

# European Stroke Organisation (ESO) guideline on pharmacological interventions for long-term secondary prevention after ischaemic stroke or transient ischaemic attack

European Stroke Journal  
2022, Vol. 7(3) I–II  
© European Stroke Organisation 2022  
Article reuse guidelines:  
sagepub.com/journals-permissions  
DOI: 10.1177/23969873221100032  
journals.sagepub.com/home/eso  
SAGE

Jesse Dawson<sup>1</sup> , Yannick Béjot<sup>2,3</sup>, Louisa M Christensen<sup>4</sup> ,  
Gian Marco De Marchis<sup>5</sup> , Martin Dichgans<sup>6,7</sup>, Guri Hagberg<sup>8,9</sup>,  
Mirjam R Heldner<sup>10</sup>, Haralampos Milionis<sup>11</sup>, Linxin Li<sup>12</sup> ,  
Francesca Romana Pezzella<sup>13</sup>, Martin Taylor Rowan<sup>1</sup>,  
Cristina Tiu<sup>14,15</sup>  and Alastair Webb<sup>12</sup> 

## Abstract

Recurrent stroke affects 9% to 15% of people within 1 year. This European Stroke Organisation (ESO) guideline provides evidence-based recommendations on pharmacological management of blood pressure (BP), diabetes mellitus, lipid levels and antiplatelet therapy for the prevention of recurrent stroke and other important outcomes in people with ischaemic stroke or transient ischaemic attack (TIA). It does not cover interventions for specific causes of stroke, including anticoagulation for cardioembolic stroke, which are addressed in other guidelines. This guideline was developed through ESO standard operating procedures and the Grading of Recommendations, Assessment, Development and Evaluation (GRADE) methodology. The working group identified clinical questions, selected outcomes, performed systematic reviews, with meta-analyses where appropriate, and made evidence-based recommendations, with expert consensus statements where evidence was insufficient to support a recommendation. To reduce the long-term risk of recurrent stroke or other important outcomes after ischaemic stroke or TIA, we recommend: BP lowering treatment to a target of <130/80 mmHg, except in subgroups at increased risk of harm; HMGCoA-reductase inhibitors (statins) and targeting a low density lipoprotein level of <1.8 mmol/l (70 mg/dl); avoidance of dual antiplatelet therapy with aspirin and clopidogrel after the first 90 days; to not give direct oral anticoagulant drugs (DOACs) for embolic stroke of undetermined source and to consider pioglitazone in people with diabetes or insulin resistance, after careful consideration of potential risks. In addition to the evidence-based recommendations, all or the majority of working group members supported: out-of-office BP monitoring;

<sup>1</sup>Institute of Cardiovascular and Medical Sciences, College of Medical, Veterinary and Life Sciences, University of Glasgow, Glasgow, UK

<sup>2</sup>Dijon Stroke Registry, Department of Neurology, University Hospital of Dijon, Dijon, France

<sup>3</sup>Pathophysiology and Epidemiology of Cardio-Cerebrovascular disease (PEC2), University of Burgundy, Dijon, France

<sup>4</sup>Dept of Neurology, Copenhagen University Hospital Bispebjerg, Kobenhavn, Denmark

<sup>5</sup>Department of Neurology and Stroke Center, University Hospital Basel and University of Basel, Basel, Switzerland

<sup>6</sup>Institute for Stroke and Dementia Research (ISD), University Hospital, LMU Munich, Munich, Germany

<sup>7</sup>Munich Cluster for Systems Neurology (SyNergy), Munich, Germany

<sup>8</sup>Oslo Stroke Unit, Department of Neurology, Oslo University Hospital, Ullevål, Norway

<sup>9</sup>Department of medical research, Bærum Hospital Vestre Viken Hospital Trust, Drammen, Norway

<sup>10</sup>Stroke Research Center Bern, Department of Neurology, University and University Hospital Bern, Bern, Switzerland

<sup>11</sup>Department of Internal Medicine, School of Health Sciences, Faculty of Medicine, University of Ioannina, Ioannina, Greece

<sup>12</sup>Wolfson Centre for Prevention of Stroke and Dementia, Department of Clinical Neurosciences, University of Oxford, Oxford, UK

<sup>13</sup>Stroke Unit, Department of Neuroscience, San Camillo Forlanini Hospital, Rome, Italy

<sup>14</sup>Department of Clinical Neurosciences, University of Medicine and Pharmacy 'Carol Davila', Bucuresti, Romania

<sup>15</sup>Department of Neurology, University Hospital Bucharest, Bucharest, Romania

## Corresponding author:

Jesse Dawson, Institute of Cardiovascular and Medical Sciences, College of Medical, Veterinary and Life Sciences, University of Glasgow, Queen Elizabeth University Hospital, Glasgow G12 9QQ, UK.

Email: jesse.dawson@glasgow.ac.uk

use of combination treatment for BP control; consideration of ezetimibe or PCSK9 inhibitors when lipid targets are not achieved; consideration of use of low-dose DOACs in addition to an antiplatelet in selected groups of people with coronary or peripheral artery disease and aiming for an HbA1c level of <53 mmol/mol (7%) in people with diabetes mellitus. These guidelines aim to standardise long-term pharmacological treatment to reduce the burden of recurrent stroke in Europe.

**Keywords**

Guideline, systematic review, stroke, hypertension, dyslipidaemia, diabetes, antiplatelet

The full version of this guideline appears online. All guidelines can be found at <https://journals.sagepub.com/topic/collections-eso/eso-1-guidelines/eso>

Date received: 30 March 2022; accepted: 25 April 2022