The Cost of Stroke Prevention

To the Editor:

Statin trials have consistently shown a robust (20% to 25%) reduction in major vascular events (myocardial infarction, stroke, vascular death), although a previous trial of simvastatin demonstrated no reduction in stroke rate for the subgroup of patients with preexisting cerebrovascular disease. Until recently, the use of statins for secondary stroke prevention in patients without coronary heart disease had not been fully addressed. However, on the basis of the Stroke Prevention by Aggressive Reduction in Cholesterol Levels (SPARCL) trial results,3 statin therapy has been added as Class I B evidence under the new American Heart Association/American Stroke Association (AHA/ASA) recommendations.4

In the SPARCL trial of atorvastatin for recent stroke or transient ischemic attack, the use of atorvastatin showed an impressive 16% relative risk reduction (2.2% absolute risk reduction) in subsequent stroke over 5 years. However, the results are tempered because statistical significance was achieved only after prespecified adjustments for geographic region, entry event, gender, and age. At $3.45 per tablet,5 the cost to prevent a single stroke is $289 628.

Therefore, when considering the new AHA/ASA recommendations, one must still regard the SPARCL trial results with respect to other new treatments and established therapies (Table),2,3,6–12 many of which are proven more timely and cost effective. The prohibitive cost of atorvastatin may limit its general applicability.

Sources of Funding

Dr Hopkins receives grant support from Boston Scientific, Cordis, and Micrus Endovascular. Dr Siddiqui has received a research grant from the University at Buffalo. Dr Levy receives grant support from Boston Scientific and Cordis.

Disclosures

Dr Hopkins receives grant support from Boston Scientific, Cordis, and Micrus; and honoraria from Bard, Boston Scientific, and Cordis; has an ownership interest in AccessClosure, Boston Scientific, Micrus, and Square One, Inc; and serves as a consultant to/member of the advisory board for Abbott, Bard, Boston Scientific, Cordis, and Micrus. Dr Siddiqui has received a

Table. Strategies for Secondary Stroke Prevention

<table>
<thead>
<tr>
<th>Therapy (Study)</th>
<th>RRR Stroke, %</th>
<th>ARR Stroke, %</th>
<th>% of Patients With Stroke*</th>
<th>Time Frame, y</th>
<th>NNT</th>
<th>Cost Estimate** to Prevent 1 Stroke, US $</th>
<th>RRR Stroke, MI, Death, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atorvastatin4</td>
<td>16</td>
<td>2.2</td>
<td>11.2 vs 13.1</td>
<td>5</td>
<td>46</td>
<td>289 628</td>
<td>20</td>
</tr>
<tr>
<td>Simvastatin2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NA</td>
<td>20</td>
</tr>
<tr>
<td>Aspirin10</td>
<td>18</td>
<td>2.9</td>
<td>12.9 vs 15.8</td>
<td>2</td>
<td>34.5</td>
<td>252</td>
<td>13.4</td>
</tr>
<tr>
<td>Aspirin + dipyridamole10</td>
<td>37</td>
<td>5.9</td>
<td>9.9 vs 15.8</td>
<td>2</td>
<td>16.9</td>
<td>61 068</td>
<td>32.8</td>
</tr>
<tr>
<td>Clopidogrel6</td>
<td></td>
<td>Similar to ASA</td>
<td>9.7 vs 10.6 (compared with aspirin)</td>
<td>4</td>
<td>16.9</td>
<td>93 185†</td>
<td>Similar to aspirin</td>
</tr>
<tr>
<td>Perindopril + indapamide9</td>
<td>43</td>
<td>5.9</td>
<td>8.5 vs 14.4</td>
<td>4</td>
<td>16.9</td>
<td>48 608</td>
<td>40</td>
</tr>
<tr>
<td>Warfarin2 (atrial fibrillation)</td>
<td>67</td>
<td>8</td>
<td>4 vs 12</td>
<td>1</td>
<td>12.5</td>
<td>1825</td>
<td>53</td>
</tr>
<tr>
<td>CEA4 (70%–99% symptomatic stenosis)</td>
<td>65</td>
<td>17</td>
<td>9 vs 26 (with medical management)</td>
<td>2</td>
<td>5.9</td>
<td>71 461</td>
<td>51†</td>
</tr>
<tr>
<td>Carotid stent11,12 (high-surgical risk) Similar to CEA</td>
<td>62 vs 7.9 (compared with CEA)</td>
<td>1</td>
<td>102 672§</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ACE indicates angiotensin-converting enzyme; ARR, absolute risk reduction; CEA, carotid endarterectomy; MI, myocardial infarction; NA, not available; NNT, No. needed to treat; RRR, relative risk reduction.

*Rate of stroke in study group vs placebo, unless noted otherwise.
†Rate of nonfatal MI occurring after 30 days is not reported in the composite outcome.
‡With no direct comparison between clopidogrel and placebo, the NNT from aspirin was used for cost comparison.
§With no direct comparison between carotid stent and medical therapy only, the NNT from the North American Symptomatic Endarterectomy Trial was used for cost comparison.


(Stroke. 2009;40:e41-e42.)

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Stroke is available at http://stroke.ahajournals.org

DOI: 10.1161/STROKEAHA.108.520734
research grant from the University at Buffalo and honoraria from Genentech, an American Association of Neurological Surgeons’ course, and an Emergency Medicine Conference. Dr Levy receives grant support, other research support (devices), and honoraria from Micrus Endovascular; receives grant support from ev3; serves as a consultant to Cordis Neurovascular and Micrus Endovascular; and receives fees for carotid stent training from Abbot Vascular and ev3. Dr Samuelson reports nothing to disclose.

Rodney M. Samuelson, MD
Department of Neurosurgery
Millard Fillmore Gates Hospital
Kaleida Health
Department of Neurosurgery & Toshiba Stroke Research Center
School of Medicine and Biomedical Sciences
State University of New York
Buffalo, NY

Elad I. Levy, MD
Adnan H. Siddiqui, MD, PhD
L. Nelson Hopkins, MD
Department of Neurosurgery
Millard Fillmore Gates Hospital
Kaleida Health
Department of Neurosurgery & Toshiba Stroke Research Center
Department of Radiology
School of Medicine and Biomedical Sciences
University at Buffalo
State University of New York
Buffalo, NY

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Stroke. 2009;40:e41-e42; originally published online December 18, 2008;
doi: 10.1161/STROKEAHA.108.520734
Stroke is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
Copyright © 2008 American Heart Association, Inc. All rights reserved.
Print ISSN: 0039-2499. Online ISSN: 1524-4628

The online version of this article, along with updated information and services, is located on the
World Wide Web at:
http://stroke.ahajournals.org/content/40/2/e41

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