patient-centered approach to care that involves the entire care team to help make the office visit with the physician more efficient; recognizing latent autoimmune diabetes in adults (LADA); 	<ol style="list-style-type: none"> Evaluate current standards of care (screening, prevention, diagnosis, treatment, management) for patients with diabetes, or who are at risk for developing diabetes, for opportunities to update standards in accordance to current research and evidence-based guidelines. Apply a patient-centered approach to incorporate guideline recommendations for intensifying therapy to achieve glycemic control. Use medication which allow patients to achieve their individualized metabolic targets without weight gain or increasing their risk of developing treatment emergent hypoglycemia. Encourage patients to remain adherent to their prescribed behavioral and pharmacologic therapeutic interventions. 	Learners will submit written commitment to change statements on the session evaluation, indicating how they plan to implement presented practice recommendations.



<p>understanding and adhering to current screening and evaluation guidelines; being up to date on current guidelines for medications and therapeutic approaches; improving efforts toward patient education and counseling for prevention in pre-diabetic patients, including effective use of group visits; effective control and maintenance of patients receiving treatment; and having an awareness of current guidelines for gestational diabetes.</p> <ul style="list-style-type: none">• Physicians are often not aware of updated clinical guidelines and results of clinical interventions from retrospective studies that prove such recommendations to be effective.• Physicians do not routinely use clinical guidelines (from the American Diabetes Association or the American Association of Clinical Endocrinologists) in managing care for patients with diabetes, and often do not provide optimal coordination of care with specialists.• Over 60 % of patients will discontinue their prescribed medications, including insulin, oral agents and GLP-1 RAs within 6 months. Poor adherence results in higher A1Cs and a greater risk of microvascular and macrovascular complications		
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<ul style="list-style-type: none"> Cardiovascular outcome studies have now been published which suggests patients with known cardiovascular disease or those who are at high risk for developing CV disease may benefit from certain therapeutic agents 		
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ACGME Core Competencies Addressed (select all that apply)

X	Medical Knowledge		Patient Care
	Interpersonal and Communication Skills		Practice-Based Learning and Improvement
	Professionalism		Systems-Based Practice

Faculty Instructional Goals

Faculty play a vital role in assisting the AAFP to achieve its mission by providing high-quality, innovative education for physicians, residents and medical students that will encompass the art, science, evidence and socio-economics of family medicine and to support the pursuit of lifelong learning. By achieving the instructional goals provided, faculty will facilitate the application of new knowledge and skills gained by learners to practice, so that they may optimize care provided to their patients.

- Provide up to 3 evidence-based recommended practice changes that can be immediately implemented, at the conclusion of the session; including SORT taxonomy & reference citations
- Facilitate learner engagement during the session
- Address related practice barriers to foster optimal patient management
- Provide recommended journal resources and tools, during the session, from the American Family Physician (AFP), Family Practice Management (FPM), and Familydoctor.org patient resources; those listed in the References section below are a good place to start
 - Visit <http://www.aafp.org/journals> for additional resources
 - Visit <http://familydoctor.org> for patient education and resources
- Provide an overview of current updates on diabetes topics in general and their immediate impact to patient care, including recommendations for implementation.
- Describe the best evidence for screening for and prevention of type 2 diabetes.
- Outline the diagnostic criteria for type 2 diabetes.
- Summarize initial testing and treatment of a patient with newly diagnosed type 2 diabetes.
- Describe goals for blood pressure, cholesterol, and A1c levels based on best evidence for patient-oriented outcomes.
- Summarize drug treatment for glucose control for patients with type 2 diabetes.
- Discuss potential benefits and adverse effects of combination drugs for glucose control.
- Describe alternatives to traditional individual office visits for optimizing diabetes care.
- Summarize team-based care in the provision of diabetes education and other diabetes services.
- Describe ways to incorporate technology in the care of a panel of patients with diabetes including ambulatory glucose monitoring and continuous glucose sensing.



- Summarize options for organizing and billing for group visits for diabetes.
- Provide recommendations regarding guidelines for Medicare reimbursement.
- Provide recommendations to maximize office efficiency and guideline adherence to the diagnosis and management of diabetes.
- Provide an overview of newly available treatments, including efficacy, safety, contraindications, and cost/benefit relative to existing treatments.
- Provide instructions regarding the incorporation and use of the PCMH/ACO/Primary Care Core Measure Set into practice.

Needs Assessment

* Note – for the purposes of this session, the scope and focus is intended to provide an overview of current updates on diabetes topics in general and their immediate impact to patient care, including recommendations for implementation.

Family physicians providing care for a broad spectrum of patients, from birth to geriatric care, can be challenged to remain up to date on evidence-based guidelines and recommendations, especially when those guidelines are updated, vague or contradictory. Physicians need continuing medical education that will help them to apply the most current and clinically relevant evidence-based recommendations to practice.

Data from a recent American Academy of Family Physicians (AAFP) CME Needs Assessment survey indicate that family physicians have statistically significant and meaningful gaps in the medical skill necessary to efficaciously manage treatment; manage diabetes complications (addressed in other CME sessions); and in managing those at risk for developing diabetes, such as patients with metabolic syndrome.¹ Additionally, CME outcomes data from several 2012-2015 AAFP FMX (formerly Assembly) sessions focused on diabetes topics suggest that physicians have knowledge and practice gaps with regard to utilizing a patient-centered approach to care that involves the entire care team to help make the office visit with the physician more efficient; recognizing latent autoimmune diabetes in adults (LADA); understanding and adhering to current screening and evaluation guidelines; being up to date on current guidelines for medications and therapeutic approaches; improving efforts toward patient education and counseling for prevention in pre-diabetic patients, including effective use of group visits; effective control and maintenance of patients receiving treatment; and having an awareness of current guidelines for gestational diabetes.²⁻⁵

Some family physicians may not be aware of updated clinical guidelines and results of clinical interventions from retrospective studies that prove such recommendations to be effective.⁶ Research suggests that primary care physicians do not routinely use clinical guidelines in managing care for patients with diabetes, and often do not provide optimal coordination of care with specialists.⁷ For example, the Diabetes Control and Complications Trial (DCCT) reported that intensive diabetes therapy aimed at lowering glycemic levels reduces the risk of diabetic retinopathy, nephropathy and neuropathy.⁸ Additionally, consensus from a number of organizations, including the Joint National Committee on the Prevention, Detection, Evaluation and Treatment of High Blood Pressure, the American Diabetes Association and the National Kidney Foundation, supports aggressive blood pressure targets in patients with diabetes, which



may require pharmacologic therapy.⁹ Family physicians can also help patients make numerous lifestyle modifications, including smoking cessation, alcohol restriction, dietary modification (often with sodium restriction), physical activity and weight loss, all of which can decrease patients' risk of complications from diabetes and improve their overall health. Current data suggests that physicians achieve the standard care for chronic diseases and preventive care only 50 percent to 60 percent of the time; therefore, physicians may need continuing education to assist them in developing and maintaining team-based chronic disease care strategies.^{6,10,11}

Despite potential risks and established clinical guidelines, recent data suggest that some patients are not being managed optimally for diabetes.¹² There are several evidence-based clinical performance measures for adult diabetes, including those defined by the National Diabetes Quality Improvement Alliance. Many family physicians traditionally have relied on the American Medical Association (AMA)-convened Physician Consortium for Performance Improvement (PCPI) list of clinical performance measures for adult diabetes; however, many physicians continue to need education and strategies to assist them with consistent implementation of these measures into practice.

A review of the recent literature reveals a number of updates with regard to diabetes care and management, including (but not limited to):

- ACOG Releases Guideline on Gestational Diabetes¹³
 - Screening for gestational diabetes usually occurs at 24 to 28 weeks' gestation, but early screening is recommended in women with risk factors.
 - Gestational diabetes should be treated with nutrition therapy.
 - If medications are needed, insulin and oral medications are equally effective and appropriate for first-line therapy.
 - Women with gestational diabetes should be screened again at six to 12 weeks postpartum.
- Recent FDA approval of diabetes treatments¹⁴⁻¹⁸
 - Invokana to treat type 2 diabetes (first in a new class of diabetes drugs)
 - Tanzeum (albiglutide) to treat type 2 diabetes
 - Afrezza (insulin human) Inhalation Powder to treat diabetes
 - Trulicity (dulaglutide) to treat type 2 diabetes
 - FDA has recently approved SGLT2 inhibitors for diabetes; however, the FDA has also issued a warning that the type 2 diabetes medicines canagliflozin, dapagliflozin, and empagliflozin may lead to ketoacidosis¹⁹
 - Empagliflozin now has an indication to reduce cardiovascular risk in patients with type 2 diabetes
 - Tresiba (insulin degludec injection); Novo Nordisk; For glycemic control in adults with diabetes mellitus, Approved September 2015
 - IGLargine 300 (Toujeo) approved as a new concentrated basal insulin
 - Combination therapies using GLP-1 RAS and basal insulin (IDegLira and IGLarlexisenatide)
 - Disposable patch pumps designed to provide easy access to basal-bolus therapy for patients with type 2 diabetes



- Libre Pro sensor which monitors interstitial glucose levels every 15 minutes for 2 weeks. Data may be downloaded and used by clinicians to intensify diabetes interventions.
- Currently recruiting diabetes-related medical trials²⁰
- Pending FDA approval: Semaglutide, a once weekly GLP-1 RA which improves fasting, postprandial glucose levels as well as A1C. In addition, this drug reduces CV risk by 26 %²¹
- Both SGLT1 inhibitors and GLP-1 RAs have been shown to reduce progression to nephropathy²²
- Culturally appropriate health education for people in ethnic minority groups with type 2 diabetes mellitus²³
- Reminder systems for women with previous gestational diabetes mellitus to increase uptake of testing for type 2 diabetes or impaired glucose tolerance²⁴
- Intensive glucose control versus conventional glucose control for type 1 diabetes mellitus²⁵
- Surgery for weight loss in adults²⁶
- AACE/Obesity Society/ASMBS Clinical practice guidelines for the perioperative nutritional, metabolic, and nonsurgical support of the bariatric surgery patient²⁷
- Outpatient glycemic control with a bionic pancreas in type 1 diabetes²⁸
- Effect of angiotensin-converting enzyme inhibitors and angiotensin II receptor blockers on all-cause mortality, cardiovascular deaths, and cardiovascular events in patients with diabetes mellitus: a meta-analysis²⁹
- Physical activity and sedentary behaviors associated with risk of progression from gestational diabetes mellitus to type 2 diabetes mellitus: a prospective cohort study³⁰
- Glycemic Control in Type 2 Diabetes (Drug Treatments)³¹
- Findings from recent studies do not support the hypothesis that diabetes, or treatment of diabetes is associated with risk of thyroid cancer among postmenopausal women.³²
- US Food and Drug Administration (FDA) revised its labeling of metformin, which previously had identified metformin as contraindicated in women and men with serum creatinine levels ≥ 1.4 mg/dL (124 micromol/L) and ≥ 1.5 mg/dL (133 micromol/L), respectively [25]. The use of metformin is contraindicated in patients with an eGFR < 30 mL/min, and the initiation of metformin is not recommended in patients with an eGFR between 30 and 45 mL/min. For patients taking metformin whose eGFR falls below 45 mL/min, the benefits and risks of continuing treatment should be assessed, whereas metformin should be discontinued if the eGFR falls below 30 mL/min. For patients with eGFR between 30 and 60 mL/min, we typically reduce the metformin dose by half (no more than 1000 mg per day), although there are no data to support this approach.^{33,34}
- Not all individuals with diabetes should be unconditionally assumed to be a risk equivalent of those with prior CHD.³⁵
- A recent study suggests that patients with type 2 diabetes who are at high risk of cardiovascular events while taking standard therapy, those taking liraglutide had lower rates of cardiovascular events and death from any cause than did those in a placebo group.³⁶
- Recent studies suggest a possible increased risk of hospital admission for heart failure in those patients with type 2 diabetes treated with DPP-4 inhibitors and with cardiovascular



diseases or multiple risk factors for vascular diseases at baseline. Although the effect is small if it exists, and the associated confidence interval includes no effect, our results suggest the advisability of caution in the use of DPP-4 inhibitors for patients with type 2 diabetes who are at high risk for heart failure.³⁷

- While intranasal glucagon remains investigational and is not commercially available, in a recent randomized trial comparing intranasal (3 mg) and intramuscular (1 mg) glucagon in 77 patients with type 1 diabetes and hypoglycemia (induced in a controlled setting by administering insulin), successful reversal of hypoglycemia occurred in 98.7 and 100 percent of intranasal glucagon and intramuscular glucagon visits, respectively.³⁸
- While not yet available in the United States, recent randomized trials involving patients with new or established type 2 diabetes, have shown that among patients with type 2 diabetes and a recent acute coronary syndrome, treatment with lixisenatide resulted in rates of major cardiovascular events, including heart failure and death from any cause, that were similar to those observed with placebo.³⁹

Physicians may improve their care of patients with diabetes, or at risk of developing diabetes, by engaging in continuing medical education that provides practical integration of current evidence-based guidelines and recommendations into their standards of care, including, but not limited to the following:⁴⁰⁻⁴⁸

- The AAFP *recommends* screening for gestational diabetes mellitus (GDM) in asymptomatic pregnant women after 24 weeks of gestation. (2014).
- The AAFP *concludes that the current evidence is insufficient* to assess the balance of benefits and harms of screening for GDM in asymptomatic pregnant women before 24 weeks of gestation. (2014).
- The AAFP *recommends* screening for type 2 diabetes in asymptomatic adults with sustained blood pressure (either treated or untreated) greater than 135/80 mm Hg. (2008)
- The AAFP *concludes that the current evidence is insufficient* to assess the balance of benefits and harms of screening for type 2 diabetes in asymptomatic adults with blood pressure of 135/80 mm Hg or lower. (2008).
- The guideline, Management of Newly Diagnosed Type 2 Diabetes Mellitus in Children and Adolescents, was developed by the American Academy of Pediatrics and endorsed *with qualifications* by the American Academy of Family Physicians.
 - Insulin therapy should be initiated for children and adolescents with T2DM who are ketotic or in diabetic ketoacidosis and in whom the distinction between T1DM and T2DM is unclear.
 - Insulin therapy should be initiated for patients who have random venous or plasma blood glucose (BG) concentrations ≥ 250 mg/dL or whose HbA1c is $> 9\%$.
 - In all other instances, a lifestyle modification program and metformin should be initiated as first-line therapy at the time of diagnosis of T2DM.
 - HbA1c concentrations should be monitored every 3 months and treatment intensified if treatment goals for BG and HbA1c concentrations are not being met.
 - Patients should be advised to monitor finger-stick BG concentrations if they are taking insulin or other medications with a risk of hypoglycemia, are initiating or changing their diabetes treatment regimen, have not met treatment goals, or have intercurrent illnesses.



- Nutritional counseling may incorporate the Academy of Nutrition and Dietetics' *Pediatric Weight Management Evidence-Based Nutrition Practice Guidelines*.
- Children and adolescents with T2DM should be encouraged to engage in moderate-to-vigorous exercise for at least 60 minutes daily and to limit nonacademic screen time to less than 2 hours per day.
- The guideline, Oral Pharmacologic Treatment of Type 2 Diabetes Mellitus, was developed by the American College of Physicians and endorsed by the American Academy of Family Physicians.
 - Pharmacologic therapy should be added in individuals diagnosed with type 2 diabetes when lifestyle modifications, including diet, exercise, and weight loss, have failed to adequately improve hyperglycemia.
 - Monotherapy with metformin should be the initial pharmacologic therapy for most patients with type 2 diabetes.
 - A second agent should be added to metformin to treat patients with persistent hyperglycemia when lifestyle modifications and monotherapy with metformin fail to control hyperglycemia.
- The guideline on Management of Overweight and Obesity in Adults was developed by the American College of Cardiology, the American Heart Association, and the Obesity Society, and was endorsed by the American Academy of Family Physicians.
 - *Note: This topics is covered by other sessions
- Metformin should be used as first-line therapy to reduce microvascular complications, assist in weight management, reduce the risk of cardiovascular events, and reduce the risk of mortality in patients with type 2 diabetes mellitus.
- Patients with prediabetes or new-onset diabetes should undertake extensive lifestyle changes to slow the progression of type 2 diabetes.
- Patients with existing cardiovascular disease, two or more cardiovascular disease risk factors, or duration of diabetes of 10 years or more should have higher A1C goals because of a lack of benefit and the potential for increased risk of mortality compared with lower A1C goals.
- Self-monitoring of blood glucose levels for patients taking noninsulin therapies does not significantly affect glycemic control.
- Screening for GDM should occur after 24 weeks of gestation in all women without known diabetes mellitus.
- USPSTF recommendation based on systematic reviews and meta-analyses
- Initial management of GDM involves dietary changes, increased physical exercise, and blood glucose self-monitoring.
- Target glucose values in women with GDM are ≤ 95 mg per dL (5.3 mmol per L) with fasting, ≤ 140 mg per dL (7.8 mmol per L) one-hour postprandial, or ≤ 120 mg per dL (6.7 mmol per L) two-hour postprandial.
- Pharmacologic therapy with metformin (Glucophage), glyburide, or insulin is appropriate for women with GDM whose glucose values are above goal despite lifestyle modifications.
- Treatment of impaired fasting glucose and impaired glucose tolerance with pharmacologic interventions, lifestyle interventions, or both decreases progression to diabetes mellitus.



- Patients 40 to 70 years of age who are overweight or obese should be screened for type 2 diabetes. Persons with abnormal results should be referred for intensive behavioral counseling interventions that focus on physical activity and a healthy diet.
- If initial screening results for type 2 diabetes are normal, screening may be repeated every three years.
- Diagnosis of type 2 diabetes can be made using fasting plasma glucose, A1C testing, random plasma glucose testing, or an oral glucose tolerance test. Women with GDM should be screened at six to 12 weeks postpartum, and every three years thereafter, for abnormal glucose metabolism.
- The US Preventive Services Task Force (USPSTF) has issued new recommendations for diabetes screening. Previously, the USPSTF only recommended screening for diabetes in adults with hypertension, but the new guideline recommends screening for diabetes as part of cardiovascular risk assessment in adults aged 40 to 70 years with body mass index (BMI) ≥ 25 kg/m² [18]. The USPSTF suggests screening every three years based on limited evidence. We agree with the new USPSTF guideline and also suggest diabetes screening for adults with hypertension or hyperlipidemia. A fasting plasma glucose (FPG) and/or a glycated hemoglobin (A1C) are the preferred screening tests.
- For most persons with diabetes, A1C should be at 7% or lower to decrease the occurrence of microvascular disease.
- An angiotensin-converting enzyme inhibitor or angiotensin receptor blocker should be used to treat hypertension.
- Patients should receive a high-intensity statin if they have at least a 7.5% risk of atherosclerotic CVD.
- A dosage of 75 to 162 mg per day of aspirin is an option in persons with a 10-year risk of CVD of 10%.

Key Points for Practice: 2016 ADA Updates of Medical Care for Patients with Diabetes Mellitus:⁴⁹

- All adults should be tested for diabetes beginning at 45 years of age.
- Overweight or obese patients with one or more risk factors for diabetes should be screened at any age.
- Persons who use continuous glucose monitoring and insulin pumps should have continued access after 65 years of age.
- Aspirin therapy should be considered for women with diabetes who are 50 years and older.
- The addition of ezetimibe to statin therapy should be considered for eligible patients who can tolerate only a moderate-dose statin

These recommendations are provided only as assistance for physicians making clinical decisions regarding the care of their patients. As such, they cannot substitute for the individual judgment brought to each clinical situation by the patient's family physician. As with all clinical reference resources, they reflect the best understanding of the science of medicine at the time of publication, but they should be used with the clear understanding that continued research may result in new knowledge and recommendations. These recommendations are only one element in the complex process of improving the health of America. To be effective, the recommendations



must be implemented. As such, physicians require continuing medical education to assist them with making decisions about specific clinical considerations.

The American Academy of Family Physicians Academy has participated in the Core Measures Collaborative (the Collaborative) convened by America's Health Insurance Plans (AHIP) since August 2014. The Collaborative is a multi-stakeholder effort working to define core measure sets of various specialties promoting alignment and harmonization of measure use and collection across both public and private payers.

Participants in the Collaborative included Centers for Medicare and Medicaid Services (CMS), the National Quality Forum (NQF), private payers, provider organizations, employers, and patient and consumer groups. This effort exists to decrease physician burden by reducing variability in measure selection, specifications and implementation—making quality measurement more useful and meaningful for consumers, employers, as well as public and private clinicians.

With significant AAFP input, a PCMH/ACO/Primary Care Core Measure Set has been developed for primary care. The goal of this set is to decrease burden and allow for more congruence between payer reporting programs.⁵⁰

Resources: Evidence-Based Practice Recommendations/Guidelines/Performance Measures

- Diabetes Mellitus: Screening and Diagnosis⁴¹
- AAP Management of newly diagnosed type 2 Diabetes Mellitus (T2DM) in children and adolescents⁵¹
- ADA Standards of medical care in diabetes⁴⁹
- ACOG Gestational diabetes mellitus¹³
- Management of Blood Glucose with Noninsulin Therapies in Type 2 Diabetes⁴⁴
- Screening, Diagnosis, and Management of Gestational Diabetes Mellitus⁴³
- Pharmacologic management of hypertension in patients with diabetes⁹
- Glycemic Control in Type 2 Diabetes (Drug Treatments)³¹
- Preventing CVD in Adults with Type 2 Diabetes Mellitus: An Update from the AHA and ADA⁴⁰
- Adding health education specialists to your practice⁵²
- Envisioning new roles for medical assistants: strategies from patient-centered medical homes⁵³
- The benefits of using care coordinators in primary care: a case study⁵⁴
- An organized approach to chronic disease care¹⁰
- Patient-physician partnering to improve chronic disease care¹¹
- Group visits for chronic illness care: models, benefits and challenges.⁵⁵
- Keys to high-functioning office teams⁵⁶
- Registries made simple⁵⁷
- AMA PCPI Approved Quality Measures¹²
- Engaging Patients in Collaborative Care Plans⁵⁸
- The Use of Symptom Diaries in Outpatient Care⁵⁹



- Health Coaching: Teaching Patients to Fish⁶⁰
- Medication adherence: we didn't ask and they didn't tell⁶¹
- Encouraging patients to change unhealthy behaviors with motivational interviewing⁶²
- Integrating a behavioral health specialist into your practice⁶³
- Simple tools to increase patient satisfaction with the referral process⁶⁴
- Documenting Diabetes Mellitus under ICD-10⁶⁵
- FPM Toolbox – Disease Management: Diabetes⁶⁶
- FamilyDoctor.org. Diabetes Overview (patient education)⁶⁷
- FamilyDoctor.org. Gestational Diabetes | Overview (patient education)⁶⁸

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