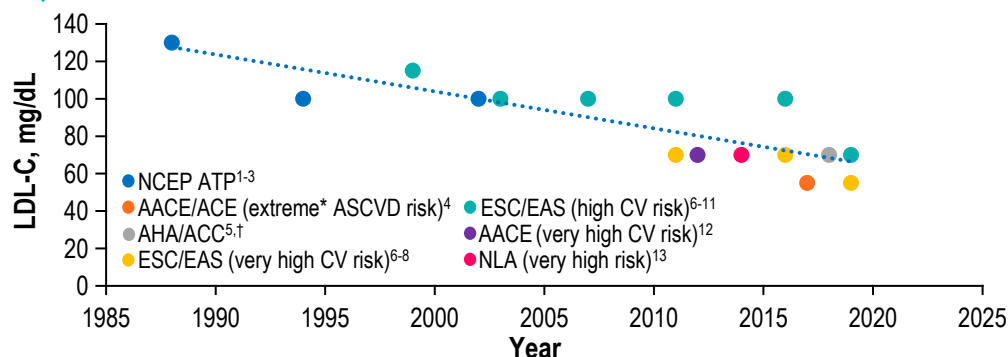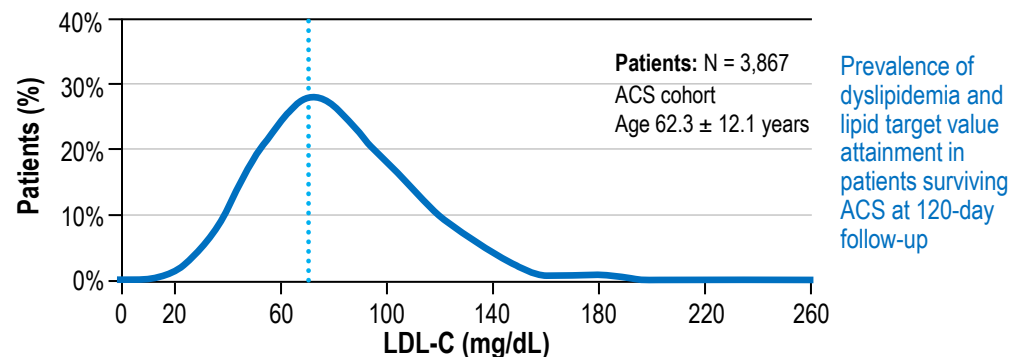# What do Clinical Guidelines Recommend for LDL-C Management of Very High-Risk ASCVD Patients?

With Each Guideline Update, LDL-C Recommendations Have Lowered to Reduce Risk for CV Events[1–13]

Legend:
- NCEP ATP[1-3]
- AACE/ACE (extreme* ASCVD risk)[4]
- AHA/ACC[5,†]
- ESC/EAS (very high CV risk)[6-8]
- ESC/EAS (high CV risk)[6-11]
- AACE (very high CV risk)[12]
- NLA (very high risk)[13]

Axes: LDL-C, mg/dL (y-axis) vs Year (x-axis)

Less than 30% of Recent MI/ACS Patients Achieved an LDL-C < 70 mg/dL (DYSIS II)[14]

Patients: N = 3,867
ACS cohort
Age 62.3 ± 12.1 years

Prevalence of dyslipidemia and lipid target value attainment in patients surviving ACS at 120-day follow-up

Axes: Patients (%) (y-axis) vs LDL-C (mg/dL) (x-axis)

Very High-Risk Patients Are Clearly Defined With Specific LDL-C Recommendations in Current Cholesterol Guidelines[8,15]

2018 AHA/ACC Guidelines
2 risk groups, including:

- **Multiple major ASCVD events** (recent ACS, history of MI, history of ischemic stroke, symptomatic PAD)
- **One major ASCVD event and multiple high-risk conditions** (e.g. age ≥ 65 years, HeFH, prior coronary artery bypass surgery or percutaneous coronary intervention, diabetes mellitus, hypertension, CKD (eGFR 15-59 mL/min/1.73 m^2), currently smoking, persistently elevated LDL-C ≥ 100 mg/dL despite maximally tolerated statin and ezetimibe therapies, history of congestive heart failure)

LDL-C Threshold of 70 mg/dL

THRESHOLD

=

Trigger to INTENSIFY THERAPY by using NON-STATIN MEDICATIONS

2019 ESC/EAS Guidelines
5 risk groups, including:

- **Documented ASCVD,** either clinical or unequivocal on imaging. Documented ASCVD includes previous ACS[a], stable angina, coronary revascularization[b], stroke and TIA, and peripheral arterial disease[c]
- **DM with target organ damage,** or at least three major risk factors, or early onset of T1DM of long duration (> 20 years)
- **Severe CKD** (eGFR < 30 mL/min/1.73 m^2)
- **A calculated SCORE ≥ 10%** for 10-year risk of fatal CVD
- **FH with ASCVD** or with another major risk factor

LDL-C Goal < 55 mg/dL AND ≥ 50% Reduction from Baseline

Additionally, for ASCVD patients on maximally tolerated statin experiencing a 2nd vascular event within 2 years, a lower LDL-C goal of < 40 mg/dL may be considered

LDL-C Measurement Frequency Recommendations[8,15]

4 –12 Weeks
(reassess lipid levels after initiation of therapy or dose adjustment)

Repeat Lipid Measurements 3–12 Months as Needed

| ACS Specific[‡] | Day 1 | Admission for ACS and lipid profile testing | Week 4–6 | Reassess lipid levels and adjust treatment as necessary |

AHA/ACC and ESC/EAS Guidelines Recommend "Lower is Better" for LDL-C[8,15]

Footnotes, Definitions and References

*Progressive ASCVD, including unstable angina that persists after achieving an LDL-C < 70 mg/dL, or established clinical ASCVD in individuals with diabetes, CKD stage 3 or 4, and/or HeFH, or in individuals with a history of premature ASCVD (< 55 years of age for males or < 65 years of age for females). †In very high-risk ASCVD (see *"Very High-Risk Patients Are Clearly Defined With Specific LDL-C Recommendations in Current Cholesterol Guidelines"*, side 1), use an LDL-C threshold of 70 mg/dL to consider the addition of non-statins to statin therapy. A threshold is the point/trigger at which intensification of therapy may be considered. Additional AHA/ACC guidelines were published in 2013 but did not provide a recommendation for target LDL-C levels to reduce the ASCVD risk.[16] ‡ESC/EAS guidelines only.

[a]MI or UA; [b]PCI, CABG, and other arterial revascularization procedures; [c]Unequivocally documented ASCVD on imaging includes those findings that are known to be predictive of clinical events such as significant plaque on coronary angiography or CT scan (multivessel coronary disease with two major epicardial arteries having > 50% stenosis), or on carotid ultrasound.

AACE = American Association of Clinical Endocrinologists; ACC = American College of Cardiology; ACE = American College of Endocrinology; ACS = acute coronary syndrome; AHA = American Heart Association; ASCVD = atherosclerotic cardiovascular disease; ATP = Adult Treatment Panel; CABG = coronary artery bypass grafting; CKD = chronic kidney disease; CT = computed tomography; CV = cardiovascular; CVD = cardiovascular disease; DM = diabetes mellitus; DYSIS = Dyslipidemia International Study; EAS = European Atherosclerosis Society; eGFR = estimated glomerular filtration rate; ESC = European Society of Cardiology; FH = familial hypercholesterolemia; HeFH = heterozygous familial hypercholesterolemia; LDL-C = low-density lipoprotein cholesterol; MI = myocardial infarction; NCEP = National Cholesterol Education Program; NLA = National Lipid Association; PAD = peripheral artery disease; PCI = percutaneous coronary interventions; T1DM = type 1 diabetes mellitus; TIA = transient ischemic attack; unequivocally documented ASCVD = includes those findings that are known to be predictive of clinical events, such as significant plaque on coronary angiography or CT scan (multivessel coronary disease with two major epicardial arteries having > 50% stenosis), or on carotid ultrasound.

1. Goodman DS, et al. *Arch Intern Med.* 1988;148(1):36-69. **2.** Grundy SM, et al. *JAMA.* 1993;269(23):3015-3023. **3.** NCEP. *Circulation.* 2002;106(25):3143-3421. **4.** Jellinger PS, et al. *Endocr Pract.* 2017;23(suppl 2):1-87. **5.** Grundy SM, et al. *Circulation.* 2019;18;139(25):e1082-e1143. **6.** Reiner Z, et al. *Eur Heart J.* 2011;32: 1769-1818. **7.** Catapano AL, et al. *Eur Heart J.* 2016;37(39):2999-3058. **8.** Mach F, et al. *Eur Heart J.* 2020;41(1):111-188. **9.** Wood D, et al. *Eur J Gen Pract.* 1999;5:154-161. **10.** De Backer G, et al. *Atherosclerosis.* 2004; 173:381-391. **11.** Graham I, et al. *Eur Heart J.* 2007;28:2375-2414. **12.** Jellinger PS, et al. *Endocr Pract.* 2012;18(suppl 1):1-78. **13.** Jacobson TA, et al. *J Clin Lipidol.* 2014;8(5): 473-488. **14.** Gitt AK, et al. *Atherosclerosis.* 2017;266:158-166. **15.** Grundy SM, et al. *J Am Coll Cardiol.* 2019;73:e285–e350. **16.** Stone NJ, et al. *J Am Coll Cardiol.* 2014;63(25 Pt B):2889-2934.

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