Pravastatin lowered coronary disease risk in elderly persons with or at risk of vascular disease


QUESTION: In elderly persons with or at risk of vascular disease, what is the effectiveness and safety of pravastatin?

Design
Randomised (allocation concealed*), blinded (clinicians, participants, data collectors, and outcome assessors), placebo controlled trial with mean follow up of 3.2 years (Prospective Study of Pravastatin in the Elderly at Risk [PROSPER]).

Setting
Scotland, Ireland, and the Netherlands.

Participants
5804 participants between 70–82 years (mean age 75 y, 52% women) who had a history of vascular disease (coronary, cerebral, or peripheral) or risk factors for vascular disease (eg, smoking, hypertension, or diabetes), a total plasma cholesterol concentration between 4.0 and 9.0 mmol/l, and a triglyceride concentration < 6.0 mmol/l. Participants with poor cognitive function (Mini-Mental State Examination score < 24) were excluded. Follow up was 100%.

Intervention
Participants were allocated to pravastatin, 40 mg/day (n=2913), or placebo (n=2913).

Main outcome measures
Composite endpoint of coronary death, nonfatal myocardial infarction (MI), or fatal or nonfatal stroke (primary composite endpoint); composite endpoint of coronary death or nonfatal MI; composite endpoint of fatal or nonfatal stroke; and adverse events.

Main results
Analysis was by intention to treat. Pravastatin lowered the risk of the primary composite endpoint and the composite endpoint of coronary death or nonfatal MI (table). The pravastatin and placebo groups did not differ for the composite endpoint of fatal or nonfatal stroke, but pravastatin was associated with a greater risk of having a new cancer diagnosis (table).

Conclusion
In elderly persons with or at risk of vascular disease, pravastatin lowered the risk of coronary disease events.

*See glossary.

COMMENTARY
With proof that lowering cholesterol concentrations decreases mortality in high risk, middle aged patients, it is appropriate to focus attention on the elderly. Beyond about 75 years of age, serum cholesterol concentrations contribute less to the risk of coronary heart disease than they do between the ages of 55–75 years, but coronary mortality is higher.

The results of the PROSPER study extend the results of a subgroup analysis of the Heart Protection Study1 that showed significant effects of statin therapy on cardiovascular events in older patients. PROSPER failed to confirm decreased stroke rates with statin therapy, probably because of short follow up and a lower than expected background stroke rate. Many participants in the study, however, had systolic hypertension at baseline (mean systolic blood pressure 155 mm Hg), and control of this risk factor might have lessened the effect of statin therapy on stroke (and MI) even more. The finding of increased malignancy rates in patients treated with statins should not be viewed as credible. This finding contradicts a larger body of evidence showing that no such increased risk exists and is more likely the result of chance.

Elderly patients and their caregivers often choose therapies that preserve functional status rather than those that decrease mortality. PROSPER failed to show reductions in cognitive and functional decline, but the measures used in the study were insensitive to change in persons with high levels of function.

On the whole, the results of PROSPER give providers and elderly patients data on which to individualise therapeutic decisions. Elderly patients who are highly functional, have vascular disease or high cholesterol concentrations and 1 other risk factor, and wish to maximise life span will probably choose statin therapy. Similar patients whose only goal is to preserve their current functional level will probably forgo therapy.

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Abstract and commentary also appear in ACP Journal Club.

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<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Pravastatin</th>
<th>Placebo</th>
<th>RRR (95% CI)</th>
<th>NNT (CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary composite endpoint‡</td>
<td>14%</td>
<td>16%</td>
<td>13% (1.8 to 23)</td>
<td>47 (25 to 359)</td>
</tr>
<tr>
<td>Coronary death or nonfatal MI</td>
<td>10%</td>
<td>12%</td>
<td>17% (4 to 29)</td>
<td>47 (27 to 199)</td>
</tr>
<tr>
<td>Fatal or nonfatal stroke</td>
<td>4.7%</td>
<td>4.5%</td>
<td>4% (-18 to 31)</td>
<td>Not significant</td>
</tr>
<tr>
<td>New cancer diagnoses</td>
<td>8.5%</td>
<td>6.8%</td>
<td>24% (4 to 48)</td>
<td>61 (33 to 362)</td>
</tr>
</tbody>
</table>

‡MI = myocardial infarction. Other abbreviations defined in glossary; RRR, RRI, NNT, NNH, and CI calculated from data in article.

*Primary composite endpoint = coronary death, nonfatal MI, or fatal or nonfatal stroke.