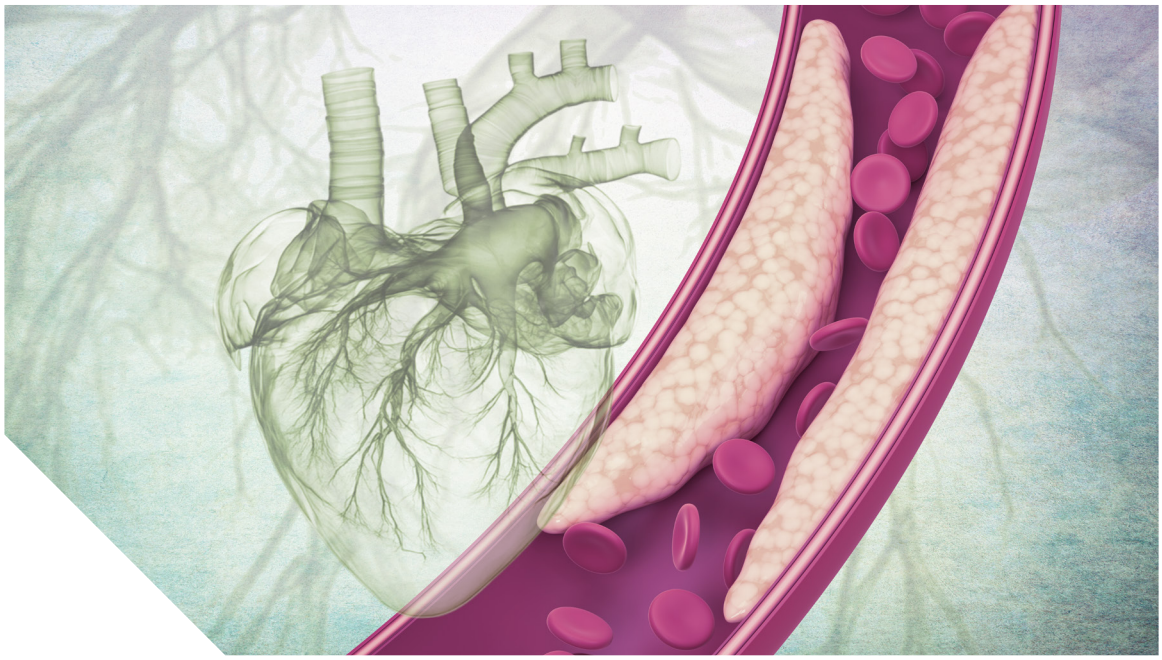
Hyperlipidaemia: when and how to start statin therapy

During the last decades, the prevalence of some non-communicable diseases, such as hyperlipidaemia, has been increasing globally. A recent meta-analysis conducted in the Middle East found a pooled prevalence of 32.09% for elevated low-density lipoprotein cholesterol (LDL-C).[1] Increased blood levels of LDL-C, classified as hyperlipidaemia, is a well-established causal risk factor for atherosclerotic cardiovascular disease (ASCVD). Early and appropriate initiation of tailored pharmacotherapy based on statins is a cornerstone of both primary and secondary cardiovascular disease (CVD) prevention strategies.[2,3]



The importance of risk assessment

The decision to initiate statin therapy is partly based on the patient's estimated cardiovascular risk or LDL-C thresholds. Across international guidelines (European, American, Middle East…), tools like the Systematic Coronary Risk Estimation 2 (SCORE2) (Europe), pooled cohort equations (PCEs) (US), or similar region-adapted calculators are employed to determine a patient's 10-year ASCVD risk. These risk scores incorporate factors such as age, sex, smoking status, cholesterol or blood pressure, providing an important foundation for shared decision-making.[3-6]

When and how to start statin-based therapy

Management of CVD prevention should typically begin with lifestyle modifications and regular physical activity, avoiding sedentary behaviours. If risk thresholds are met after lifestyle measures, pharmacotherapy is initiated. Statins are the first-line pharmacological agents in all major guidelines for CVD prevention due to their proven efficacy in lowering LDL-C.[3-5,7] Moreover, guidelines distinguish between primary prevention (preventing first CVD events) and secondary prevention (preventing recurrent events in patients with established disease):

- *Primary prevention.* Statins are recommended for individuals at moderate, high, or very high risk of CVD depending on the score risk previously mentioned. In addition, other risk-enhancing factors, such as family history of premature CVD, chronic kidney disease (CKD), diabetes mellitus or metabolic syndrome, may support earlier initiation even in lower risk groups patients.[3-5,8]
- *Secondary prevention.* European guidelines recommend immediate high-intensity statin treatment initiation in patients with established CVD for a reduction of LDL -C < 55 mg/dL (14 mmol/L) and ≥50% of LDL-C levels from baseline.[3]

Selection of statins (moderate-intensity statins target 30-49% LDL-C reductions, whereas high-intensity statins target ≥50% LDL-C reductions) is driven by the patient's cardiovascular risk, LDL-C baseline levels and reduction goals specifically stratified in international guidelines. Guidelines outline assessing baseline LDL-C levels and performing periodic monitoring on statin therapy, as it is critical to improve treatment adherence, detect possible adverse events and ensure treatment efficacy. If LDL-C reduction goals are not achieved with maximally tolerated statin dosages, a combination of statins with other lipid-lowering agents is recommended.[3,5,8]

Considerations for special populations

Although guidelines align on core principles, certain populations may require adapted approaches. These populations include individuals with diabetes mellitus, familial hypercholesterolemia, CKD, or other risk-enhancing conditions. Such groups may need earlier initiation, more aggressive LDL-C targets, or additional therapies beyond statins, highlighting the importance of individualised care based on risk-benefit analysis.[3,5,8]

Conclusion

While guideline-specific thresholds and terminology may differ, there is strong global consensus on the central role of statins in reducing ASCVD risk. Recommendations from North American, European, and Middle Eastern sources all endorse using statins as first-line pharmacological therapy in both primary and secondary prevention, with intensity tailored to the patient's cardiovascular risk level.[3,5,7] Following guidelines and implementing these core principles into everyday clinical practice is key to curbing the burden of cardiovascular disease across populations.

References

1. Kargar S, Ansari H. Prevalence of dyslipidemias in the Middle East region: A systematic review & meta-analysis study. Diabetes Metab Syndr. 2023 Nov;17(11):102870.
2. Pirillo A, Casula M, Catapano AL. European guidelines for the treatment of dyslipidaemias: New concepts and future challenges. Pharmacol Res. 2023 Oct; 196:106936.
3. Visseren FLJ, Mach F, Smulders YM, Carballo D, Koskinas KC, Bäck M, Benetos A, Biffi A, Boavida JM, Capodanno D, Cosyns B, Crawford C, Davos CH, Desormais I, Di Angelantonio E, Franco OH, Halvorsen S, Hobbs FDR, Hollander M, Jankowska EA, Michal M, Sacco S, Sattar N, Tokgozoglu L, Tonstad S, Tsioufis KP, van Dis I, van Gelder IC, Wanner C, Williams B; ESC National Cardiac Societies; ESC Scientific Document Group. 2021 ESC Guidelines on cardiovascular disease prevention in clinical practice. Eur Heart J. 2021 Sep 7;42(34):3227-3337. doi: 10.1093/eurheartj/ehab484. Erratum in: Eur Heart J. 2022 Nov 7;43(42):4468. doi: 10.1093/eurheartj/ehac458. PMID: 34458905.
4. Arnett DK, Blumenthal RS, Albert MA, Buroker AB, Goldberger ZD, Hahn EJ, Himmelfarb CD, Khera A, Lloyd-Jones D, McEvoy JW, Michos ED, Miedema MD, Muñoz D, Smith SC Jr, Virani SS, Williams KA Sr, Yeboah J, Ziaeian B. 2019 ACC/AHA Guideline on the Primary Prevention of Cardiovascular Disease: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. Circulation. 2019 Sep 10;140(11):e596-e646.
5. Patel SB, Wyne KL, Afreen S, Belalcazar LM, Bird MD, Coles S, Marrs JC, Peng CC, Pulipati VP, Sultan S, Zilbermint M. American Association of Clinical Endocrinology Clinical Practice Guideline on Pharmacologic Management of Adults With Dyslipidemia. Endocr Pract. 2025 Feb;31(2):236-262. doi: 10.1016/j.eprac.2024.09.016. PMID: 39919851.
6. AlRahimi J, AlSaif S, Alasnag M, Awan Z, Almutairi F, Al Mudaiheem H, Gencer B, Catapano AL, Mach F, Tash A. 2022 Saudi Guidelines for the Management of Dyslipidemia. Heart Views. 2023 Apr-Jun;24(2):67-92.
7. Al Sayed N, Al Waili K, Alawadi F, Al-Ghamdi S, Al Mahmeed W, Al-Nouri F, Al Rukhaimi M, Al-Rasadi K, Awan Z, Farghaly M, Hassanein M, Sabbour H, Zubaid M, Barter P. Consensus clinical recommendations for the management of plasma lipid disorders in the Middle East. Int J Cardiol. 2016 Dec 15;225:268-283.
8. Aygun S, Tokgozoglu L. Comparison of Current International Guidelines for the Management of Dyslipidemia. J Clin Med. 2022 Dec 6;11(23):7249