

Home

Impact of CVD  
and ASCVD

Risk of  
Elevated LDL-C

Burden of LDL-C

# You choose to fight CVD. So do we.

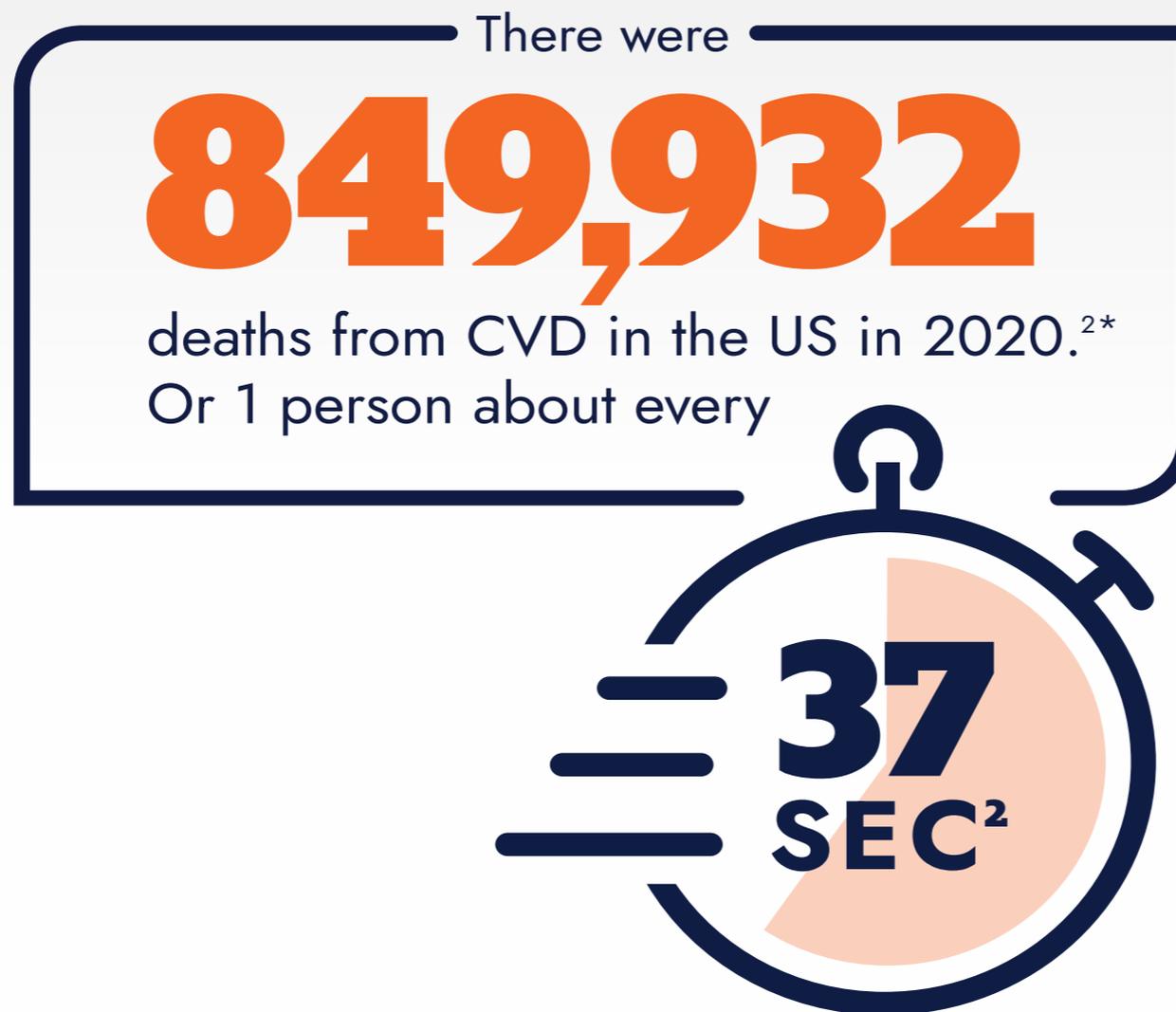
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For your patients with cardiovascular disease (CVD), especially those with ASCVD (atherosclerotic cardiovascular disease) who have had a prior CV event, it's time to change how we approach CVD and help address the rise of this health crisis together.



Not real patients or health care provider.

# Cardiovascular disease is the #1 cause of death in the US<sup>1</sup>

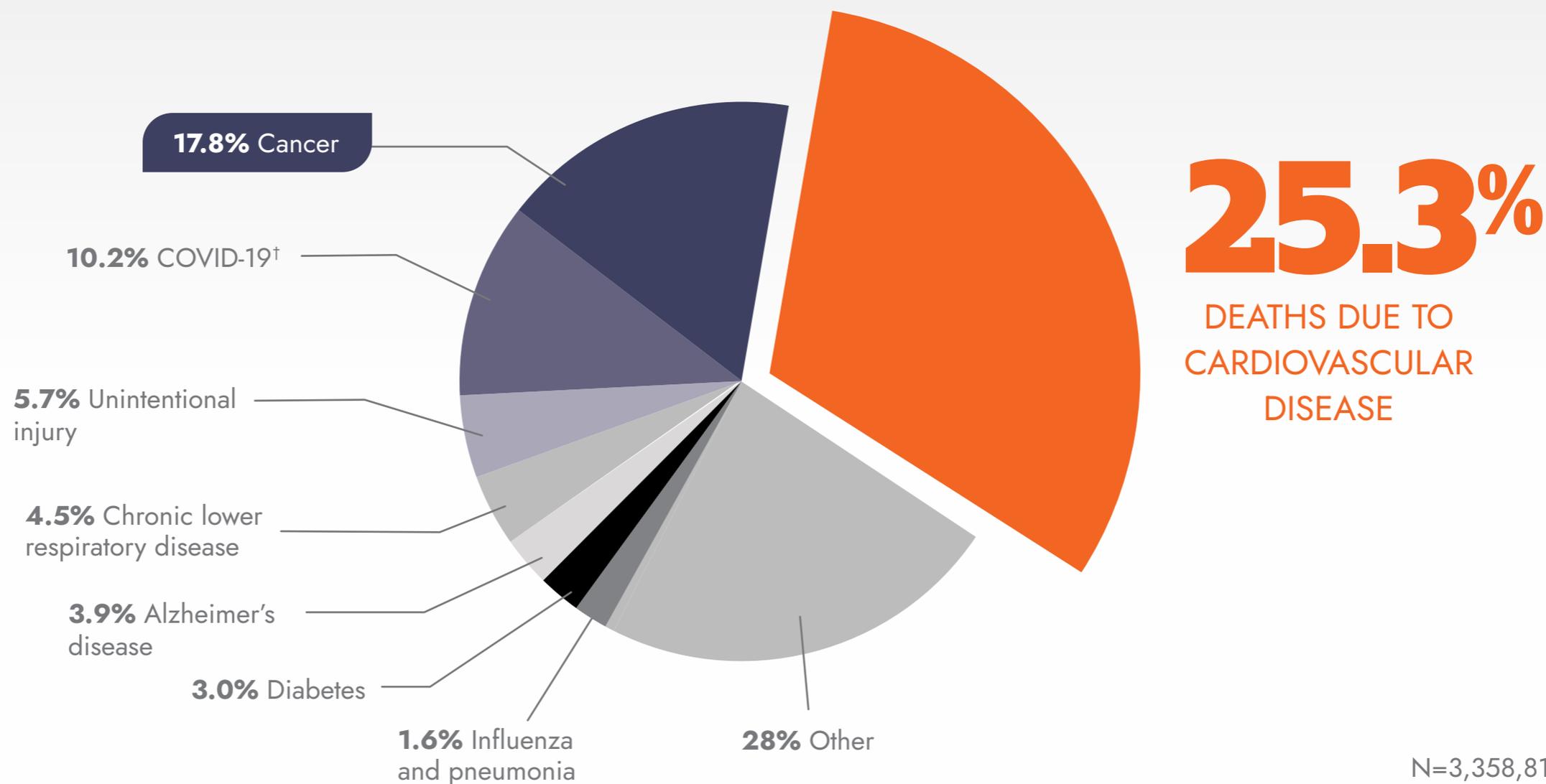


\*National Vital Statistic System (NVSS) 2020 preliminary report. CVD comprises coronary heart disease and stroke.

References:

1. McClellan M, Brown N, Califf RM, Warner JJ. Call to action: urgent challenges in cardiovascular disease: a presidential advisory from the American Heart Association. *Circulation*. 2019;139(9):e1-e11. doi:10.1161/CIR.0000000000000652 2. Ahmad FB, Anderson RN. The leading causes of death in the US for 2020. *JAMA*. 2021;325(18):1829-1830. Accessed June 24, 2021. <https://jamanetwork.com>

# CVD caused more deaths than cancer in 2020<sup>1\*</sup>



\*Leading causes are classified according to underlying cause and presented according to the number of deaths among US residents.

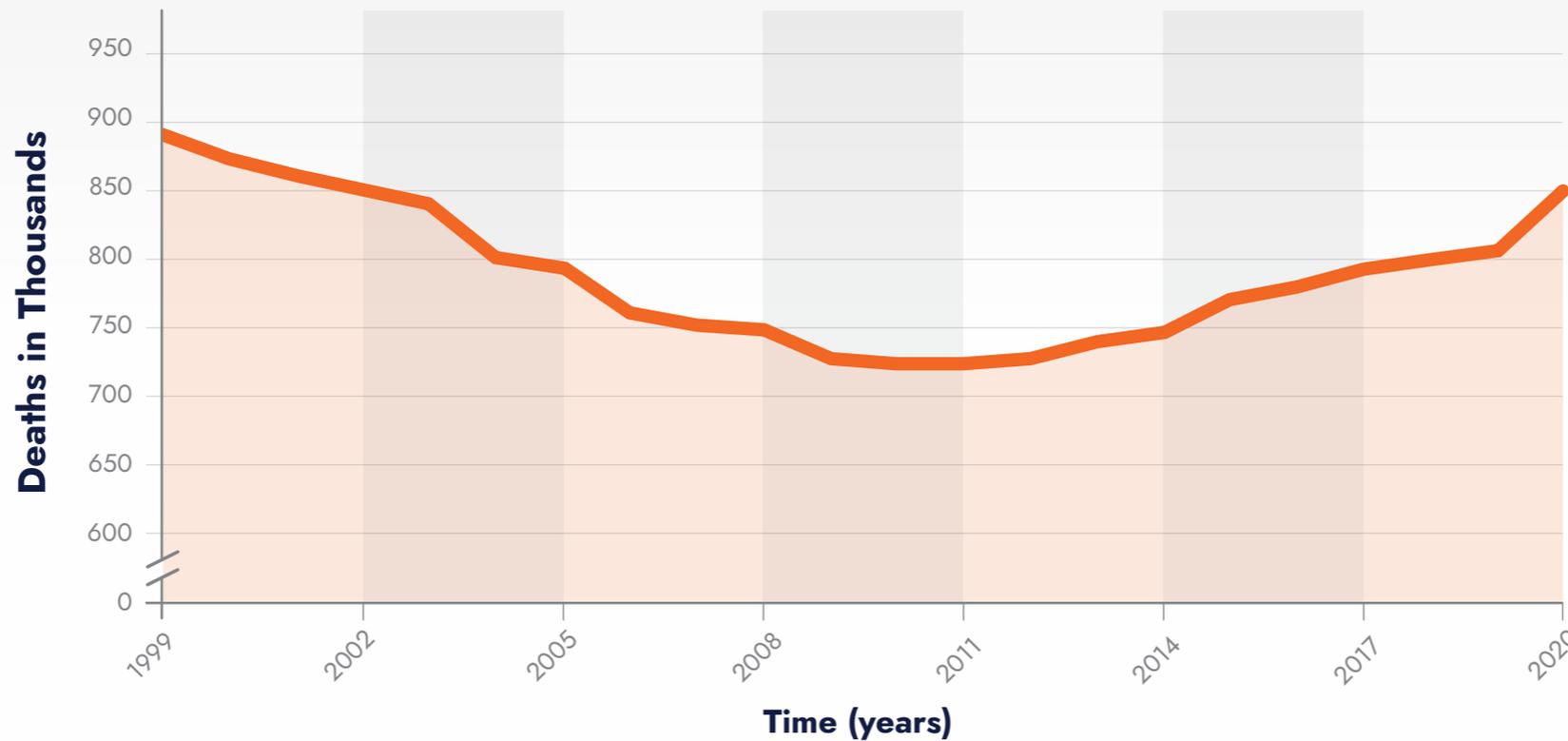
†Deaths with confirmed or presumed COVID-19, coded to International Statistical Classification of Diseases and Related Health Problems, Tenth Revision code U07.1, as the underlying cause of death.

Reference:

1. Ahmad FB, Anderson RN. The leading causes of death in the US for 2020. *JAMA*. 2021;325(18):1829-1830. Accessed June 24, 2021. <https://jamanetwork.com>

# Despite the availability of effective treatments, CVD\* deaths are on the rise over the past decade<sup>1-8</sup>

### Deaths attributable to cardiovascular disease, US, 1999-2020<sup>2-8</sup>



Not a real health care provider.

## You can change the future for your patients by changing the way you address LDL-C— one of the most readily modifiable risk factors for your patients with ASCVD<sup>9</sup>

\*Includes heart disease and stroke.

References:

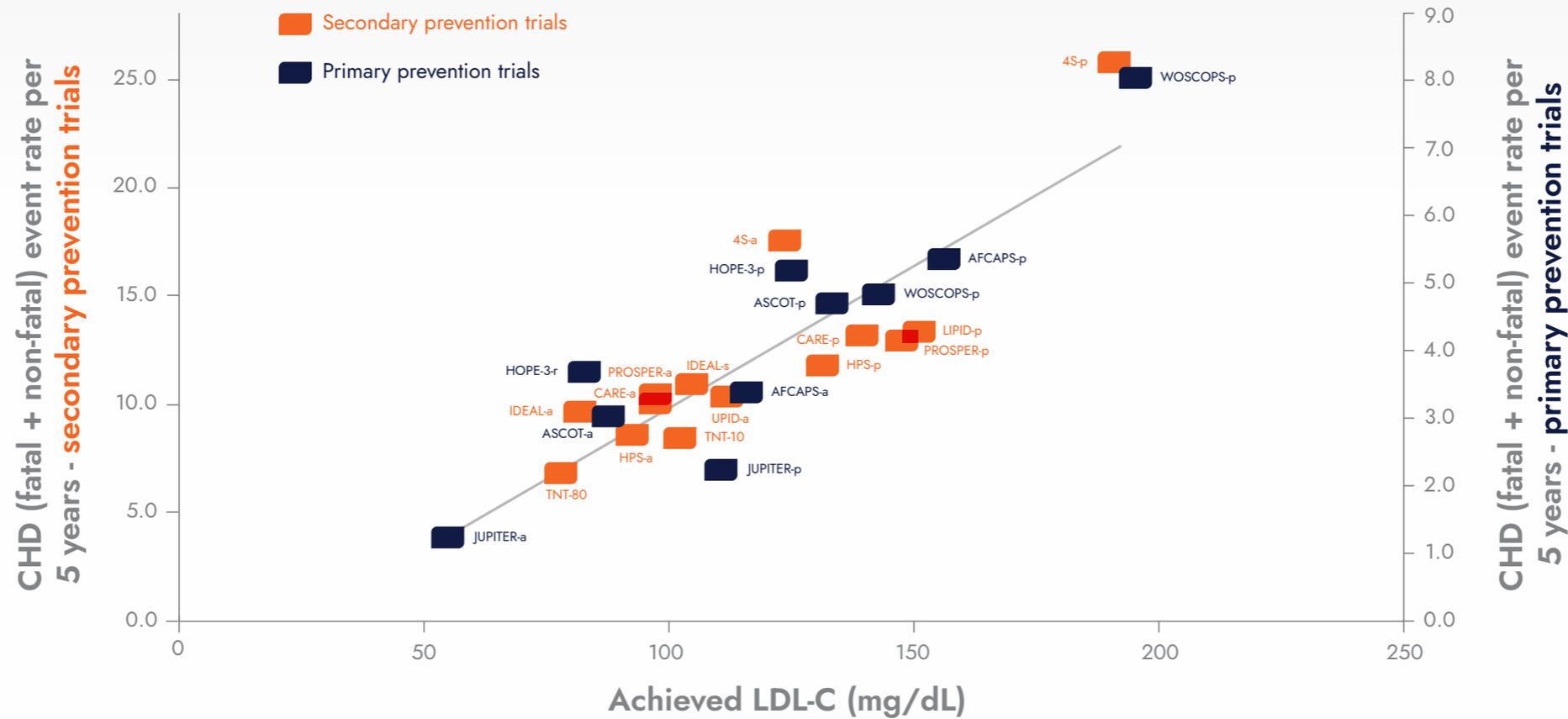
1. Fox KM, Tai M-H, Kostev K, Hatz M, Qian Y, Laufs U. Treatment patterns and low-density lipoprotein cholesterol (LDL-C) goal attainment among patients receiving high- or moderate-intensity statins. *Clin Res Cardiol.* 2018;107(5):380-388. doi:10.1007/s00392-017-1193-z 2. LCWK9: deaths, percent of total deaths, and death rates for the 15 leading causes of death: United States and each state, 1999-2015. Centers for Disease Control and Prevention. Accessed July 27, 2021. <https://www.cdc.gov/nchs/nvss/mortality/lcwk9.htm> 3. Heron M. Deaths: leading causes for 2015. National Vital Statistics Reports. 2019;66(5):1-76. Accessed July 27, 2021. [https://www.cdc.gov/nchs/data/nvsr/nvsr66/nvsr66\\_05.pdf](https://www.cdc.gov/nchs/data/nvsr/nvsr66/nvsr66_05.pdf) 4. Heron M. Deaths: leading causes for 2016. National Vital Statistics Reports. 2019;67(6):1-77. Accessed July 27, 2021. [https://www.cdc.gov/nchs/data/nvsr/nvsr67/nvsr67\\_06.pdf](https://www.cdc.gov/nchs/data/nvsr/nvsr67/nvsr67_06.pdf) 5. Heron M. Deaths: leading causes for 2017. National Vital Statistics Reports. 2019;68(6):1-77. Accessed July 27, 2021. [https://www.cdc.gov/nchs/data/nvsr/nvsr68/nvsr68\\_06-508.pdf](https://www.cdc.gov/nchs/data/nvsr/nvsr68/nvsr68_06-508.pdf) 6. Heron M. Deaths: leading causes for 2018. National Vital Statistics Reports. 2021;70(4):1-115. Accessed July 27, 2021. <https://www.cdc.gov/nchs/data/nvsr/nvsr70/NVSR70-04-508.pdf> 7. Leading causes of death reports, 1981-2019. Centers for Disease Control and Prevention. 2019. Updated February 20, 2020. Accessed July 27, 2021. <https://webappa.cdc.gov/sasweb/ncipc/leadcause.html> 8. Ahmad FB, Anderson RN. The leading causes of death in the US for 2020. *JAMA.* 2021;325(18):1829-1830. Accessed June 24, 2021. <https://jamanetwork.com> 9. Jacobson TA, Cheeley MK, Jones PH, et al. The SAtin Adverse Treatment Experience Survey: experience of patients reporting side effects of statin therapy. *J Clin Lipidol.* 2019;13(3):415-424. doi:10.1016/j.jacl.2019.04.011



IN CLINICAL TRIALS OF >500,000 PATIENTS

# The relationship between persistently elevated LDL-C and CV events has been established<sup>1</sup>

Consistent clinical evidence confirms a direct correlation between LDL-C and CHD events<sup>1</sup>



CHD: coronary heart disease.

Reference:

1. Ference BA, Ginsberg HN, Graham I, et al. Low-density lipoproteins cause atherosclerotic cardiovascular disease. 1. Evidence from genetic, epidemiologic, and clinical studies. A consensus statement from the European Atherosclerosis Society Consensus Panel. *Eur Heart J.* 2017;38(32):2459-2472. doi:10.1093/eurheartj/ehx144

FOR PATIENTS WITH ASCVD

# Lowering LDL-C reduces the risk for severe CV events<sup>1</sup>

## Average risk reduction in major vascular event (21 trials: statin vs control)\*

Rate Ratio (RR) per ~40 mg/dL (1 mmol/L) of LDL-C Lowered

Non-fatal MI  
0.74 (0.69-0.78)

CHD-related death  
0.80 (0.73-0.86)

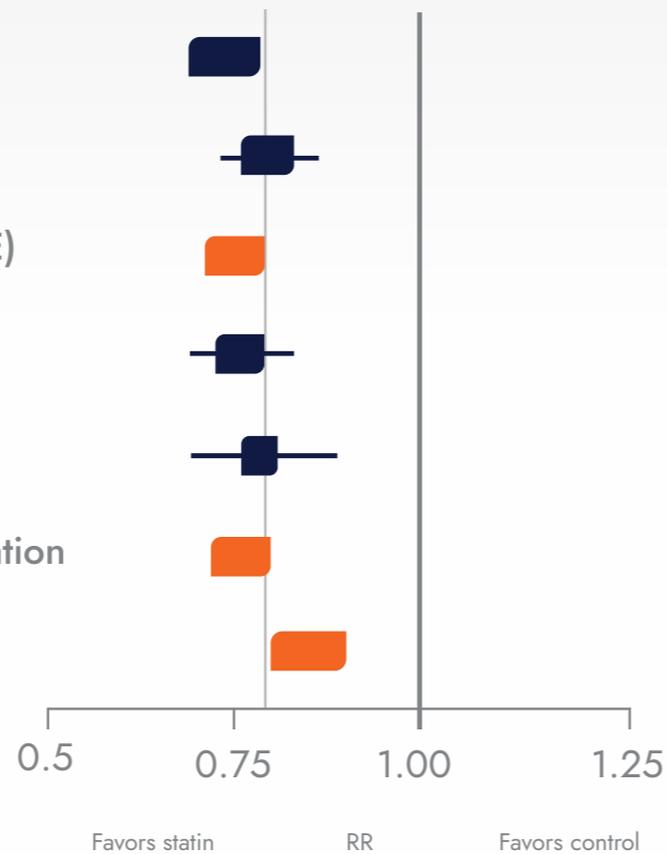
Any coronary event (MACE)  
0.76 (0.73-0.79)

Bypass  
0.76 (0.69-0.83)

Coronary angioplasty  
0.78 (0.69-0.89)

Any coronary revascularization  
0.76 (0.73-0.80)

Stroke  
0.85 (0.80-0.90)



CI 95% CI 99%

(p<0.0001)

MI: myocardial infarction.

MACE: major adverse cardiovascular event.

n=64,744 statins vs 64,782 control. Total major vascular events: 7136 statins vs 8934 control.

For every ~40 mg/dL (1 mmol/L) of LDL-C reduction, patients experience a

**22%**

reduction in risk of major adverse cardiovascular events<sup>1</sup>

**Source:** Based on a meta-analysis of 26 randomized trials of statin therapy performed by the Cholesterol Treatment Trialist Collaboration, which included 170,000 participants with a median follow-up of 4-8 years, and assessed the effect of LDL-C-lowering therapy through trials of more- vs less-intense statin therapy (5 trials) or statin vs control (21 trials) on the risk of occlusive vascular events. 22% reduction corresponds to RR 0.78 in MACE (CI 0.76-0.80; p<0.0001) and is based on analysis of 26 trials. Average risk reduction plot based on analysis of 21 trials of statin vs control.

\*Major vascular events defined as MI (non-fatal or CHD-related death), any major cardiovascular event, coronary revascularization (angioplasty, bypass, or any vascular intervention), or stroke.

**Reference:**

1. Baigent C, Blackwell L, Emberson J, et al. Efficacy and safety of more intensive lowering of LDL cholesterol: a meta-analysis of data from 170 000 participants in 26 randomised trials. *Lancet*. 2010;376(9753):1670-1681. doi:10.1016/S0140-6736(10)61350-5

# Elevated LDL-C over time increases the risk for MI<sup>1,2</sup>

The longer patients have persistently elevated LDL-C, the earlier they are at risk of MI.<sup>1</sup>



LDL-C level (mg)



Time (years)



Increase in MI risk<sup>2</sup>

Time (years)

**Study design:** Based on a proposed model of log-linear association between hypothetically persistent elevated LDL-C concentrations (mg/dL or mmol/L) and duration of exposure to such LDL-C concentrations and the risk of ASCVD as discussed by the European Atherosclerosis Society Consensus Panel. All calculations, including proposed log-linear association between persistently elevated LDL-C and risk ASCVD/MI, are based on a conceptual theory of the effects of chronically elevated LDL-C derived from a meta-analysis examining 200 studies (prospective cohort, Mendelian, and randomization) and are not the direct representation of trial outcomes. Right-panel graphic is a conceptual rendering of log-linear increase in MI risk over time in years and assumes subjects remain at consistent and elevated theoretical LDL-C concentration.

References:

- 1. Ference BA, Ginsberg HN, Graham I, et al. Low-density lipoproteins cause atherosclerotic cardiovascular disease. 1. Evidence from genetic, epidemiologic, and clinical studies. A consensus statement from the European Atherosclerosis Society Consensus Panel. *Eur Heart J.* 2017;38(32):2459-2472. doi:10.1093/eurheartj/ehx144
- 2. Ference BA, Graham I, Tokgozoglou L, Catapano AL. Impact of lipids on cardiovascular health: *JACC Health Promotion Series.* 2018;17(10):1141-1156. doi:10.1016/j.jacc.2018.06.046

## Despite current treatment options and the efforts of patients and HCPs<sup>1</sup>

UP TO

**80%**  
OF ASCVD  
PATIENTS

are not reaching the recommended  
LDL-C target of **<70 mg/dL<sup>1</sup>**

**DIET, EXERCISE, AND MONOTHERAPY WITH STATINS MAY NOT BE ENOUGH  
FOR SOME PATIENTS WITH ASCVD<sup>2,3</sup>**

**References:**

1. Fox KM, Tai M-H, Kostev K, Hatz M, Qian Y, Laufs U. Treatment patterns and low-density lipoprotein cholesterol (LDL-C) goal attainment among patients receiving high- or moderate-intensity statins. *Clin Res Cardiol.* 2018;107(5):380-388. doi:10.1007/s00392-017-1193-z 2. McClellan M, Brown N, Califf RM, Warner JJ. Call to action: urgent challenges in cardiovascular disease: a presidential advisory from the American Heart Association. *Circulation.* 2019;139(9):e1-e11. doi:10.1161/CIR.0000000000000652 3. Jones PH, Nair R, Thakker KM. Prevalence of dyslipidemia and lipid goal attainment in statin-treated subjects from 3 data sources: a retrospective analysis. *J Am Heart Assoc.* 2012;1(6):1-10. doi:10.1161/JAHA.112.001800

# Patients face many obstacles when it comes to lowering LDL-C<sup>1-6</sup>

## LIFESTYLE OBSTACLES

Comorbidities may prevent many patients from being able to adhere to exercise and activity recommendations<sup>1</sup>

## TREATMENT OBSTACLES

Challenges that patients with ASCVD encounter in being treated for hyperlipidemia may include:

- Tolerability issues<sup>2</sup>
- Comorbidities/  
Heavy pill burden<sup>1,3</sup>
- Statins alone are often not enough to reach recommended levels<sup>1</sup>

## ACCESS OBSTACLES

The inability to access treatments other than statins can prevent patients with ASCVD from being able to properly manage elevated LDL-C<sup>1,4</sup>

## ENVIRONMENTAL OBSTACLES

Obstacles that can complicate lifestyle, treatment, and access to care may include:

- Socioeconomic status<sup>5</sup>
- Decline in health evaluations due to COVID-19<sup>6</sup>
- Limited health literacy<sup>5</sup>

### References:

1. Jones PH, Nair R, Thakker KM. Prevalence of dyslipidemia and lipid goal attainment in statin-treated subjects from 3 data sources: a retrospective analysis. *J Am Heart Assoc.* 2012;1(6):1-10. doi:10.1161/JAHA.112.001800 2. Jacobson TA, Cheeley MK, Jones PH, et al. The STatin Adverse Treatment Experience Survey: experience of patients reporting side effects of statin therapy. *J Clin Lipidol.* 2019;13(3):415-424. doi:10.1016/j.jacl.2019.04.011 3. Lansberg P, Lee A, Lee Z-V, Subramaniam K, Setia S. Nonadherence to statins: individualized intervention strategies outside the pill box. *Vasc Health Risk Manag.* 2018;14:91-102. doi:10.2147/VHRM.S158641 4. Brown MT, Bussell JK. Medication adherence: WHO cares? *Mayo Clin Proc.* 2011;86(4):304-314. doi:10.4065/mcp.2010.0575 5. Office of Disease Prevention and Health Promotion. Social determinants of health. Healthy People 2030. Accessed July 13, 2021. <https://health.gov/healthypeople/objectives-and-data/social-determinants-health> 6. Miller K. Cleveland Clinic survey: about half of Americans experiencing concerning heart symptoms during pandemic avoid seeking care. *Clevelandclinic.org.* Published February 1, 2021. Accessed July 15, 2021. <https://newsroom.clevelandclinic.org/2021/02/01/cleveland-clinic-survey-about-half-of-americans-experiencing-concerning-heart-symptoms-during-pandemic-avoid-seeking-care/>

# CVD remains the #1 cause of death in the US<sup>1</sup>

Despite their efforts and current treatment options, up to **80% of ASCVD patients are not reaching the recommended LDL-C target of <70 mg/dL**—leaving them at increased risk for a CV event<sup>1,2</sup>

WHAT MORE CAN HCPs DO TO GET AHEAD OF CHALLENGES ASSOCIATED WITH PERSISTENTLY ELEVATED LDL-C?



**Ensure patients are tested regularly** according to guideline recommendations



**Ensure patients know their numbers** and talk to them about the risk of elevated LDL-C



**Consider additional treatment options** to help patients reach target LDL-C level of <70 mg/dL

References:

1. McClellan M, Brown N, Califf RM, Warner JJ. Call to action: urgent challenges in cardiovascular disease: a presidential advisory from the American Heart Association. *Circulation*. 2019;139(9):e1-e11. doi:10.1161/CIR.0000000000000652 2. Fox KM, Tai M-H, Kostev K, Hatz M, Qian Y, Laufs U. Treatment patterns and low-density lipoprotein cholesterol (LDL-C) goal attainment among patients receiving high- or moderate-intensity statins. *Clin Res Cardiol*. 2018;107(5):380-388. doi:10.1007/s00392-017-1193-z