How Sweet It Is! Management of Diabetes Series: Risk Reduction and Management of Complications with Diabetes Part 1

Mary Lynn McPherson, PharmD, MA, BCPS, CPE

Home Study Webcast

4 Slides Per Page

freeCE

How Sweet It Is! Management of Diabetes Series:

Risk Reduction and Management of Complications with Diabetes Part 1

ACTIVITY DESCRIPTION

Patients with diabetes often turn to their pharmacist for assistance in smoking cessation, therefore pharmacists need to be knowledgeable in this area. Patients with diabetes also have questions about impotence and sexual intimacy, traveling with diabetes, and the management of pain.

TARGET AUDIENCE

The target audience for this activity is **pharmacists, pharmacy technicians** and **nurses** in hospital, community, and retail pharmacy settings.

LEARNING OBJECTIVES

After completing this activity, the **pharmacist** will be able to:

- Describe the complications associated with diabetes mellitus including macrovascular, microvascular and neuropathic.
- Explain strategies to minimize the complications of diabetes mellitus including health maintenance recommendations.
- Explain strategies to manage glucose intolerance before, during and after pregnancy

After completing this activity, the **pharmacy technician** will be able to:

- Describe the complications associated with diabetes mellitus including macrovascular, microvascular and neuropathic.
- Explain strategies to minimize the complications of diabetes mellitus including health maintenance recommendations.
- Explain strategies to manage glucose intolerance before, during and after pregnancy

ACCREDITATION

Pharmacy

PharmCon, Inc. is accredited by the Accreditation Council for Pharmacy Education as a provider of continuing pharmacy education.

Nursing

PharmCon, Inc. is approved by the California Board of Registered Nursing (Provider Number CEP 13649) and the Florida Board of Nursing (Provider Number 50-3515). Activities approved by the CA BRN and the FL BN are accepted by most State Boards of Nursing.

CE hours provided by PharmCon, Inc. meet the ANCC criteria for formally approved continuing education hours. The ACPE is listed by the AANP as an acceptable, accredited continuing education organization for applicants seeking renewal through continuing education credit. For additional information, please visit: http://www.nursecredentialing.org/RenewalRequirements.aspx

Universal Activity No.: 0798-0000-17-202-H04
Credits: 1.0 contact hour (0.1 CEU)

Release Date: 7/23/2018
freeCE Expiration Date: 1/23/2021
ACPE Expiration Date: 1/23/2021

ACTIVITY TYPE

Knowledge-Based Home Study Webcast

FINANCIAL SUPPORT BY

Pharmaceutical Education Consultants, Inc.

Mary Lynn McPherson, PharmD, MA, BCPS, CPE

Professor, University of Maryland School of Pharmacy

ABOUT THE AUTHOR

Mary Lynn McPherson, Pharm.D., MA, MDE, BCPS, CPE, CDE is Professor and Executive Director, Advanced Post-Graduate Education in Palliative Care in the Department of Pharmacy Practice and Science at the University of Maryland School of Pharmacy in Baltimore. She also serves as the Program Director for the Online Master of Science and Graduate Certificate Program in Palliative Care through the University of Maryland, Baltimore. Dr. McPherson has a master's degree in Instructional Systems Development, and a second master's degree in Distance Education and e-Learning.

Dr. McPherson has maintained a practice in hospice and palliative care (local and national) and ambulatory care her entire career. Dr. McPherson teaches extensively in the Doctor of Pharmacy curriculum on pain management and end of life care, including didactic and experiential content. She also developed one of the first and few palliative care pharmacy residencies in the U.S.

Dr. McPherson serves on the Board of the Hospice Network of Maryland, and was founding president of the American Society of Pain Educators. McPherson is a Fellow in the American Society of Health-Systems Pharmacists, the American Pharmacists Association, the American Society of Consultant Pharmacists and the American Society of Pain Educators. She is Board Certified in Pharmacotherapy, a Certified Diabetes Educator and a Certified Pain Educator. She has received many honors for her work, including the American Pharmacists Association Distinguished Achievement Award in Specialized Practice, the Maryland Pharmacists Association Innovative Practice Award, and the Maryland Society of Health-Systems Pharmacists W. Purdum Lifetime Achievement Award. Dr. McPherson has received many awards for teaching including the Presidential Citation from the Hospice and Palliative Nurses Association, Professor of the Year many times from the School of Pharmacy, University of Maryland Baltimore Founder's Week Teacher of the Year and the Robert Chalmers Distinguished Educator Award from the American Association of Colleges of Pharmacy. She has written four books, including "Demystifying Opioid Conversion Calculations: A Guide for Effective Dosing," and many book chapters and peer-reviewed articles on pain management, palliative care, and other topics.

FACULTY DISCLOSURE

It is the policy of PharmCon, Inc. to require the disclosure of the existence of any significant financial interest or any other relationship a faculty member or a sponsor has with the manufacturer of any commercial product(s) and/or service(s) discussed in an educational activity. Mary Lynn McPherson reports no actual or potential conflict of interest in relation to this activity.

Peer review of the material in this CE activity was conducted to assess and resolve potential conflict of interest. Reviewers unanimously found that the activity is fair balanced and lacks commercial bias.

Please Note: PharmCon, Inc. does not view the existence of relationships as an implication of bias or that the value of the material is decreased. The content of the activity was planned to be balanced and objective. Occasionally, faculty may express opinions that represent their own viewpoint. Participants have an implied responsibility to use the newly acquired information to enhance patient outcomes and their own professional development. The information presented in this activity is not intended as a substitute for the participant's own research, or for the participant's own professional judgement or advice for a specific problem or situation. Conclusions drawn by participants should be derived from objective analysis of scientific data presented from this activity and other unrelated sources.

Neither freeCE/PharmCon nor any content provider intends to or should be considered to be rendering medical, pharmaceutical, or other professional advice. While freeCE/PharmCon and its content providers have exercised care in providing information, no guarantee of it's accuracy, timeliness or applicability can be or is made. You assume all risks and responsibilities with respect to any decisions or advice made or given as a result of the use of the content of this activity.

Faculty: Mary Lynn McPherson, PharmD, MA, BCPS, CPE

freeCE

faculty

Mary Lynn McPherson, PharmD, MA, BCPS, CPE

Professor, University of Maryland School of Pharmacy

Faculty Disclosure

It is the policy of PharmCon, Inc. to require the disclosure of the existence of any significant financial interest or any other relationship a faculty member or a sponsor has with the manufacturer of any commercial product(s) and/or service(s) discussed in an educational activity. **Mary Lynn McPherson** reports no actual or potential conflict of interest in relation to this activity.

Peer review of the material in this CE activity was conducted to assess and resolve potential conflict of interest. Reviewers unanimously found that the activity is fair balanced and lacks commercial bias.

Please Note: PharmCon, Inc. does not view the existence of relationships as an implication of bias or that the value of the material is decreased. The content of the activity was planned to be balanced and objective. Occasionally, faculty may express opinions that represent their own viewpoint. Participants have an implied responsibility to use the newly acquired information to enhance patient outcomes and their own professional development. The information presented in this activity is not intended as a substitute for the participant's own research, or for the participant's own professional judgement or advice for a specific problem or situation. Conclusions drawn by participants should be derived from objective analysis of scientific data presented from this activity and other unrelated sources.

Neither freeCE/PharmCon nor any content provider intends to or should be considered to be rendering medical, pharmaceutical, or other professional advice. While freeCE/PharmCon and its content providers have exercised care in providing information, no guarantee of it's accuracy, timeliness or applicability can be or is made. You assume all risks and responsibilities with respect to any decisions or advice made or given as a result of the use of the content of this activity.

freeCE

Objectives

1. Describe the complications associated with diabetes mellitus including macrovascular, microvascular and neuropathic.
2. Explain strategies to minimize complications of diabetes mellitus including health maintenance and recommendations.
3. Explain strategies to manage glucose intolerance before, during and after pregnancy.

1. Introduction to diabetes mellitus.
2. Lifestyle modification and diabetes mellitus
3. Monitoring diabetes mellitus
4. Medication management Part 1
5. Medication management Part 2
6. Problem solving with diabetes mellitus
7. Coping with diabetes mellitus
8. **Risk reduction and management of complications with diabetes mellitus Part 1**
9. Risk reduction and management of complications with diabetes mellitus Part 2
10. Diabetes disease state management

freeCE

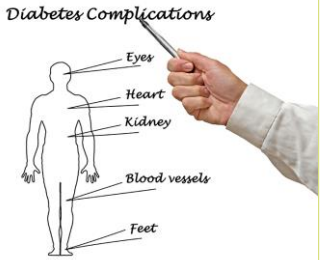
When we say....”He died of diabetes...”

freeCE

freeCE

Complications of Diabetes

- Macrovascular complications
- AKA Atherosclerotic CV disease
  - Cardiovascular disease
  - Cerebrovascular disease
  - Peripheral vascular disease
- Microvascular complications
  - Retinopathy
  - Nephropathy
- Neuropathic complications
  - Autonomic
  - Sensorimotor



freeCE

Identifying Patient Thoughts and Feelings

- About diabetes complications
  - "What have you heard about diabetes complications?
  - What is your greatest concern/what worries you the most about diabetes complications?
  - Do you believe that complications are inevitable if you have diabetes?
  - Do you think a person can do anything to prevent diabetes complications?
  - What do you want to learn today about preventing complications?"

AADE Module 7: Reducing Risks

freeCE

What Impacts Glycemic Management?

- Lifestyle change
- Effective medication management
- Collaboratively developed treatment plans
- Assess and address self-management barriers
- Encourage patient to assume active role in directing the day-to-day decision-making, planning, monitoring, evaluation, and problem-solving in diabetes self-management
- Comprehensive medical evaluation (initial, follow-up)
  - Complications, psychosocial, management of comorbid conditions

Diabetes Care 2018;41(Suppl 1):S28-S37.

freeCE

American Diabetes Association

- Physical examination
- Laboratory evaluation
- Assessment and plan
  - Goal setting
  - Cardiovascular risk assessment and staging of CKD
  - Therapeutic treatment plan

Diabetes Care 2018;41(Suppl 1):S28-S37.

freeCE

freeCE

American Diabetes Association

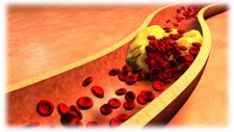
- Past Medical and Family History
  - Diabetes history, family history
  - Personal history of complications and common comorbidities
- Social History
  - Assess lifestyle and behavior patterns
- Medications and Vaccinations
- Technology Use
- Screening
  - Psychosocial conditions, diabetes self-management education
  - Hypoglycemia, pregnancy planning

Diabetes Care 2018; 41(Suppl 1):S28-S37.

freeCE

ASCVD (atherosclerotic cardiovascular dz)

- Includes coronary heart disease, cerebrovascular disease, peripheral arterial disease
- Leading cause of early death for PWD (4 x more likely MI/CVA)
- Risk factors should be assessed at least annually and include:
  - Hypertension, dyslipidemia
  - Smoking
  - Family history of premature coronary disease
  - Chronic kidney disease / albuminuria



Diabetes Care 2018;41(Suppl 1):S86-S104.

freeCE

Hypertension Screening and Diagnosis

- BP should be measured at every routine clinical visit
- Patients with BP ≥ 140/90 mmHg should have BP confirmed using multiple readings, including measurements on a different day, to diagnose hypertension
- All hypertensive patients with diabetes should monitor their BP at home

Diabetes Care 2018;41(Suppl 1):S86-S104.

freeCE

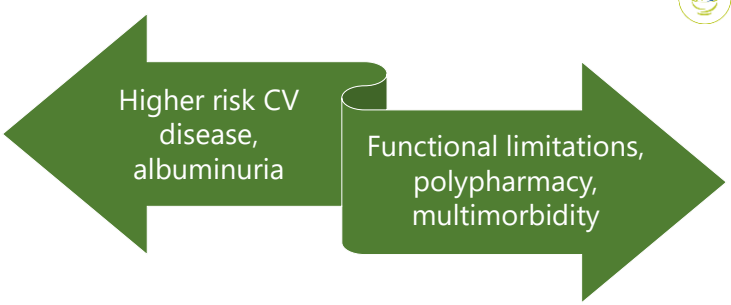
Hypertension/Blood Pressure Control

- Defined as sustained BP ≥ 140/90 mmHg
  - Treatment goal: < 140 mmHg SBP and < 90 mmHg DBP
- HTN is a major risk factor for ASCVD / microvascular complications
- Antihypertensive therapy reduces ASCVD events, heart failure and microvascular complications
- Considerations in the management of hypertension:
  - Risks of treatment (hypotension, drug adverse effects)
  - Life expectancy
  - Comorbidities including vascular complications
  - Patient attitudes and expected treatment efforts
  - Resources and support system

Diabetes Care 2018;41(Suppl 1):S86-S104.

freeCE

Who gets intensive BP targets?



Diabetes Care 2018;41(Suppl 1):S86-S104.

freeCE

Recommendations for BP Control

> 120/80	• Lifestyle intervention – weight loss if overweight • DASH diet, ↓ sodium, ↑potassium, ↓ EtOH, ↑ activity
≥ 140/90	• Lifestyle intervention • Prompt initiation /titration of antihypertensives
≥ 160/100	• Lifestyle intervention • Prompt initiation /titration of two antihypertensives

Diabetes Care 2018;41(Suppl 1):S86-S104.

freeCE

Treatment of Hypertension

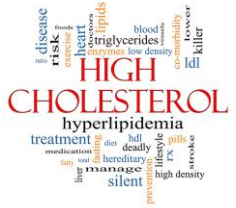
- Initial BP between **140/90** and **160/100** mmHg
  - Lifestyle management
  - Albuminuria present – ACE I or ARB
  - Albuminuria not present – ACE I, ARB, CCB, Diuretic
- Initial BP ≥ **160/100** mmHg
  - Lifestyle management
  - Start two agents
    - Albuminuria present – Start ACE I or ARB AND CCB or Diuretic
    - No albuminuria – Start 2 of 3: ACE I or ARB; CCB; Diuretic

Diabetes Care 2018;41(Suppl 1):S86-S104.

freeCE

Lipid Management

- Lifestyle modification
- Weight loss
- Reduction of saturated fat, trans fat, cholesterol intake
- Increase of dietary n-3 fatty acids, viscous fiber, and plant stanols/sterols intake
- Increased physical activity
- Intensify efforts with TG > 150 mg/dl, and/or HDL < 40 mg/dl for men or < 50 mg/dl for women



Diabetes Care 2018;41(Suppl 1):S86-S104.

freeCE

freeCE

Lipid Management

- If not on statins or other lipid-lowering therapy when diagnosed, obtain a lipid profile, and every 5 years if under 40 years old
- Obtain a lipid profile at initiation of lipid-lowering therapy
  - 4-12 weeks after initiation of a change in dose
  - Annually thereafter

Diabetes Care 2018;41(Suppl 1):S86-S104.

freeCE

Lipid Management

- For patients of all ages with diabetes and ASCVD, high-intensity statin therapy should be added to lifestyle therapy
- Patients < 40 years with additional ASCVD risk factors, consider using moderate-intensity statins in addition to lifestyle therapy
- Patients aged 40-75 years, and >75 without ASCVD, use moderate-intensity statin in addition to lifestyle therapy
- Adjust therapy based on patient response
- Patients with DM and ASCVD if LDL is ≥ 70 mg/dl on maximally tolerated statin dose, consider adding additional LDL-lowering therapy

Diabetes Care 2018;41(Suppl 1):S86-S104.

freeCE

Lipid Management

Age	ASCVD	Recommended statin intensity and combination treatment
< 40 years	No	None
	Yes	If LDL-C ≥ 70 mg/dl despite maximally tolerated statin dose, consider adding additional LDL-lowering therapy (such as ezetimibe or PCSK9 inhibitor)
≥ 40 years	No	Moderate
	Yes	If LDL-C ≥ 70 mg/dl despite maximally tolerated statin dose, consider adding additional LDL-C lowering therapy (such as ezetimibe or PCSK9 inhibitor)

ASCVD Risk Factors include: LDL-C ≥ 100 mg/dl, HTN, smoking, chronic kidney disease, albuminuria, family history of premature ASCVD

Diabetes Care 2018;41(Suppl 1):S86-S104.

freeCE

Lipid Management

High-intensity statin therapy (lowers LDL-C by ≥ 50%)	Moderate-intensity statin therapy (lowers LDL-C by 30-50%)
Atorvastatin 40-80 mg	Atorvastatin 10-20 mg
Rosuvastatin 20-40 mg	Rosuvastatin 5-10 mg
	Simvastatin 20-40 mg
	Pravastatin 40-80 mg
	Lovastatin 40 mg
	Fluvastatin XL 80 mg
	Pitavastatin 2-4 mg

Diabetes Care 2018;41(Suppl 1):S86-S104.

freeCE

freeCE

Aspirin Therapy

- Use aspirin 75-162 mg/day as a secondary prevention strategy in those with DM and ASCVD
- For patients with ASCVD and documented aspirin allergy, clopidogrel 75 mg/day should be used
- Dual antiplatelet therapy (with low-dose aspirin and a P2Y12 inhibitor) is reasonable for a year after an acute coronary syndrome, and may have benefits beyond this period
- Aspirin therapy 75-162 mg/dal may be considered as a primary prevention strategy in those with T1 or T2DM who are at increased CV risk

Diabetes Care 2018;41(Suppl 1):S86-S104.

freeCE

Whoa....what's this?? Reducing CV risk?

- SGLT2 inhibitors - Empagliflozin (Jardiance)
  - EMPA-REG Outcome study
  - Large, placebo-controlled prospective study investigating empagliflozin effect on CV morbidity and mortality as add-on therapy in patients with T2DM and high CV risk
  - 7,020 patients randomized for median of 2.6 years; patients otherwise on standard therapy
  - Primary outcome – occurred in 10.5% of empagliflozin patients vs. 12.1% placebo
    - Lower risk of all-cause mortality, CV mortality and HF hospitalizations in empagliflozin group
    - No differences in the rates of MI's or strokes
  - New Indication - as an adjunct to diet and exercise to improve glycemic control in adults with type 2 diabetes mellitus, to reduce the risk of cardiovascular death in adult patients with type 2 diabetes mellitus and established cardiovascular disease.

Pincus K. Maryland Pharmacist 2017; Summer:20-28.

freeCE

Whoa....what's this?? Reducing CV risk?

- Glucagon-like peptide 1 (GLP-1) agonist - Liraglutide (Victoza)
  - 9,340 participants in the LEADER trial, compared adding placebo vs. liraglutide in individuals with T2DM at a high risk of cardiovascular events
  - Liraglutide reduced the risk of CV death, non-fatal MI or non-fatal CVA by 13% (vs. placebo 14.9%)
  - Liraglutide also reduced CV and all-cause mortality rates, and rates of nephropathy events
  - No difference in rate of MI or stroke
  - FDA indication:
    - As an adjunct to diet and exercise to improve glycemic control in adults with type 2 diabetes mellitus, and to reduce the risk of major adverse cardiovascular events in adults with type 2 diabetes mellitus and established cardiovascular disease

Pincus K. Maryland Pharmacist 2017; Summer:20-28.

freeCE

Sofía Hernandez is NOT having a good day

- Sofía is 42 years old Puerto Rican woman
- Diagnosed a year ago with type 2 diabetes
- At the time of diagnosis Sofía weighed 375 pounds
- She was started on metformin and advised to lose weight
- She has not been very successful in losing weight and her BG was not controlled on metformin alone
- Her physician added insulin glargine 10 units at bedtime
- Sofía just presented to the ER with what she thought was a heart attack. Oh no! What now?

Sophia was NOT having a heart attack, instead she was having a panic attack. But this is not all good news.....let's continue

freeCE

freeCE

Sofía Hernandez's Near Miss...

- Sofía was found to be having a panic attack, but it scared her badly.
- She is "born again" and wants to take better care of her diabetes so she won't die and leave her son alone.
- Her BP in the ER, and on two separate occasions at her doctor's office averages 150/95 mmHg
- Her LDL-C is 140 mg/dl
- No history of smoking, renal function is fine
- Albumin-creatinine ratio is 20 mg/g creatinine
- No family history of premature ASCVD
- What should we do with Sofía?

Sofía's A1c is 7.4%. She is on metformin and insulin glargine 10 units at bedtime. She PROMISED to go on the DASH diet!

freeCE

Treatment of Hypertension

- Initial BP between **140/90** and **160/100** mmHg
  - Lifestyle management
  - Albuminuria present – ACE I or ARB
  - Albuminuria not present – ACE I, ARB, CCB, Diuretic
- Start Sofía on **HCTZ 25 mg po qd**

Diabetes Care 2018;41(Suppl 1):S86-S104.

freeCE

Lipid Management

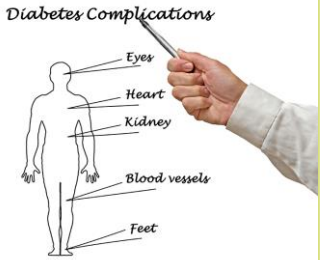
- For patients of all ages with diabetes and ASCVD, high-intensity statin therapy should be added to lifestyle therapy
- Patients < 40 years with additional ASCVD risk factors, consider using moderate-intensity statins in addition to lifestyle therapy
- Patients aged 40-75 years, and >75 without ASCVD, use moderate-intensity statin in addition to lifestyle therapy
- **Atorvastatin 10 mg po qd**
- Adjust therapy based on patient response

Diabetes Care 2018;41(Suppl 1):S86-S104.

freeCE

Complications of Diabetes

- Macrovascular complications
- AKA Atherosclerotic CV disease
  - Cardiovascular disease
  - Cerebrovascular disease
  - Peripheral vascular disease
- Microvascular complications
  - Retinopathy
  - Nephropathy
- Neuropathic complications
  - Autonomic
  - Sensorimotor



freeCE

freeCE

Diabetic Kidney Disease

- At least annually, assess urinary albumin and estimated GFR in T1DM with duration ≥ 5 years, and all T2DM patients, and in all patients with comorbid hypertension
- Optimize glucose and BP control
- For patients with non-dialysis-dependent CKD, dietary protein should be about 0.8 g/kg body weight per day (higher on dialysis)
- Non-pregnant adults with DM and HTN, ACE I or ARB is recommended
  - ACE I or ARB not recommended for primary prevention of diabetic kidney disease in PWD and normal BP, normal urinary albumin-creatinine ratio and eGFR

Normal urinary albumin-to-creatinine ratio is < 30 mg/gram creatinine

Diabetes Care 2018;41(Suppl 1):S105-S118.

freeCE

CKD Stages and Kidney-Related Care

Stage	eGRF (ml/min/ 1.73m²)	Evidence of Kidney Damage	Diagnose cause of kidney injury	Evaluate and tx risk factors for CKD progression	Evaluate and tx CKD complications	Prepare for renal replacement therapy
No evidence of CKD	≥ 60	-				
1	≥ 90	+	√	√		
2	60-89	+	√	√		
3	30-59	+/-	√	√	√	
4	15-29	+/-		√	√	√
5	< 15	+/-			√	√

Diabetes Care 2018;41(Suppl 1):S105-S118.

freeCE

Selected Complications of CKD

- Elevated blood pressure
- Volume overload
- Electrolyte abnormalities
- Metabolic acidosis
- Anemia
- Metabolic bone disease

Stage CKD	eGFR (ml/min/1.73 m²)
No evidence	≥ 60
1	≥ 90
2	60-89
3	30-59
4	15-29
5	Less than 15

Diabetes Care 2018;41(Suppl 1):S105-S118.

freeCE

Remember Fred Flintstone?

- Fred is a 72 year old man, whose wife passed away about two years ago.
- Fred was diagnosed with pre-diabetes two years ago, and he didn't take good care of himself.
- He hasn't been to his PCP in over a year.
- But Fred found a good woman and they got married!
- Wilma (surely you saw that coming!) insists he go to his PCP!

freeCE

freeCE

Fred, Fred, Fred…

- Fred's blood pressure is 142/94 mmHg on average.
- His creatinine clearance is 50 ml/min
- He has CKD stage 3
- His albumin-to-creatinine ratio is 50 mg/g creatinine
- What would you recommend we do at this point?
- Non-pregnant adults with DM and HTN, ACE I or ARB is recommended → lisinopril 10 mg po qd

freeCE

Diabetic Retinopathy

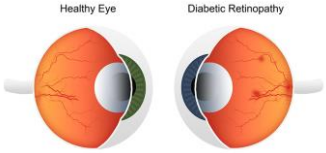
- Highly specific vascular complication seen in T1 and T2DM
- Prevalence strongly related to both the duration of diabetes and the level of glycemia control
- Most frequent cause of new cases of blindness among adults aged 20-74 years in developed countries
- Glaucoma, cataracts, and other disorders of the eye occur earlier and more frequently in people with diabetes.

Diabetes Care 2018;41(Suppl 1):S105-S118.

freeCE

Diabetic Retinopathy Recommendations

- Optimize glycemic control to reduce the risk or slow the progression of diabetic retinopathy
- Optimize BP and serum lipid control to reduce the risk or slow the progression of diabetic retinopathy

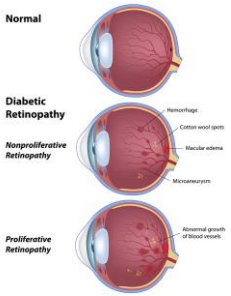


Diabetes Care 2018;41(Suppl 1):S105-S118.

freeCE

Retinopathy

- Nonproliferative
  - Microaneurysms, hard exudates, intraretinal hemorrhage
- Preproliferative
  - Venous beading, cotton wool spots, intraretinal microvascular abnormalities
- Proliferative
  - Neovascularization
    - Formation and proliferation of abnormal retinal vessel growth
    - Vessels are more fragile than normal blood vessels and can hemorrhage into the vitreous, reducing visual acuity



freeCE

freeCE

Screening for Retinopathy

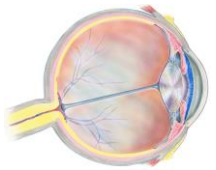
- T1DM – within 5 years of diagnosis of DM
- T2DM – initial dilated and comprehensive eye exam by ophthalmologist or optometrist at the time of DM diagnosis
- If no evidence of retinopathy for one or more annual eye exams, and glycemia is well controlled, then exams every 1-2 years may be considered
- If any degree of retinopathy is present, repeat exams at least annually
- If retinopathy is progressing, more frequent eye exams
- Eye exam before pregnancy or in the first trimester with pre-existing DM, then every trimester and for 1 year postpartum

Diabetes Care 2018;41(Suppl 1):S105-S118.

freeCE

Treatment of Retinopathy

- With macular edema, severe nonproliferative diabetic retinopathy, or any proliferative retinopathy, refer to eye care specialist
- Panretinal laser photocoagulation – reduces vision loss
- Intravitreous injections of antivascular endothelial growth factor ranibizumab
- Retinopathy is not a contraindication to aspirin therapy; aspirin does not increase the risk for retinal hemorrhage

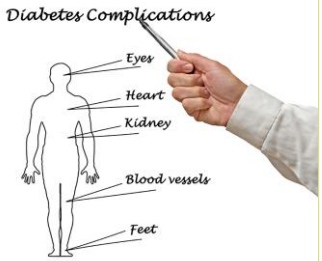


Diabetes Care 2018;41(Suppl 1):S105-S118.

freeCE

Complications of Diabetes

- Macrovascular complications
- AKA Atherosclerotic CV disease
  - Cardiovascular disease
  - Cerebrovascular disease
  - Peripheral vascular disease
- Microvascular complications
  - Retinopathy
  - Nephropathy
- Neuropathic complications
  - Autonomic
  - Sensorimotor



freeCE

Diabetic Neuropathies

- Heterogenous group of disorders with diverse clinical manifestations
  - Diabetic neuropathy is a diagnosis of exclusion. Nondiabetic neuropathies may be present in PWD and may be treatable.
  - Numerous treatment options exist for symptomatic diabetic neuropathy.
  - Up to 50% diabetic peripheral neuropathy may be asymptomatic. If not recognized and if preventive foot care is not implemented, patients are at risk for injuries to their insensate feet.
  - Recognition and treatment of autonomic neuropathy may improve symptoms, reduce sequelae, and improve quality of life.

Specific treatment for the underlying nerve damage, other than improved glycemic control, is currently not available. Improved glycemic control slows disease progression but does not reverse neuronal loss.

Diabetes Care 2018;41(Suppl 1):S105-S118.

freeCE

Screening for Neuropathy

- All patients should be screened at the time of diagnosis of T2DM, or within 5 years of diagnosis of T1DM
- Assessment for distal symmetric polyneuropathy should include:
  - History and assessment of temperature or pinprick sensation, and vibration sensation
  - All patients should have annual 10-g monofilament test to identify feet at risk for ulceration and amputation
  - Symptoms and signs of autonomic neuropathy should be assessed in patients with microvascular complications

CV – asymptomatic, decreased heart rate variability with deep breathing, resting tachycardia, orthostasis.
GI – esophageal dysmotility, gastroparesis, constipation, diarrhea, fecal incontinence
GU – sexual dysfunction, pain with intercourse (for women), bladder dysfunction, urinary incontinence

Diabetes Care 2018;41(Suppl 1):S105-S118.

freeCE

Treatment of Diabetic Neuropathy

- Optimize blood glucose control
- Treat pain of diabetic peripheral neuropathy (stay tuned!)

freeCE

Diabetes and Pregnancy

- The prevalence of diabetes in pregnancy has been increasing in the US
  - Parallels the growing prevalence of obesity
- The majority is gestational diabetes; remainder is pre-existing T1DM and T2DM
  - Greater maternal and fetal risk than gestational diabetes

Diabetes Care 2018;41(Suppl 1):S137-S143.

freeCE

Diabetes and Pregnancy - Preconception

- Starting at puberty, preconception counseling should be incorporated into routine diabetes care for all girls of childbearing potential.
- Family planning should be discussed and effective contraception should be prescribed and used until a woman is prepared and ready to become pregnant.
- Preconception counseling should address the importance of glycemic control as close to normal as is safely possible, ideally A1c < 6.5%, to reduce the risk of congenital anomalies.
- Preconception dilated eye exam.

Diabetes Care 2018;41(Suppl 1):S137-S143.

freeCE

freeCE

Glycemic Targets in Pregnancy

- Fasting and post-prandial SMBG is recommended in both gestational and pre-existing diabetes in pregnancy
- A1c target is 6-6.5%
- A1c target may be relaxed to 7% if necessary to prevent hypoglycemia
- Fasting < 95 mg/dl
- One-hour postprandial < 140 mg/dl
- Two-hour postprandial < 120 mg/dl

Diabetes Care 2018;41(Suppl 1):S137-S143.

freeCE

Management of Gestational Diabetes

- Lifestyle change is an essential component and may be sufficient to control BG
- Insulin is the preferred medication for treating hyperglycemia in gestational diabetes mellitus as it does not cross the placenta to a measurable extent
- Metformin and glyburide may be used, but both cross the placenta to the fetus, with metformin likely crossing to a greater extent that glyburide.
- All oral agents lack long-term safety data.
- Metformin, when used to treat PCOS, may be DC'ed once pregnancy confirmed
- Postpartum follow-up
  - Test for T2DM at 4-12 weeks postpartum with OGTT
  - GDM is associated with an increased lifetime maternal risk for DM at 50-70% after 15-25 years; woman should be tested every 1-3 years for DM

Diabetes Care 2018;41(Suppl 1):S137-S143.

freeCE

Preexisting Diabetes

- Insulin is the preferred agent for management of both T1DM and T2DM because it does not cross the placenta
  - Caution: T1DM – increased risk of hypoglycemia in first trimester and counter-regulatory hormones may decrease hypoglycemia awareness
  - Insulin resistance drops rapidly after the birth, and patient will require much less insulin immediately after delivery
- Also, oral agents are generally insufficient to overcome the insulin resistance in T2DM, and are ineffective in T1DM
- Woman with T1/T2DM should take low-dose aspirin (81 mg) from the end of the first trimester until the baby is born to lower the risk of preeclampsia
- BP target is 120-160/80-105 mmHg

freeCE

Exam Questions:

1. Which of the following is a macrovascular complication of diabetes?
    a. Cerebrovascular disease
    b. Nephropathy
    c. Neuropathy
    d. Retinopathy

2. Which of the following is an example of a microvascular complication of diabetes?
    a. Cardiovascular disease
    b. Peripheral vascular disease
    c. Neuropathy
    d. Retinopathy

3. True or False: The initial evaluation of a person diagnosed with diabetes should include a review of psychosocial conditions, diabetes self-management education provided, and pregnancy planning if appropriate.
    a. True
    b. False

4. Which of the following is a modifiable risk factor for ASCVD in a patient with diabetes?
    a. Hypertension
    b. Family history of premature coronary disease
    c. Smoking
    d. A and C
    e. A, B and C

5. The definition of hypertension, per the American Diabetes Association, is which of the following? A sustained blood pressure in excess of…
    a. 120/80 mmHg
    b. 130/85 mmHg
    c. 140/90 mmHg
    d. 150/100 mmHg

6. What is the hypertension management recommendation (per the ADA) for a patient with a BP > 120/80 (but less than 140/90) who has diabetes?
    a. Lifestyle intervention consisting of weight loss if overweight
    b. Lisinopril 10 mg po qd
    c. HCTZ 25 mg po qd
    d. Clonidine 0.3 mg po qd

7. What is the target LDL-cholesterol for a patient with diabetes?
    a. < 70 mg/dl
    b. < 100 mg/dl
    c. < 130 mg/dl
    d. None of the above; intensity of statin therapy is determined by ASCVD risk

8. Which of the following would be considered "high intensity statin therapy?"
    a. Atorvastatin 10 mg po qd
    b. Atorvastatin 40 mg po qd
    c. Rosuvastatin 10 mg po qd
    d. Pravastatin 40 mg po qd

9. Which of the following medications now has the FDA indication "to reduce the risk of cardiovascular death in adult patients with type 2 diabetes mellitus and established cardiovascular disease?"
    a. Glyburide
    b. Metformin
    c. Empagliflozin
    d. Semaglutide

10. The preferred antihypertensive agent for a patient with diabetes and hypertension, and diabetic kidney disease is which of the following?
    a. ACE inhibitor
    b. Angiotensin receptor blocker
    c. Thiazide diuretic
    d. A or B
    e. A, B or C