Call to action: Bridging gaps in lipid management in Hong Kong

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Atherosclerotic cardiovascular disease in Hong Kong

Cardiovascular disease is the third leading cause of death in Hong Kong, contributing to 13% of all deaths in 2020.1 According to the Hong Kong Population Health Survey conducted between 2020 and 2022, the prevalence of high blood cholesterol among individuals aged 15 to 84 years in the Hong Kong general population increased from 8.4% in 2003/20042 to 51.9% in 2022.3 Low-density lipoprotein cholesterol (LDL-C) has been recognised as one of the most important modifiable risk factors for atherosclerotic cardiovascular disease (ASCVD).4 Accordingly, optimal LDL-C management is essential for reducing the incidence of and mortality from ASCVD. Despite the availability of effective and safe lipid-lowering therapies (LLTs) and guidelines for managing elevated LDL-C and other lipids, implementation remains a key challenge in clinical practice.

Advancements in lipid-lowering therapies

A lower LDL-C level is highly beneficial because of the direct correlation between the absolute reduction in LDL-C level and reduced cardiovascular risk, such that an incremental reduction in LDL-C level leads to a proportional reduction in the number of cardiovascular events.5 Statins are well-established as effective LLTs; this recognition has been extended to other non-statin therapies, including proprotein convertase subtilisin/kexin type 9 inhibitors (PCSK9is), ezetimibe, bempedoic acid, evinacumab, and inclisiran.6,7 Clinical trials have demonstrated that PCSK9is effectively lower LDL-C levels, thereby surpassing previous recommendations (high risk: <2.6 mmol/dL; very high risk: <1.8 mmol/dL) to offer additional cardiovascular benefits to patients (particularly those with high or very high ASCVD risk) who failed to meet their target LDL-C goal despite maximally tolerated high-intensity statin therapy.6,8

Adapting the latest evidence into current guidelines

The European Society of Cardiology and European Atherosclerosis Society (ESC/EAS) revised their guidelines in 2019 to integrate recent evidence concerning ASCVD prevention.5 These updates include a more aggressive approach with new LDL-C targets across all cardiovascular risk categories, as well as recommendations for lipid-lowering strategies. Since these updates, other cardiology societies (Table)5,9-11 and medical associations12,13 have also begun to recommend achieving the lowest possible LDL-C levels, especially for patients with very high ASCVD risk.

The 2019 ESC/EAS guidelines recommend the following LDL-C targets for the prevention of ASCVD in very high- and high-risk patients: <1.4 mmol/L and <1.8 mmol/L (and 50% reduction from baseline), respectively.5 Consistent with these recommendations, the 2024 American Diabetes Association guidelines recommend that patients with diabetes aged 40-70 years receive moderate-intensity statins, and such patients with one or more ASCVD risk factors receive high-intensity statins, to achieve LDL-C <1.8 mmol/L and ≥50% reduction from baseline.12 Statin therapy should also be considered for young adults aged 20-39 years, depending on their existing risk factors.12 The American Heart Association/American Stroke Association guidelines recommend a target LDL-C of <1.8 mmol/L for patients who have experienced transient ischaemic attack/ischaemic stroke with atherosclerotic disease.13

If there is inadequate LDL-C reduction with maximally tolerated statins, the addition of non-statin options (eg, PCSK9is or ezetimibe) can be considered according to the extent of reduction required to reach the LDL-C goal.5,7,9-13
Low-density lipoprotein cholesterol target achievement remains challenging in Hong Kong

Low-density lipoprotein cholesterol management in Hong Kong has gradually improved, but considerable gaps in care persist. A territory-wide study conducted between 2016 and 2021 revealed poor achievement of LDL-C target goals among patients hospitalised for acute coronary syndrome. The study showed low rates of prescription for high-intensity statins (53%) and combination LLTs (1.3%-3.8%) at discharge; LLT and statin treatments were rarely intensified after discharge. Notably, approximately 22% of patients did not undergo follow-up lipid profile assessment after discharge. This lack of follow-up has been identified as an independent risk factor for all-cause death and cardiovascular-related death.

A separate study involving over 700,000 patients revealed gross underutilisation of statins among patients with diabetes in Hong Kong, such that most of this population failed to meet LDL-C targets. Importantly, women and younger individuals were particularly undertreated, highlighting the need to address these age and sex disparities in lipid management. Consistent with current evidence, a large cohort of local patients with ischaemic stroke (with or without significant large artery atherosclerosis) demonstrated that the achievement of a target LDL <1.8 mmol/L was associated with a reduced risk of subsequent major adverse cardiovascular events.

Outdated recommendations in local settings can hinder optimal lipid management. As a result, physicians may fail to initiate appropriate LLT, prioritise regular monitoring, or provide appropriate follow-up care to assess treatment efficacy. Patients may not recognise the dangers of elevated LDL-C levels or understand the importance of lifestyle modification and medication adherence, leading to suboptimal outcomes.

Call to action: bridging gaps in lipid management

The International Atherosclerosis Society issued a call to action for improvements in lipid management, based on a multinational survey that involved 1758 physicians comprising cardiologists, endocrinologists, neurologists/stroke specialists, nephrologists, and general medicine practitioners from Japan, Germany, Colombia and the Philippines; the survey was designed to identify knowledge gaps in clinical practice. The results highlighted three major gaps in beliefs and behaviour across the four countries: (1) physicians lacked clear guidance concerning the management of higher-risk patients who may benefit from aggressive LLT; (2) although most physicians believed that they followed guideline recommendations, only half knew the LDL-C target for high-risk patients, and more than one-third had no opinion concerning the safety of low LDL-C levels; and (3) physicians were unsure of the potential effects of statins on cognitive, renal, and hepatic functions.

### TABLE. Target LDL-C goals established by various regional guidelines

<table>
<thead>
<tr>
<th>Risk assessment</th>
<th>LDL-C targets</th>
<th>Risk factor enumeration</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Secondary prevention</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very high risk</td>
<td>&lt;1.0 mmol/L if a second event is experienced within 2 years from starting maximum statin-based therapy</td>
<td>NA</td>
</tr>
<tr>
<td>Not very high risk</td>
<td>≥50% reduction from baseline</td>
<td>NA</td>
</tr>
<tr>
<td><strong>Primary prevention</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High risk</td>
<td>≥50% reduction from baseline</td>
<td>&lt;1.8 mmol/L and ≥50% reduction from baseline</td>
</tr>
<tr>
<td>Moderate risk</td>
<td>30%-49% reduction from baseline</td>
<td>&lt;2.6 mmol/L</td>
</tr>
<tr>
<td>Low risk</td>
<td>NA</td>
<td>&lt;3.0 mmol/L</td>
</tr>
</tbody>
</table>

**Abbreviations:** AHA/ACC = American Heart Association/American College of Cardiology; APSC = Asian Pacific Society of Cardiology; ASCVD = atherosclerotic cardiovascular disease; CVD = cardiovascular disease; ESC/EAS = European Society of Cardiology/European Atherosclerosis Society; LDL-C = low-density lipoprotein cholesterol; NA = not available; PCE = Pooled Cohort Equation

* Adults aged 40 to 75 years with LDL-C levels of 1.7-4.8 mmol/L without diabetes
as well as the increased risk of haemorrhagic stroke associated with low LDL-C levels.\textsuperscript{17} Taken together, these findings highlighted key areas for enhanced education and research efforts to bridge gaps in lipid management.\textsuperscript{17} Physicians’ limited familiarity with the rapidly changing guidelines hinders optimal LDL-C management.

The Hong Kong Cardiovascular Task Force published a consensus statement regarding ASCVD prevention in 2016, based on the 2011 ESC/EAS guidelines and the 2013 American Heart Association/American College of Cardiology guidelines.\textsuperscript{18} Although the consensus is valuable, it primarily constitutes expert opinion and lacks endorsement from any medical societies. Additionally, although various international societies have established guidelines for optimal lipid management, differences among these recommendations (eg, pharmacological treatment, lifestyle modification, and therapeutic targets) may lead to confusion and uncertainty among primary care physicians regarding the best approach.\textsuperscript{19}

Efforts to bridge current gaps in lipid management in Hong Kong will require identifying local therapeutic limitations and barriers to optimising lipid management among physicians and patients. Based on knowledge of these issues, a consensus among local experts (ie, cardiologists, endocrinologists, neurologists, nephrologists, internists, general practitioners, nutritionists, and other healthcare specialists) can be achieved to provide practical recommendations that are consistent with international guidelines and adapted to local clinical practice.\textsuperscript{11} Considering the complexities and time involved in developing local guidelines, a practical course of action would involve local medical societies across various specialties collaborating to issue a joint statement that recommends the adoption of appropriate guidelines, thereby ensuring a more cohesive and unified approach to lipid management in Hong Kong.

Local recommendations should also address pertinent issues, such as greater adherence to established guidelines—specifically, by encouraging the prompt initiation and intensification of statin therapy in eligible patients. Because the overall ASCVD risk assessment is the basis for treatment decisions in patients with dyslipidaemia,\textsuperscript{5,7,9} appropriate tools—adapted to the local population—should be used in routine clinical practice to ensure that patients are adequately assessed and managed. Additionally, the benefits of long-term adherence to LLT should be consistently and effectively communicated to patients.

Author contributions
All authors contributed to the development of the manuscript, approved the final version for publication, and take full responsibility for its accuracy and integrity.

Conflicts of interest
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