Lipid Management for Patients With Diabetes

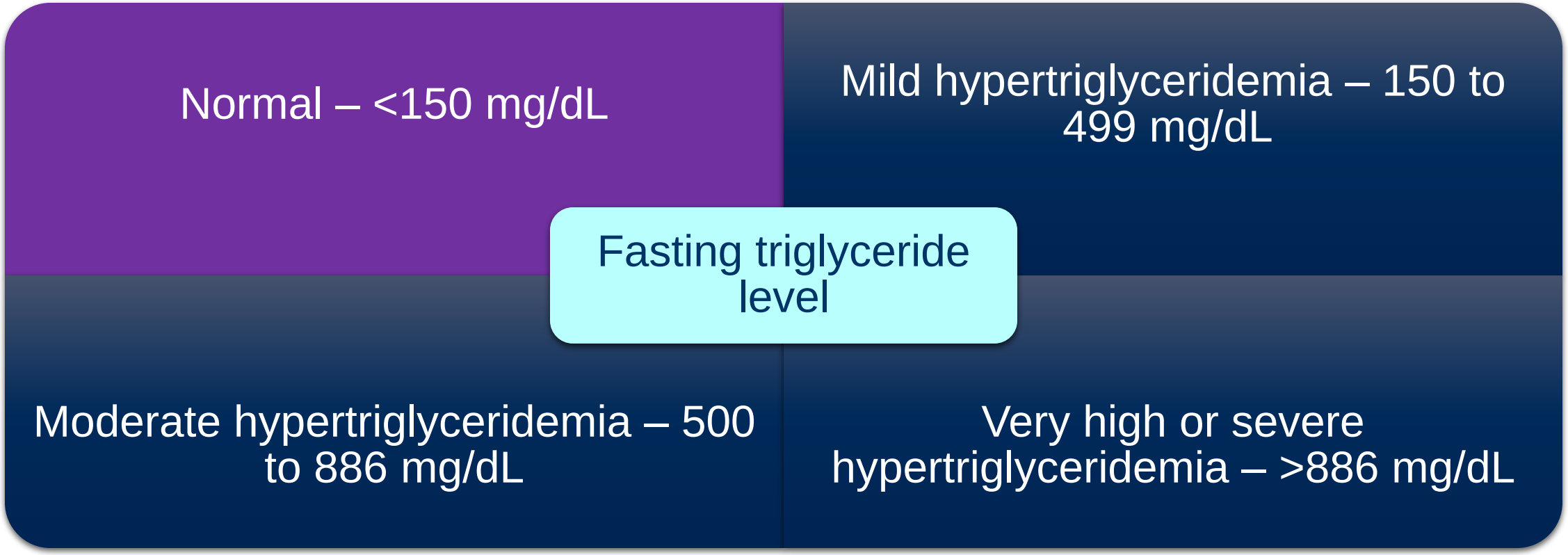
Dr. Jalil Houshyar

Assistant professor of endocrinology

Tabriz university of medical sciences

June 2021

Hypertriglyceridemia



Hypertriglyceridemia

- (> 886-1000mg/dl).
- Triglycerides 175–886 mg/dL
- Strict glycemic control in diabetics should be first-line therapy in patients with mild to moderate hypertriglyceridemia(obesity, chronic liver or kidney disease and/or nephrotic syndrome, hypothyroidism and medications).
- For patients with fasting triglyceride levels≥500 mg/dL , consider medical therapy.
- Triglycerides 175–499 mg/dL

LIPANTIL® MICRO 200MG CAPSULES
(fenofibrate)

Non-micronised formulations may also be available and are given in an initial dose of 200 to 300 mg daily in divided doses, adjusted according to response to between 200 and 400 mg daily; 100 mg of non-micronised fenofibrate is therapeutically equivalent to 67 mg of the standard micronised form. (Martindale 36e)

May increase risk of cholelithiasis; discontinue if gallstones are found upon gallbladder studies (up to date 2018).

Give with dinner

Fibrates also interfere with the metabolism of warfarin .As a result, the warfarin dose should be reduced by 30 percent in patients treated with this drug (up to date 2018).

Fenofibrate dose should be cut by two-thirds and gemofibrozil by one-half when eGFR is 15-60, and fibrates should be avoided when eGFR is <15 (**CPG for Managing Dyslidemia and Prevention of CVD, *Endocr Pract.* 2017;23(Suppl 2).**

Hypertriglyceridemia

Fenofibrate is the preferred fibrate in patients who require combined therapy with a statin and fibrate.

Fibrate therapy can reduce triglyceride levels by as much as 50 percent or more

A response to fibrates is seen as early as two weeks into therapy with a maximal effect in six to eight weeks.

(up to date 2018)

Hypertriglyceridemia

- Fish oil:can lower the serum triglyceride concentration by as much as 50 percent .
- The majority of the response with with fish oil is seen in two weeks .
- The nutrition labels must be studied to calculate the number of capsules required to obtain a dose of 3–5 g of n-3 fatty acids (up to date 2018).

ترکیبات (هر کپسول) :

نام	مقدار	نیاز روزانه
Fish oil	1000 mg	*
Eqiv.Omega3	300 mg	*
EPA	180 mg	*
DHA	120 mg	*

1000 mg Omega-3-acid ethyl esters 90
Omacor soft capsules are soft, oblong, transparent gelatine capsules containing pale yellow oil, for oral administration. Each capsule contains 1000 mg of Omega-3-acid ethyl esters 90, which contains eicos-apentaenoic acid (EPA) ethyl ester (460 mg) and docosahexaenoic acid (DHA) ethyl ester (380 mg).

Omega-3 acid ethyl esters are available by prescription in capsules that contain 80% ePa and dHa.Thus, a dose of four capsules is needed to lower triglycerides by 30–50% (*Journal of Clinical Endocrinology & Metabolism, September 2012, 97: 2969–2989).*

(freeze)

Hypercholesterolemia

Table 10.3—High-intensity and moderate-intensity statin therapy*

High-intensity statin therapy (lowers LDL cholesterol by ≥50%)	Moderate-intensity statin therapy (lowers LDL cholesterol 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

Hypercholesterolemia

- LDL>190mg/dl
- For patients of all ages with diabetes and atherosclerotic cardiovascular disease high-intensity statin therapy should be added to life style therapy(Atorvastatin40-80mg)

Hypercholesterolemia

- <40 age
- ASCVD risk factors
- LDL cholesterol≥100 mg/dL ,high blood pressure, smoking, chronic kidney disease, albuminuria, and family history of premature ASCVD
- Moderate-intensity statin may be considered(Atorvastatin10-20mg)

Hypercholesterolemia

- Age> 40y
- Male: 48y
- TG: 440, ***Chlo T:250***, HDL:30, LDL:128, BP:130/80

Hypercholesterolemia

- Age> 40y
- Male: 48y
- TG: 440, ***Chlo T:250***, HDL:30, LDL:128, BP:130/80
- http://www.cvriskcalculator.com/

Age (years)	48
Gender	(●) Male ( ) Female
Race	( ) African American (●) Other
Total cholesterol (mg/dL)	250
HDL cholesterol (mg/dL)	30
Systolic blood pressure (mmHg)	130
Diastolic blood pressure (mmHg)	80
Treated for high blood pressure	(●) No ( ) Yes
Diabetes	( ) No (●) Yes
Smoker	(●) No ( ) Yes

Calculate

13.3%

10-year risk of heart disease or stroke

On the basis of your age alone, the USPSTF guidelines suggest there is **insufficient evidence you will benefit from starting aspirin** for heart disease and stroke risk reduction.

On the basis of your age, your calculated risk for heart disease or stroke over 7.5%, and diabetes, the ACC/AHA guidelines suggest you should be on a **high intensity statin**.

Based on your age, your blood pressure is **well-controlled**.

Demography	Cholesterol	Blood pressure	Risk factors
Age: 48	Total: 250	Systolic: 130	Diabetes: yes
Gender: male	HDL: 30	Diastolic: 80	Smoking: no
Race: not African-American		On medication: no	

Hypercholesterolemia

- For patients with diabetes and atherosclerotic cardiovascular disease, if LDL cholesterol is≥70 mg/dL on maximally tolerated statin dose, consider adding additional LDL-lowering therapy (such as ezetimibe).

Monitoring

- Hypertriglyceridemia
- Hypercholesterolemia

Hypercholesterolemia

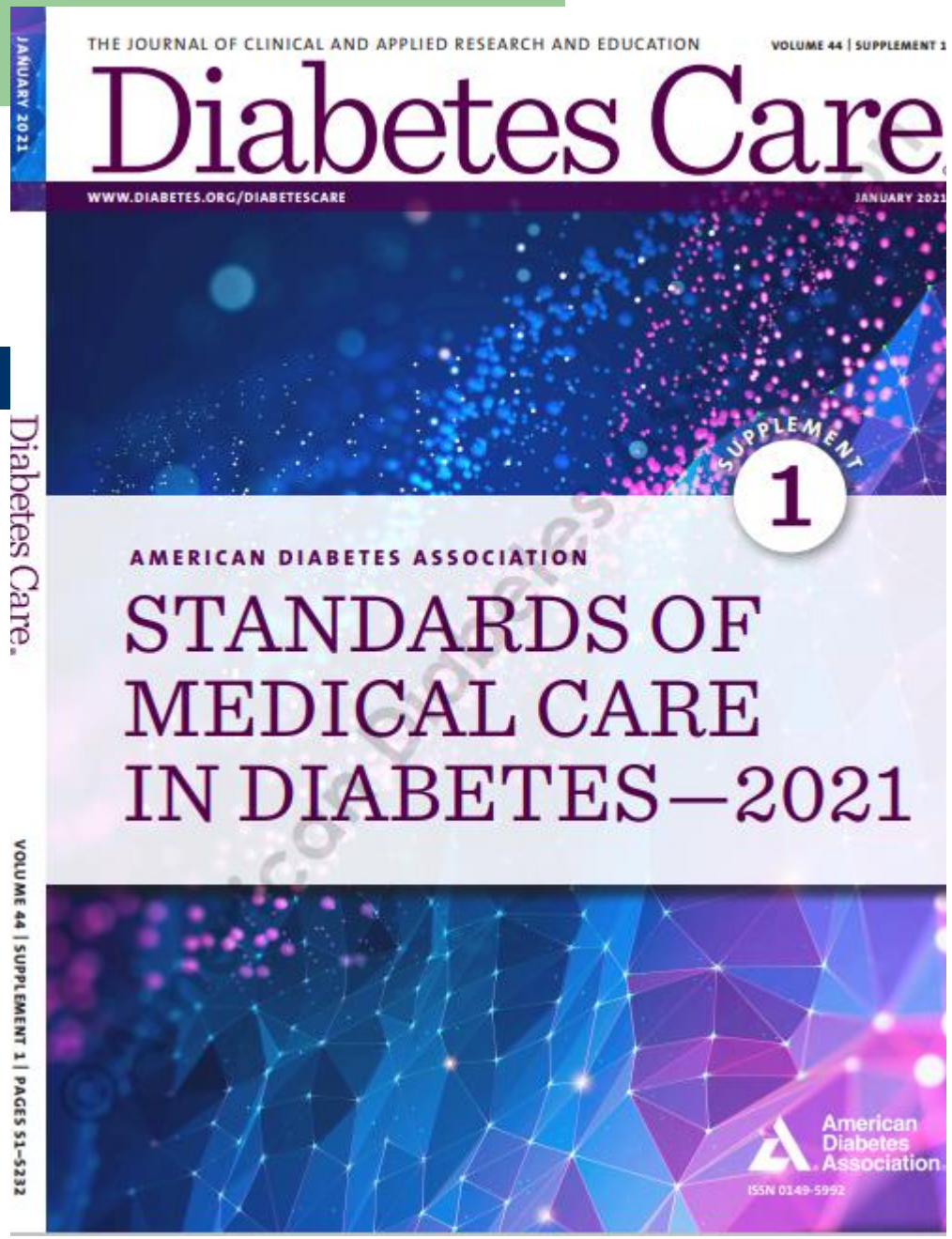
In a major departure from prior guidelines, the 2013 guideline eliminates LDL targets as goals of therapy. The panel did so because major clinical trials did not titrate therapy to a goal, but rather used fixed doses of statins. Instead, the new guideline suggests different intensities of statin therapy based on risk category **(Fig. 291e-4)**.

FH(160-200)

DM with cvd <70

Concerns

- (on average) treatment of 255 patients with statins for 4 years resulted in **one additional case of diabetes** while simultaneously preventing 5.4 vascular events among those255patients.
- a concern that statins or other lipid lowering agents might cause **cognitive dysfunction or dementia** is not currently supported by evidence and should not deter their use in individuals with diabetes at high risk for ASCVD.



Circulation

CHOLESTEROL CLINICAL PRACTICE GUIDELINES

2018 AHA/ACC/AACVPR/AAPA/ABC/ACPM/ADA/AGS/APhA/ASPC/NLA/PCNA Guideline on the Management of Blood Cholesterol

A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines

WRITING COMMITTEE MEMBERS
Scott M. Grundy, MD, PhD, FAHA, Chair*
Neil J. Stone, MD, FACC, FAHA, Vice Chair*
Alison L. Bailey, MD, FACC, FAACVPR†
Craig Beam, CRE*
Kim K. Birtcher, MS, PharmD, AACC, FNLA‡
Roger S. Blumenthal, MD, FACC, FAHA, FNLA§
Lynne T. Braun, PhD, CNP, FAHA, FPCNA, FNLA‖
Sarah de Ferranti, MD, MPH*
Joseph Faiella-Tommasino, PhD, PA-C¶
Daniel E. Forman, MD, FAHA**
Ronald Goldberg, MD††
Paul A. Heidenreich, MD, MS, FACC, FAHA‡‡
Mark A. Hlatky, MD, FACC, FAHA*
Daniel W. Jones, MD, FAHA§
Donald Lloyd-Jones, MD, SCM, FACC, FAHA*
Nuria Lopez-Pajares, MD, MPH§§
Chiadi E. Ndumele, MD, PhD, FAHA*
Carl E. Orringer, MD, FACC, FNLA‖
Carmen A. Peralta, MD, MAS*
Joseph J. Saseen, PharmD, FNLA, FAHA¶¶
Sidney C. Smith Jr, MD, MACC, FAHA*
Laurence Sperling, MD, FACC, FAHA, FASPC***
Salim S. Virani, MD, PhD, FACC, FAHA*
Joseph Yeboah, MD, MS, FACC, FAHA†††

ACC/AHA Task Force Members, see page e1123

Key Words: AHA Scientific Statements ■ Guidelines ■ biomarkers, coronary artery calcium score ■ pharmacological ■ cardiovascular disease ■ cholesterol, LDL-cholesterol ■ diabetes mellitus ■ drug therapy ■ hydroxymethylglutaryl-CoA reductase inhibitors/statins ■ hypercholesterolemia ■ lipids ■ patient compliance ■ primary prevention ■ risk assessment ■ risk reduction discussion ■ risk treatment discussion, secondary prevention ■ ezetimibe ■ proprotein convertase subtilisin/kexin type 9 inhibitor (PCSK9) inhibitors

*ACC/AHA Representative. †AACVPR Representative. ‡ACC/AHA Task Force on Clinical Practice Guidelines Liaison. §Prevention Subcommittee Liaison. ‖PCNA Representative. ¶AAPA Representative. **AGS Representative. ††ADA Representative. ‡‡PM Representative. §§ACPM Representative. ‖‖NLA Representative. ¶¶APhA Representative. ***ASPC Representative. †††ABC Representative.

The American Heart Association requests that this document be cited as follows: Grundy SM, Stone NJ, Bailey AL, Beam C, Birtcher KK, Blumenthal RS, Braun LT, de Ferranti S, Faiella-Tommasino J, Forman DE, Goldberg R, Heidenreich PA, Hlatky MA, Jones DW, Lloyd-Jones D, Lopez-Pajares N, Ndumele CE, Orringer CE, Peralta CA, Saseen JJ, Smith SC Jr, Sperling L, Virani SS, Yeboah J. 2018 AHA/ACC/AACVPR/AAPA/ABC/ACPM/ADA/AGS/APhA/ASPC/NLA/PCNA guideline on the management of blood cholesterol: a report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. *Circulation*. 2019;139:e1082–e1143. DOI: 10.1161/CIR.0000000000000625.

https://www.ahajournals.org/journal/circ