High-dose statins are cost-effective compared with conventional-dose statins in patients with acute coronary syndromes


Clinical impact ratings: Cardiology ★★★★★☆☆☆☆☆

QUESTION
In patients with acute coronary syndromes (ACSs) or stable coronary artery disease (CAD), is high-dose statin therapy cost-effective compared with conventional-dose statin therapy?

METHODS
Design: Cost-effectiveness study using a Markov decision-analysis model developed from 4 international, randomized, controlled trials with follow-up of 2 years (2 ACS trials, n = 8659, 77% men) or 5 years (2 stable CAD trials, n = 18 889, 81% men).

Setting: United States.

Patients: Hypothetical cohorts of 60-year-old patients with ACS or stable CAD.

Intervention: High-dose (e.g., atorvastatin, 80 mg/d; cost $1380/y) or conventional-dose (e.g., simvastatin, 20 mg/d; cost $870/y) statin therapy.

Outcomes: Incremental cost-effectiveness ratio (ICER) per quality-adjusted life-year (QALY) gained. Endpoints considered were death, myocardial infarction, stroke, rehospitalization for ACS, and revascularization. Direct costs of inpatient and outpatient medical care for life were estimated from Medicare reimbursement rates in 2005 U.S. dollars.

Main results
Risks for all endpoints were lower with high-dose compared with conventional-dose statins (relative risk 0.76 to 0.99). Using high-dose statins for the rest of their lives, a cohort of 60-year-old patients would gain 0.35 QALYs if they initially had ACS (mainly from a reduction in mortality) and 0.10 QALYs if they initially had stable CAD (mainly from a reduction in stroke) (Table). Costs were higher with high-dose statins, resulting in an ICER of $12 900 per QALY for patients with ACS and $33 400 for patients with stable CAD, assuming a difference in daily drug costs of $1.40 (Table). In ACS, a difference in daily drug costs of up to $3.50 resulted in an ICER < $44 000; however, in stable CAD, the difference in daily drug costs had to be < $1.70 to keep the ICER at < $50 000.

Conclusions
Compared with conventional-dose statin therapy, high-dose statin therapy is cost-effective in patients with acute coronary syndromes. Its cost-effectiveness in patients with stable coronary artery disease is less clear and depends on the difference in drug costs.

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Economics

Lifetime cost-effectiveness of high-dose vs conventional-dose statin therapy in hypothetical cohorts of 60-year-old patients with acute coronary syndromes (ACSs) or stable coronary artery disease (CAD)*

<table>
<thead>
<tr>
<th>Initial disease</th>
<th>QALYs</th>
<th>Costs</th>
<th>ICER (per QALY gained)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High-dose statin</td>
<td>Conventional-dose statin</td>
<td>Gain</td>
</tr>
<tr>
<td>ACS</td>
<td>13.59</td>
<td>13.24</td>
<td>0.35</td>
</tr>
<tr>
<td>Stable CAD</td>
<td>13.77</td>
<td>13.67</td>
<td>0.10</td>
</tr>
</tbody>
</table>

*QALY = quality-adjusted life-year; ICER = incremental cost-effectiveness ratio. Costs are in 2005 U.S. dollars. Model assumes that risk reductions from trial results (5 y follow-up) are sustained throughout life and that the difference in daily drug costs is $1.40.

In conclusion, high-dose statins seem to be cost-effective in ACS. However, their cost-effectiveness in stable CAD is limited. Decisions to advocate for high-dose statins in high-risk stable CAD must remain individualized, based on patient risks, benefits, and preferences.

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References