Low-Molecular-Weight Heparins or Heparinoids Versus Standard Unfractionated Heparin for Acute Ischemic Stroke (Cochrane Review)

Carl Counsell, MD; Peter Sandercock, FRCP

Objectives
A systematic review of the trials directly comparing low-molecular-weight heparins (LMWH) or heparinoids with unfractionated heparin (UFH) in people with acute confirmed or presumed ischemic stroke.

Search Strategy
We searched the Cochrane Stroke Group trials register and MedStrategy (1995). We also contacted pharmaceutical companies. Date of most recent search: May 2001.

Selection Criteria
Randomized trials comparing heparinoids or LMWH with standard UFH in people with acute ischemic stroke. We included only trials in which treatment was started within 14 days of stroke onset.

Data Collection and Analysis
The 2 reviewers independently selected studies for inclusion, assessed trial quality, and extracted the data.

Main Results
We included 5 trials involving 705 people. Four trials compared a heparinoid (danaparoid), and 1 compared an LMWH (enoxaparin) with standard UFH (Figures 1 and 2). Overall, 55/414 (13%) of the patients allocated danaparoid or enoxaparin had deep vein thrombosis (DVT) compared with 65/291 (22%) of those allocated UFH. This reduction was significant (odds ratio [OR] 0.52, 95% CI 0.56 to 0.79). However, the number of more major events (pulmonary embolism, death, intracranial or extracranial hemorrhage) was too small to provide a reliable estimate of more important benefits and risks. No data on recurrent stroke or functional outcome in survivors were available.

Implications for Practice
Clinicians who, despite the lack of evidence of overall benefit from routine anticoagulants in patients with acute ischemic stroke, still wish to use some form of anticoagulant regimen in selected patients with acute ischemic stroke should bear in mind the following: (1) The criteria to identify those few patients that might benefit from UFH, LMWH, or heparinoid have not been defined by these data. (2) Although LMWH and heparinoids appear to be more effective at preventing DVT (and possibly also pulmonary embolism) than UFH, their relative safety and cost-effectiveness compared with UFH have not been established in patients with acute stroke.

Implications for Research
Further, very large-scale trials may be worthwhile comparing (1) aspirin alone with aspirin plus low-dose LMWH (or heparinoid) in individuals at particularly high risk of DVT and PE, and (2) a more aggressive LMWH (or heparinoid) regimen with UFH and with aspirin only in certain categories of patients, eg, those with a cardiac embolic source. These trials should measure disability and recurrent stroke as well as venous thromboembolism and major hemorrhages. Given the lack of evidence for the routine use of any anticoagulant regimen in acute ischemic stroke and the evidence in favor of using aspirin, further trials comparing only heparinoids or LMWH with UFH would be hard to justify.

Reviewers’ Conclusions
LMWH or heparinoid appear to decrease the occurrence of DVT compared with standard UFH, but there are too few data to provide reliable information on their effect on other important outcomes, including death, intracranial hemorrhage, and functional independence.
The full text, data tables, results, analyses, and reference lists of this article are available in the Cochrane Library. The full text article should be cited as: Counsell C, Sandercock P. Low-molecular-weight heparins or heparinoids versus standard unfractionated heparin for acute ischaemic stroke (Cochrane Review). In: The Cochrane Library, Issue 2, 2002. Oxford: Update Software.

The Cochrane Library is available to subscribers at http://www.update-software.com/Cochrane. Reprints of the full-text version can be purchased online from the document delivery service at this site.
Low-Molecular-Weight Heparins or Heparinoids Versus Standard Unfractionated Heparin for Acute Ischemic Stroke (Cochrane Review)
Carl Counsell and Peter Sandercock

Stroke. 2002;33:1925-1926
doi: 10.1161/01.STR.0000018820.99077.46
Stroke is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
Copyright © 2002 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/33/7/1925

Permissions: Requests for permissions to reproduce figures, tables, or portions of articles originally published in Stroke can be obtained via RightsLink, a service of the Copyright Clearance Center, not the Editorial Office. Once the online version of the published article for which permission is being requested is located, click Request Permissions in the middle column of the Web page under Services. Further information about this process is available in the Permissions and Rights Question and Answer document.

Reprints: Information about reprints can be found online at:
http://www.lww.com/reprints

Subscriptions: Information about subscribing to Stroke is online at:
http://stroke.ahajournals.org/subscriptions/