

# Summary of Recommendations

Assessment of evidence quality and grading of recommendations has been performed using the SIGN (Scottish Intercollegiate Guidelines Network) system (see annex 1). The following section includes the recommendations proposed in this guideline.

## Vascular risk

<b>B</b>	The calculation of vascular risk using one of the risk tables currently available (REGICOR or SCORE) is recommended as a complementary diagnostic tool in the clinical assessment of patients.
<b>B</b>	The SCORE table is recommended to calculate the risk of stroke.
✓	Vascular risk should be assessed at least once every five years after the age of 40.
✓	In patients with high vascular risk it should be assessed at least once a year.
✓	It is important that health care professionals be adequately trained for vascular risk calculation, and that such vascular risk calculation be integrated into the IT systems available at the medical consultation office.

## PRIMARY PREVENTION OF STROKE

### NON-modifiable risk factors

✓	Strict monitoring and follow-up of vascular risk factors is recommended in people with non-modifiable risk factors, especially elderly patients and those with a family history of stroke.
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### Lifestyle interventions: alcoholism

<b>A</b>	It is recommended to avoid alcohol consumption that exceeds two units per day.
<b>A</b>	Short informative interventions are recommended in people whose consumption could be considered harmful to health, with the objective of reducing consumption.
✓	It is important to detect alcohol consumption abuse as part of the routine clinical exam and at least every two years, especially in the case of problems that may be related to alcohol consumption abuse or before prescribing drugs that could interact with alcohol.
✓	It is recommended not to promote alcohol consumption in patients who do not drink.

### Lifestyle interventions: tobacco smoking

✓	The anamnesis of any patient should explore the habit of smoking.
<b>A</b>	Professional counselling constitutes the main therapeutic option to stop smoking. Abstinence or smoking cessation should be recommended and exposure to second-hand smoke avoided.
<b>A</b>	Replacement treatment with nicotine, bupropion, nortriptyline* or varenicline is recommended as part of structured smoking cessation programmes aimed at increasing the percentage of smoking cessation.
✓	It is necessary to prioritise smoking cessation strategies in smokers or in populations at risk such as young people and disadvantaged social classes.

\* This indication has not been approved for nortriptyline.

### Lifestyle interventions: use of illegal drugs

✓	In the routine anamnesis it is advisable to inquire about habitual or occasional use of illegal drugs.
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### Lifestyle interventions: sedentarism

B	It is recommended that all people perform at least moderately intense physical exercise, within their capabilities, for a minimum of 30 minutes a day.
B	A gradual increase in the intensity or frequency of physical exercise in people who are already moderately active is recommended.

### Lifestyle interventions: dietary and nutritional factors

A	The reduction of total fat and especially saturated fat in the diet is recommended. These types of fat should contribute less than 30% and 10% respectively to daily calorie intake.
A	Consumption of fish at least once a week and consumption of at least three pieces of fruit daily are recommended.
A	The use of vitamin supplements to reduce vascular risk is not recommended.
A	Reduced salt intake is recommended, especially in people with high blood pressure.
✓	Salt intake under 6 g daily or, in hypertense patients, replacement with potassium salt, is recommended.
✓	It is advisable to eat a varied diet and promote the consumption of fresh vegetable products (legumes, whole cereals, fruit and vegetables), fish and unrefined virgin olive oil.

## Obesity

<b>A</b>	People with obesity or abdominal obesity are recommended to lose weight until appropriate weight is reached.
<b>A</b>	Diet modification and increased physical activity are recommended as the first therapeutic steps for weight reduction.
<b>B</b>	In addition to hygienic-dietary measures, the possibility of pharmacological treatment over a limited period of time should be considered for people with obesity or abdominal obesity who do not respond to conservative measures.
<b>B</b>	In patients with morbid obesity, surgery is a therapeutic alternative that should be considered individually with each patient.

## Hypertension (High blood pressure)

<b>A</b>	In patients with high blood pressure it is recommended to modify lifestyles with the aim of achieving smoking cessation, weight loss in obese patients, alcohol consumption moderation, regular physical exercise, reduced salt intake and increased consumption of fruits and vegetables, regardless of pharmacological treatment.
<b>A</b>	Thiazide diuretics, angiotensin converting enzyme inhibitors, angiotensin II antagonists, beta-blockers or calcium antagonists are recommended for the initial treatment of high blood pressure in the majority of situations and based on the characteristics of each patient.
<b>B</b>	Initial treatment with betablockers can be considered in young patients with non-complicated hypertension.
<b>A</b>	The maintenance of blood pressure levels under 140/90 mmHg is recommended.
<b>B</b>	The maintenance of blood pressure levels under 130/80 mmHg in diabetic patients is recommended.

✓	In patients with blood pressure levels higher than 160/100 mmHg or in diabetic patients the combination of more than one antihypertensive treatments should be considered.
✓	In hypertense patients with diabetes the first treatment to consider should be with angiotensin converting enzyme inhibitors, angiotensin II antagonist monotherapy or in combination with another hypertensive drug.
✓	Combined antihypertensive drugs should have different but complementary mechanisms of action and be administered preferably at the minimal effective dose.

#### Diabetes mellitus

<b>A</b>	In people with altered basal glycaemia or impaired glucose tolerance, structured programmes aimed at encouraging physical activity and dietary changes are recommended.
<b>B</b>	In people with altered basal glycaemia or impaired glucose tolerance the use of alpha-glucosidase inhibitors or biguanides is not recommended with the aim of preventing diabetes mellitus.
<b>A</b>	In people with altered basal glycaemia or impaired glucose tolerance the use of thiazolidinediones (especially rosiglitazone) to prevent diabetes mellitus is not recommended.
<b>D</b>	Annual screening of diabetes by means of fasting morning glycaemia is recommended in the population at risk: hypertension, hyperlipemia, obesity, gestational diabetes, obstetric pathology (macrosomy, repeat abortions, malformations), altered basal glycaemia or impaired glucose tolerance at any age; and every three years in patients aged 45 years and older, within a structured vascular prevention programme.

## Dyslipemia

<b>A</b>	Statin treatment is recommended for adults without prior vascular disease and with high vascular risk.
<b>A</b>	Treatment with other drugs such as clofibrate, gemfibrozil, nicotinic acid or ion-exchange resins or their combination is not recommended for primary prevention of vascular disease.
✓	In patients with high blood cholesterol levels (>240 mg/dl of LDL cholesterol) treatment with statins should be considered.
✓	Treatment with statins should be jointly assessed with the patient after properly informing him/her of benefits and potential risks, taking associated pathologies and concomitant treatments into account. Additionally, at the beginning of treatment with statins, healthier lifestyle changes should be initiated.
✓	It is important to assess interactions between statins and other concomitant drugs metabolised preferably by cytochrome P450. If the risk of interaction is clinically relevant, treatment with pravastatin should be considered.

## Metabolic syndrome

<b>B</b>	Individuals with metabolic syndrome should be identified and advised on lifestyle modifications with the aim of promoting a healthy diet and physical exercise to lose body weight.
✓	It is important to offer proper treatment for each component of the metabolic syndrome.
✓	It is important to carry out periodic follow-up of vascular risk.

### Use of oral contraceptives

<b>B</b>	The use of oral contraceptives is not recommended in women who smoke, suffer migraines or have a history of thromboembolic episodes; other birth control measures should be considered.
<b>A</b>	The use of oral contraceptives is not recommended in women with congenital thrombophilia; other birth control measures should be considered.

### Hormone therapy

<b>A</b>	The use of hormone therapy (with estrogens alone or combined with progestagens) to prevent vascular disease in postmenopausal women is not recommended.
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### Thrombophilias

✓	After assessing the patient's age, risk of bleeding and presence of other vascular risk factors or associated pathologies, antithrombotic treatment can be initiated in patients with some type of congenital or acquired thrombophilia.
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### Others: hyperhomocysteinemia, elevated lipoprotein A, migraine, falciform cell disease

<b>B</b>	In patients with elevated plasma homocysteine levels and other vascular risk factors, vitamin B complex with folic acid should be considered.
<b>C</b>	In patients with elevated levels of lipoprotein A and other vascular risk factors, treatment with niacin should be considered.
<b>B</b>	The performance of periodic transfusions is recommended to reduce hemoglobin S to levels below 30% in patients with high risk falciform cell anemia, after assessing the risks and benefits with the patient.

### Embolc cardiopathies: atrial fibrillation

✓	All patients with atrial fibrillation should be individually assessed to establish a benefit-risk balance of antithrombotic treatment. It is advisable to assess the indication to administer anticoagulants at regular intervals.
<b>A</b>	In patients with paroxistic, persistent or permanent atrial fibrillation, who present HIGH thromboembolic risk, treatment with oral anticoagulants with an INR target range of 2 to 3 over an indefinite period of time is recommended for primary prevention of stroke of cardioembolic origin.
<b>A</b>	In patients with paroxistic, persistent or permanent atrial fibrillation, who present MODERATE thromboembolic risk, treatments with anticoagulants or antiaggregants are reasonable therapeutic options for the primary prevention of cardioembolic stroke.
<b>A</b>	In patients with paroxistic, persistent or permanent atrial fibrillation, who present LOW thromboembolic risk or formal contraindications to oral anticoagulants, antiaggregant treatment with aspirin (100-300 mg/d) is recommended for primary prevention of cardioembolic stroke.
<b>B</b>	The use of antiaggregants other than aspirin is recommended for patients with aspirin intolerance or related undesirable effects.
✓	In certain patients with MODERATE thromboembolic risk other factors, such as atrial size, presence of atrial blood clots or structural cardiac alterations, should be assessed when considering the benefits and risks of antithrombotic treatment.

### Embolc cardiopathies: myocardial infarction

✓	In patients who have suffered a myocardial infarction it is important to manage vascular risk factors to reduce the risk of new episodes.
<b>A</b>	In patients who have suffered a myocardial infarction without increase of the ST segment, especially if they have undergone a percutaneous procedure with implantation of a pharmacoactive stent, double antiaggregation with aspirin (at the minimal effective dose) and

	clopidogrel (75 mg/d) over twelve months is recommended.
<b>B</b>	In patients who have suffered a myocardial infarction with increase of the ST segment, regardless of whether they undergo acute reperfusion with fibrinolysis or a percutaneous procedure, double antiaggregation with aspirin (at the minimal effective dose) and clopidogrel (75 mg/d) over at least four weeks is recommended.
<b>C</b>	In patients who have suffered myocardial infarction with increase of the ST segment, it is reasonable to propose double antiaggregation treatment over a period of one year.
<b>B</b>	In patients who have suffered myocardial infarction with increase of the ST segment associated with dyskinesia or ventricular aneurysm, treatment with oral anticoagulants should be considered.

**Embolitic cardiopathies: dilated cardiomyopathy and other situations with reduced ejection fraction**

<b>B</b>	In patients with ejection fraction below 30%, initiation of treatment with antiaggregants or anticoagulants should be considered. The selection of treatment should be individualised based on the presence of other vascular risk factors.
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**Embolitic cardiopathies: valve prostheses**

<b>A</b>	Indefinite anticoagulant treatment with an INR interval that depends on the type of valve and patient factors is recommended in patients who have a mechanical valve prosthesis.
<b>B</b>	In patients who have a mechanical valve prosthesis and high risk of thromboembolism (atrial fibrillation, hypercoagulability states, or dysfunction of the left ventricle), it is recommended to add antiaggregants (aspirin 100 mg/d) to anticoagulant treatment.
<b>A</b>	During the first three months after implantation of a biological prosthesis anticoagulant treatment is recommended with an INR target range of 2 to 3.

<b>B</b>	Antiaggregant treatment (100-300 mg/d of aspirin or 600 mg/d of triflusal) is recommended in patients who have a biological valve and who have no risk factors for thromboembolism.
<b>A</b>	In patients who have a biological valve and risk factors for thromboembolism (atrial fibrillation, hypercoagulability states, or dysfunction of the left ventricle) treatment with anticoagulants is recommended with the objective of reaching an INR target range of 2 to 3 in aortic valves and an INR target range of 2.5 to 3.5 in mitral valves.

#### **Embolitic cardiopathies: mitral stenosis and mitral valve prolapse**

✓	Patients with mitral stenosis or mitral valve prolapse should undergo periodic cardiac monitoring. Echocardiography is useful to detect patients with a high risk of complications.
<b>A</b>	Anticoagulant treatment with an INR target range of 2 to 3 is recommended in patients presenting mitral stenosis with a thrombus in the left atrium and in those who develop atrial fibrillation.
<b>C</b>	Treatment with antiaggregants (100-300 mg/d of aspirin) is recommended in patients with mitral valve prolapse only if they present high risk echocardiographic criteria.

#### **Asymptomatic carotid artery stenosis**

<b>B</b>	Surgical treatment (carotid endarterectomy) is recommended in asymptomatic patients with significant stenosis (>70%) of the carotid artery, if and when the surgical team confirms a perioperative morbimortality of less than 3%. The decision should be made together with the patient, after informing him/her of the risks and benefits of the procedure and assessing factors such as age or comorbidities.
<b>C</b>	Surgical treatment (carotid endarterectomy) is not recommended in asymptomatic patients with mild carotid artery stenosis.
<b>A</b>	Antiaggregant treatment is recommended in all patients with carotid artery stenosis.

<b>B</b>	The use of endovascular techniques with stent implantation should be individualised in patients with high surgical risk, in cases where there are technical difficulties for the performance of a carotid endarterectomy or within the context of a clinical trial.
<b>A</b>	Carotid stenosis screening programmes in the general population are not recommended.

#### Antiaggregant treatment in the primary prevention of stroke

<b>A</b>	Primary prevention of vascular episodes with antiaggregants is not recommended in the general population.
<b>B</b>	Treatment with aspirin at the minimal effective dose (100 mg/d) should be considered for certain patients, such as those with high vascular risk, once potential benefits and risks have been weighed.
✓	Clopidogrel, dipyridamol or triflusal can be considered alternatives for patients with hypersensitivity or intolerance to the adverse effects of aspirin.

#### Antithrombotic treatment in pregnant women

✓	In pregnant women in whom anticoagulation is indicated with the aim of reducing the risk of thrombotic phenomena, including stroke, the use of non-fractionated heparin or low molecular weight heparins throughout the pregnancy should be considered.
✓	In pregnant women who have one or more mechanical heart valves, with a high risk of embolic phenomena, the addition of aspirin (at the lowest dose possible) should be considered during the first two gestational trimesters.
✓	Antithrombotic treatment during pregnancy is a complex clinical situation that should be monitored by a multidisciplinary specialised team.

### Risk of bleeding with anticoagulant treatment

<b>B</b>	In patients in whom anticoagulant treatment is indicated, the assessment of bleeding risk using one of the existing indexes is recommended.
✓	Assessing benefits-risks before initiating anticoagulant treatment should include, additionally, the assessment of adherence to treatment, and the patient's values and preferences and family and personal environment.

### Subarachnoid hemorrhage

✓	All patients with intact intracerebral aneurysm should be provided with adequate advice promoting healthier lifestyles, such as the cessation of smoking, alcohol consumption and use of any substance with sympathicomimetic activity.
<b>A</b>	Patients with intact intracerebral aneurysm should maintain blood pressure values within the normal range.
<b>B</b>	In aneurysms whose size is equal to or bigger than 7 mm, intervention on the aneurysm sac (via surgery or an endovascular procedure) and individual assessment of the risks of each procedure, the patient's age, mass effect and localisation of the aneurysm should be considered.
<b>B</b>	Expectative attitude is recommended in people over the age of 65, without symptoms and with anterior circulation aneurysms of less than 7 mm in diameter.
✓	In case of adopting a conservative approach, changes in size or presentation of the aneurysm should be closely monitored.

## SECONDARY PREVENTION OF ICTUS

### Risk of a new episode of transient ischemic stroke or transient ischemic attack

✓	Therapeutic strategies in patients who have had a first episode of ischemic stroke or transient ischemic attack should be aggressive and aimed at reducing relapse risk and vascular risk in general.
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### Lifestyle interventions

✓	The hospital discharge report should include the measures adopted for modification of lifestyles.
A	Patients who have suffered a stroke should avoid alcohol consumption of more than two units daily and be encouraged to quit smoking.
A	Alcohol consumption should not be encouraged in patients who do not drink. Patients who have suffered hemorrhagic stroke should avoid all kinds of alcohol.
B	Patients who have suffered a stroke are encouraged to exercise regularly within their capabilities and reduce body weight or abdominal obesity to normal levels.

### Hypertension

✓	Blood pressure values of patients who have had an ischemic or hemorrhagic stroke should be closely monitored.
A	In patients with a history of stroke or transient ischemic attack and high or even normal blood pressure values it is recommended to initiate treatment with antihypertensive drugs, preferably with the combination of an angiotensin converting enzyme inhibitor and a diuretic (4 mg/d of perindopril and 2.5 mg/d of indapamide).

<b>B</b>	Depending on the patient's tolerance or concomitant pathologies, monotherapy treatment with diuretics, angiotensin converting enzyme inhibitors or angiotensin II antagonists should be considered.
<b>B</b>	Once a patient who has had an ischemic stroke or transient ischemic attack is stabilised, blood pressure values should be gradually decreased with the aim of maintaining levels below 130/80 mmHg, and preferably below 120/80 mmHg.
<b>A</b>	Lifestyle changes should be promoted, aside from pharmacological treatment.

### Dyslipemia

<b>A</b>	It is recommended to treat patients with ischemic stroke or prior transient ischemic attack of atherothrombotic etiology with atorvastatin (80 mg/d), regardless of their basal LDL-cholesterol levels.
<b>B</b>	Treatment with other statins (simvastatin 40 mg) is also indicated in patients with ischemic stroke or prior transient ischemic attack of atherothrombotic etiology, regardless of their basal LDL-cholesterol levels.
✓	Treatment with statins should be jointly assessed with the patient after adequately informing him/her of the benefits and potential risks and taking associated pathologies and concomitant treatments into account. Aside from statin treatment, healthier lifestyles should be encouraged and adopted.
✓	These patients should maintain LDL-cholesterol levels below 100 mg/dl.
✓	The combination of statins with other hypolipemiant drugs to reach LDL-cholesterol target values should be avoided.

### Hormone therapy

<b>A</b>	Hormone therapy (with estrogens alone or in combination with progestagens) for secondary prevention of vascular disease in postmenopausal women is not recommended.
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### Thrombophilias

<b>B</b>	In patients with hereditary thrombophilia and a history of thrombotic episodes long term treatment with anticoagulants is recommended.
<b>B</b>	In patients with previous ischemic stroke or transient ischemic attack, who have not presented any other alternative cause to the antiphospholipid syndrome, long term treatment with anticoagulants is recommended.

### Hyperhomocysteinemia

<b>B</b>	Folic acid and vitamin B complex supplements should be considered in patients with previous stroke or hyperhomocysteinemia with the aim of reducing elevated plasma homocysteine levels.
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### Embolic cardiopathies: atrial fibrillation

✓	All patients with atrial fibrillation should be individually assessed in order to establish an adequate benefit-risk balance of anticoagulant treatment.
<b>A</b>	Treatment with oral anticoagulants with an INR target range of 2 to 3 over an indefinite period of time is recommended in patients with paroxistic, persistent or permanent atrial fibrillation who have previously had a stroke and present no formal contraindications to treatment.
✓	In cases where anticoagulant treatment is contraindicated, treatment with aspirin (300 mg/d) is an appropriate alternative.
✓	Intensification of anticoagulation or addition of antiagregant treatment (aspirin or triflusal) should be considered in patients with paroxistic, persistent or permanent atrial fibrillation, who receive correct doses of

	anticoagulant treatment and still present recurrent stroke or transient ischemic attack.
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**Embolitic cardiopathies: heart valve prosthesis**

<b>A</b>	In patients with one or more mechanical heart valve prostheses who suffer an ischemic stroke despite receiving proper anticoagulant treatment, the addition of low-dose aspirin (100 mg) or dipyridamol is recommended.
✓	The joint administration of clopidogrel or triflusal and an anticoagulant is a correct strategy in patients with contraindications to aspirin.

**Embolitic cardiopathies: other cardiopathies**

<b>B</b>	In patients with previous ischemic stroke or transient ischemic attack who present mitral stenosis, anticoagulant treatment with an INR target range of 2 to 3 is recommended, regardless of whether they present atrial fibrillation or not.
<b>B</b>	In patients with previous ischemic stroke or transient ischemic attack who present mitral valve prolapse, antiaggregant treatment (100-300 mg/d of aspirin) is recommended.
<b>C</b>	In patients with previous ischemic stroke or transient ischemic attack with mitral valve prolapse as the only cause, anticoagulant treatment with an INR target range of 2 to 3 should be considered only in cases of high risk of presenting cardioembolic phenomena.
<b>B</b>	In patients with previous ischemic stroke or transient ischemic attack who present permeable foramen ovale, treatment with antiaggregants (100-300 mg/d of aspirin) is recommended.

<b>C</b>	In patients with permeable foramen ovale and previous ischemic stroke or transient ischemic attack, treatment with anticoagulants should be considered if there is an increased risk of cardioembolic episodes (aneurysm of the atrial septum or associated with large interatrial communication).
✓	Surgical procedures with percutaneous closure of the permeable foramen ovale should only be considered in the context of a clinical trial and in cases of repeat strokes.

### Symptomatic carotid artery stenosis

<b>A</b>	Carotid endarterectomy is recommended in patients with ischemic stroke of less than 6 months evolution and significant stenosis of the carotid artery (70% to 99%, NASCET values), if and when the surgical team confirms a perioperative morbimortality of less than 6%.
<b>B</b>	In patients with ischemic stroke of less than 6 months evolution and moderate carotid artery stenosis (50% to 69%, NASCET values), carotid endarterectomy should be considered depending on factors such as sex, age and the presence of other comorbidities.
<b>A</b>	In patients with mild carotid artery stenosis (less than 50%, NASCET values) carotid endarterectomy is not recommended.
<b>B</b>	In patients with ischemic stroke or non-disabling transient ischemic attack and surgical indication, it is recommended to perform the intervention within the first two weeks after the episode.
<b>A</b>	In patients who are not candidates for intervention, treatment with antiaggregants is recommended after carotid endarterectomy, as well as intensive intervention on other vascular risk factors.
<b>B</b>	The use of endovascular techniques with stent implantation should be individualised in patients with high surgical risk, in cases where there are technical difficulties for the performance of a carotid endarterectomy or within the context of a clinical trial.

### Antithrombotic treatment in the secondary prevention of stroke

<b>A</b>	In patients with non-cardioembolic ischemic stroke or transient ischemic attack, antiaggregation with aspirin (100-300 mg/d), combined aspirin and sustained release dipyridamol (50 and 400 mg/d), triflusal (600 mg/d) or clopidogrel (75 mg/d) is recommended.
<b>A</b>	Long term use of combined aspirin and clopidogrel is not recommended due to the increased risk of bleeding complications.
<b>A</b>	In patients with ischemic stroke or transient ischemic attack, the systematic use of anticoagulant treatment to prevent recurrent strokes is not recommended.
<b>A</b>	It is recommended to initiate treatment with aspirin within the first 48 hours of the clinical suspicion of ischemic stroke and after ruling out hemorrhagic stroke.
✓	In the case of presenting recurrent strokes despite adequate antiaggregant treatment, underlying causes should be carefully reviewed and the management of risk factors should be prioritised.

### Cerebral venous thrombosis

<b>D</b>	In patients who have suffered cerebral venous thrombosis, initial treatment with heparin and later with oral anticoagulants over a period of three to six months is recommended.
<b>D</b>	In patients with congenital or acquired thrombophilias and in patients over the age of 65 or with other factors that favour thrombotic phenomena, treatment with oral anticoagulants is recommended up to twelve months.

### Antithrombotic treatment after intracerebral hemorrhage

<b>B</b>	Generalised introduction of anticoagulant or antiaggregant treatment is not recommended after an intracerebral hemorrhage.
✓	In patients who require anticoagulant treatment due to a previous condition,

	restoration of treatment should be individually assessed.
<b>C</b>	Anticoagulant treatment should be considered seven to ten days after an intracerebral hemorrhage only in patients with very high risk (>6.5% per year) of presenting ischemic stroke.
<b>C</b>	Treatment with low molecular weight heparins should be considered two days after an intracerebral hemorrhage with the aim of reducing the risk of deep venous thrombosis or pulmonary embolism.
<b>C</b>	Antiaggregant treatment is an alternative for patients who, after an intracerebral hemorrhage, present an indication for antithrombotic treatment and in whom anticoagulant treatment is not advisable.