Complete Summary

GUIDELINE TITLE

Prevention of thromboembolic venous disease in medical patients (PRETEMED).

BIBLIOGRAPHIC SOURCE(S)

Alonso Ortiz del Rio C, Medrano Ortega FJ, Romero Alonso A, Villar Conde E, Calderon Sandubete E, Marin Leon I, et al. Prevention of thromboembolic venous disease in medical patients (PRETEMED). Cordoba: Andalusian Society of Internal Medicine (SADEMI); 2003. 111 p. [130 references]

GUIDELINE STATUS

This is the current release of the guideline.

An update is programmed in three years, or sooner if new relevant evidence appears.

** REGULATORY ALERT **

FDA WARNING/REGULATORY ALERT

Note from the National Guideline Clearinghouse: This guideline references a drug(s) for which important revised regulatory and/or warning information has been released.

- February 28, 2008, Heparin Sodium Injection: The U.S. Food and Drug Administration (FDA) informed the public that Baxter Healthcare Corporation has voluntarily recalled all of their multi-dose and single-use vials of heparin sodium for injection and their heparin lock flush solutions. Alternate heparin manufacturers are expected to be able to increase heparin production sufficiently to supply the U.S. market. There have been reports of serious adverse events including allergic or hypersensitivity-type reactions, with symptoms of oral swelling, nausea, vomiting, sweating, shortness of breath, and cases of severe hypotension.
- August 16, 2007, Coumadin (Warfarin): Updates to the labeling for Coumadin to include pharmacogenomics information to explain that people's genetic makeup may influence how they respond to the drug.

COMPLETE SUMMARY CONTENT

** REGULATORY ALERT **
SCOPE
METHODOLOGY - including Rating Scheme and Cost Analysis
RECOMMENDATIONS

EVIDENCE SUPPORTING THE RECOMMENDATIONS
BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS
CONTRAINDICATIONS
QUALIFYING STATEMENTS
IMPLEMENTATION OF THE GUIDELINE
INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES
IDENTIFYING INFORMATION AND AVAILABILITY
DISCLAIMER

SCOPE

DISEASE/CONDITION(S)

Deep vein thrombosis
Pulmonary embolism

GUIDELINE CATEGORY

Prevention
Risk Assessment
Treatment

CLINICAL SPECIALTY

Cardiology
Critical Care
Emergency Medicine
Endocrinology
Family Practice
Gastroenterology
Geriatrics
Hematology
Infectious Diseases
Internal Medicine
Nephrology
Neurology
Obstetrics and Gynecology
Oncology
Pharmacology
Physical Medicine and Rehabilitation
Preventive Medicine
Pulmonary Medicine
Rheumatology

INTENDED USERS

Health Care Providers
Pharmacists
Physicians
Respiratory Care Practitioners

Students
Utilization Management

GUIDELINE OBJECTIVE(S)

- To elaborate recommendations on venous thromboembolic disease (VTD) prophylaxis for both in-hospital and outpatients with acute or chronic medical diseases
- This guideline is designed for primary care physicians, internists, and other medical specialists to make decisions regarding specific prophylaxis with one of the available physical and/or pharmacologic measures.

TARGET POPULATION

Medical patients with risk factors for venous thromboembolic disease

INTERVENTIONS AND PRACTICES CONSIDERED

Pharmacologic Measures

1. Low molecular weight heparins (LMWH)
    - Bemiparin (Hibor®)
    - Enoxaparin (Clexane®, Decipar®)
    - Dalteparin (Boxol®, Fragmin®)
    - Nadroparin (Fraxiparina®
2. Oral anticoagulants
    - Acenocoumarol (Sintrom®, Sintrom UNO®)
    - Warfarin (Aldocumar®)
3. Acetylsalicylic acid (aspirin)

Physical Measures

1. Trendelenburg´s position
2. Early mobilization (ambulation)
3. External elastic compression stockings
4. Intermittent pressotherapy with pneumatic compression devices

MAJOR OUTCOMES CONSIDERED

- Incidence of deep vein thrombosis (DVT) and pulmonary embolism (PE)
- Mortality from DVT and PE

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
Hand-searches of Published Literature (Secondary Sources)
Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

A total of 33 circumstances and medical processes commonly related to the development of venous thromboembolic disease (VTD) were identified by consensus among the guideline authors. In each case, specific research questions were formulated to determine both the risk of VTD development and the benefit of preventive interventions. The search of original investigations was performed through specific strategies in Medline (1966–2002) and The Cochrane Library 2002 in the case of interventions. A manual search from the bibliography of different studies and clinical practice guidelines (CPG) found were conducted as well.

The individual search strategies for the circumstances are collected in Appendix 1 of the original guideline document.

NUMBER OF SOURCE DOCUMENTS

A total of 1991 studies were initially identified and 188 of them selected and evaluated.

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Note from NGC: The following key points summarize the rating scheme for the strength of the evidence. Refer to the original guideline document for more information.

Quality of Evidence for Interventions Scale

The therapeutic interventions were assessed with the Jadad scale and in both cases greater relevance was given to relevant aspects such as sample extraction criteria, prospective collection of data, and verification of the effect to be measured. The 0–7 scale of quality of evidence supplied by each paper had the following stratification:

7: Excellent quality

6–5: Good

4–3: Moderate

2–0: Low quality of evidence

METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses
Systematic Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Once reviewed, all studies addressing the proposed questions were selected and evaluated in terms of quality of the evidence reported by each. Different guidelines and consensus documents were also analyzed, as well as structured reviews and meta-analyses.

After reviewing the identified studies, only those that would answer the questions were selected. In particular, prospective series, case-control studies, and the control arms of the randomized clinical trials (RCT) were chosen for quantifying risks. As far as the prevention effect is concerned, RCT and meta-analyses were selected. A critical assessment of the papers selected was performed and the quality of evidence that supported each specific question of the study was evaluated.

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus (Delphi)

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

The action recommendations for each condition was elaborated according to an explicit method that takes into account the following four elements: risk magnitude, effectiveness of intervention to avoid risk without causing greater harm, quality of the evidence about risk and about the intervention to prevent it.

As no direct evidence that makes an analysis of risk/benefit of the prophylactic interventions possible was available in most clinical circumstances considered, the four elements were considered sequentially in order to elaborate the recommendations, taking the previous element as a necessary condition to use the following one in this order: 1) Sufficiency of evidence on risk, 2) Deep vein thrombosis (DVT) risk magnitude, 3) Availability of evidence on prevention, and 4) The results that can be expected from the prevention, for each clinical situation under study. According to this, the strength of the recommendations was graded as high, medium, low, and unknown.

An expert panel using a modified Delphi RAND method, finally validated the recommendations for DVT prevention.

All recommendations were performed, taking into account some peculiar factors of the public Spanish health system (i.e., opportunities, resources availability, cultural and ethical questions). Neither cost considerations nor preferences of patients were taken into account when making the recommendations. Refer to the original guideline document for additional information.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Note from NGC: The following summarizes the rating scheme for the strength of the recommendations, which was based on both the quality of the evidence (Good, Medium, Poor, and Unknown) and the magnitude of the effect (Substantial, Large, Small, Null) whether beneficial or harmful.

Effect Expected (Benefit/Harm)

	Substantial	**Large**	**Small**	**Null**
Good	A	A	B	D
Medium	B	B	C	D
Poor	C	C	D	D
Unknown	No evidence	No evidence	No evidence	No evidence

Recommendation Grade

A. High
B. Middle
C. Low
D. Unknown

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

External Peer Review
Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

An expert panel consensus validated the discrete scale and the combination of clinical circumstances based on the sum of weights. The multidisciplinary expert panel, conducted under the RAND appropriateness method, analyzed a total of 3,432 mini-scenarios representing the possible combinations of different circumstances and medical processes. A consensus of 99% or an agreement was reached with respect to the score assigned to each mini-scenario and to the appropriateness of the intervention.

Different criteria of the AGREE instrument have been applied to the development of the guideline. In addition, a preliminary version of the guideline was reviewed by external consultants from different scientific societies: Andalusian Society of

Internal Medicine, Family Practice and Community Health Society from Andalusia, Thrombosis and Haemostasia and Angiology and Vascular Surgery.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Note from NGC: The following key points summarize the content of the guideline. Refer to the original guideline document for more information.

The elements of the recommendations rating scheme [A-D] are defined at the end of the "Major Recommendations" field.

Constitutional Risk Factors

Age

- Given the low incidence of venous thromboembolic disease (VTD) for the age factor alone, the risk-benefit ratio excludes prophylactic treatment with anticoagulants. (Evidence: C).
- In subjects over 60 years of age for whom the physician considers prevention of deep vein thrombosis (DVT) as necessary, elastic compression stockings can be an efficacious and safe option (Evidence: C).

Pregnancy and Puerperium

- In pregnancies with a high risk of VTD (prior DVT with thrombophilia or prior idiopathic DVT) prophylaxis with low molecular weight heparin (LMWH) (nadroparin, enoxaparin, or dalteparin) is indicated at doses equivalent to 5,000 IU/day subcutaneous (sc) (Evidence: B).
- The panel recommended:
    1. Prophylaxis with LMWH in pregnancy if the patient is bedridden together with another risk factor, two clinical circumstances are present, or a single clinical circumstance is associated with a high-score risk factor
    2. LMWH or physical measures if patient is bedridden and obese with no other factors, or pregnant but not obese with a clinical circumstance associated with a low-score risk factor
    3. In pregnant women with thrombophilia without prior VTD, a specialist consultation to evaluate the risk, given the heterogeneity of the different thrombophilias (Evidence: Consensus)

Gender

- No gender-based prophylaxis of VTD is recommended (Evidence: C).

Obesity

- Given the low incidence of VTD for obesity as a factor on its own, the risk-benefit ratio excludes prophylactic treatment with anticoagulants (Evidence: C).
- In obese patients for whom the physician is considering prevention of DVT, compressive elastic stockings are an adequate option (Evidence: C).

Lifestyle Dependent Risk Factors

Bedridden/Sedentary Lifestyle

- In subjects over 50 years of age bedridden for more than four days due to exacerbation of medical conditions with risk (congestive heart failure [CHF], chronic obstructive pulmonary disease [COPD]) and the presence of risk factors, prophylaxis with 40 mg of enoxaparin or an equivalent for 10 days is indicated (Evidence: A).

Tobacco Smoking

- Given the low incidence of VTD for the smoking factor alone, the risk-benefit ratio excludes prophylactic treatment with anticoagulants (Evidence: C).

Institutionalization

- Prophylaxis in domiciliary hospitalization is not justified (Evidence: B).
- For admissions of more than 4 days of patients over the age of 50 years due to exacerbation of medical conditions with risk (CHF, COPD, infection) and in the presence of risk factors, prophylaxis with 40 mg/day of enoxaparin or equivalent during the admission is indicated (Evidence: A).

Travel

- No prophylaxis of VTD is prescribed for those subjects for whom air travel is the only risk factor, given the low incidence of VTD (Evidence: C).
- When the flight is high risk due to its duration and immobilization, and an additional individual risk factor concurs, physical prophylactic measures are indicated, as well as treatment with LMWH for high-risk individuals (Evidence: B).
- The expert panel recommends:
    1. Prophylaxis with LMWH when the travel is associated with a major risk factor, considering the favorable risk-benefit ratio of a single prophylactic dose; and,
    2. Physical measures in the remaining risk situations (Evidence: Consensus).

Iatrogenic Risk Factors

Antiplatelet Treatment

- Since acetylsalicylic acid (ASA) is considerably less effective than an anticoagulation agent, it cannot be recommended to replace the later as prophylaxis for VTD (Evidence: A).

- However, given its preventive effect, the use of ASA can compensate for the low-incidence risk inherent to certain clinical circumstances. (Evidence: A).

Oral Contraceptives

- Given the low incidence of VTD induced by the use of oral contraceptives (OCs), the risk-benefit ratio excludes prophylactic treatment with anticoagulants (Evidence: C).
- In women taking oral contraceptives for whom the physician is considering DVT prophylaxis, elastic compression stockings are an adequate option. (Evidence: C).

Central Venous Catheter (CVC)

- Treatment with heparin is efficacious to prevent the DVT associated with CVC, but given the low incidence rate, systematic prophylaxis is not justified, excluding situations of prolonged maintenance of the CVC. In such conditions, LMWHs and warfarin at doses of 1 mg/d would be the recommended prophylaxis (Evidence: A).

Pacemaker

- Prophylaxis with heparin reduces the risk of asymptomatic VTD in the period of pacemaker implantation (Evidence: C).
- The expert panel concluded that in the period of implantation of a pacemaker, or immediately after, the risk of clinically relevant events or systemic complications is very low, and therefore prophylaxis of VTD does not appear to be justified (Evidence: Consensus).

Tamoxifen

- Given the low incidence of VTD for the use of tamoxifen, the risk-benefit balance excludes prophylactic treatment with anticoagulants (Evidence: C).
- In persons taking tamoxifen for whom the physician is considering DVT prophylaxis, elastic compression stockings are an adequate option. (Evidence: C).

Hormone Replacement Therapy (HRT)

- Given the low incidence of VTD for the use of HRT alone, the risk-benefit ratio excludes prophylactic treatment with anticoagulants (Evidence: C)
- During the first year of treatment with HRT in those women for whom the physician is considering DVT prophylaxis due to the coincidence with other risk factors, elastic compression stockings can be a valid option (Evidence: C).

Risk Factors Related to Medical Disorders

Acute Cerebrovascular Accident (ACVA)

- In subjects with high risk of DVT (presence of other risk factors) after ischaemic ACVA with motor deficit in the lower limbs and low risk of extracranial bleeding, in those patients for whom intracranial bleeding and neoplasm have been excluded and the risk-benefit ratio is positive, the use of LMWH as prophylaxis of VTD in the first two weeks following the ACVA is recommended (Evidence: A).
- The use of physical measures is not useful as prophylaxis of DVT in patients with ACVA (Evidence: B).
- The expert panel recommended prophylaxis with LMWH in all patients with ACVA during the period of hospitalization. (Evidence: Consensus).

Lower Limb Paralysis As A Sequela of ACVA

- Prophylaxis with LMWH is recommended if an association with a high risk factor is present. Both heparin or physical measures are recommended when associated with a single clinical circumstance or more than three minor risk factors (Evidence: Consensus).

Inflammatory Bowel Disease (IBD)

- There is no evidence to confirm or reject the risk of DVT in presence of inflammatory bowel disease.

Chronic Obstructive Pulmonary Disease (COPD)

- Prophylaxis with 40 mg/sc/day of enoxaparin is justified during admission in the lower-bleeding risk group in which the risk-benefit ratio allows it (Evidence: B).
- Prophylaxis with LMWH is recommended in all patients admitted for COPD while bedridden, or in COPD patients with some other clinical circumstance or major risk factor. When COPD is combined with between one to three minor factors, physical means or LMWH can be used (Evidence: Consensus).

Chronic Liver Disease

- No studies evaluating the possible association between chronic liver disease and DVT were identified.

Acute Myocardial Infarction (AMI)

- Treatment with heparin reduces the risk of VTD in AMI (Evidence A).
- In patients undergoing anti-aggregation treatment with ASA, adding anticoagulation is not justified to avoid VTD, since it does not produce any noticeable preventive effect (Evidence A).
- The expert panel recommends prophylaxis with LMWH in all patients hospitalized with AMI (Evidence: Consensus).

Severe Acute Infection

- Prophylactic treatment with low doses of non-fractionated heparin (NFH) in patients admitted with acute infection is not useful in reducing mortality due to fatal pulmonary thromboembolism (PTE) (Evidence: A).
- Prophylaxis with enoxaparin at doses of 40 mg/sc/day during the period of hospitalization should reduce the incidence of VTD in 1 of 10 patients with acute infection, at a cost of a 2% incidence of mild bleeding. Thus, prophylaxis is justified if the risk-benefit ratio concurs. (Evidence: B).
- Prophylaxis with LMWH is recommended in patients hospitalized with acute infection for as long as they are bedridden. In non-bedridden patients, LMWH is recommended for those over 60 years of age with another associated risk factor, and in those under 60 years of age if there is another comorbidity. Physical means or LMWH may be used when the only risk factor associated with the infection is age or obesity. (Evidence: Consensus).

Heart Failure

- Prophylaxis with enoxaparin at doses of 40 mg/sc/day during the period of hospitalization should reduce the incidence of VTD in 1 out of 10 patients with New York Heart Association (NYHA) class III or IV congestive heart failure (CHF), at a cost of a 2% incidence of mild bleeding. Thus, prophylaxis is justified if the risk-benefit ratio concurs. (Evidence: B).
- Prophylaxis with LMWH is recommended in patients hospitalized with CHF for as long as they are bedridden. In non-bedridden patients, LMWH is recommended for those over 60 years of age with another associated risk factor, and in those under 60 years of age if there is another co-morbidity. Physical means or LMWH may be used when the only risk factor associated is age or obesity. (Evidence: Consensus).

Nephrotic Syndrome and Chronic Renal Failure (CRF)

- Prophylaxis with enoxaparin at doses of 40 mg/sc/day is justified if the risk-benefit ratio concurs. (Evidence: D).
- Prophylaxis with LMWH is recommended in patients hospitalized with nephropathy for as long as they are bedridden. In non-bedridden patients, LMWH is recommended for those over 60 years of age with another associated risk factor, and in those under 60 years of age, if there is another comorbidity. Physical means or LMWH may be used when the only risk factor associated with the infection is age or obesity. (Evidence: Consensus).

Neoplasm

- Prophylaxis of VTD is not justified in most cancer patients (Evidence: B).
- In cancer patients with previous VTD, chemotherapy or CVC, prophylaxis with dicoumarinics or LMWH for periods of 3 to 6 months is justified. (Evidence: B).
- The panel recommended prophylaxis with LMWH in cancer patients with chemotherapy and CVC or another risk factor. In patients not on chemotherapy, the panel recommends LMWH if the patient is bedridden or if there is a combination of clinical circumstances or risk factors. In the other cases, if prophylaxis is not carried out with LMWH, physical measures are recommended (Evidence: Consensus).

Major Nonsurgical Trauma

- Prophylaxis with LMWH at doses equivalent to 5,000 IU/sc/day during the period of immobilization of the injured lower limb is justified (Evidence: B).

Prior Deep Vein Thrombosis (DVT)

- Given the low incidence of VTD in patients with prior DVT, the risk-benefit ratio excludes prophylaxis with anticoagulants (Evidence: C).
- Elastic compressive stockings are an adequate option (Evidence: C).

Thrombophilia

- In subjects with thrombophilia, prophylaxis of DVT must be given in all risk situations in the same way as a subject without this trait (Evidence: A).
- When a personal history of VTD is presented, exposure to another concurrent risk factor requires prophylaxis with LMWH while the exposure exists. (Evidence: C).
- Prevention of recurrence must be performed after an event of VTD with oral anticoagulants in periods of between 1 and 3 years in patients with deficit of protein C, protein S, or antithrombin III, and continuously in those with antiphospholipid syndrome (Evidence: C).

Varicose Veins

- Given the low incidence of VTD in patients with varicose veins after a prior DVT, the risk-benefit ratio excludes the indication of prophylactic treatment (Evidence: C).

Definitions:

Recommendation Grade

A. High
B. Middle
C. Low
D. Unknown

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of evidence supporting each recommendation is not specifically stated.

Different guidelines and consensus documents were analyzed, as well as structured reviews and meta-analyses (MA). In particular, prospective series,

case-control studies, and the control arms of the randomized clinical trials (RCT) were chosen for quantifying risks. As far as the prevention effect is concerned, RCT and meta-analyses were selected.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

- Appropriate use of prophylaxis for prevention of thromboembolic venous disease in medical patients
- Reduction in mortality from deep vein thromboses and pulmonary embolisms
- Relative risk reductions of fifty-six percent of deep vein thromboses and fifty-two percent of pulmonary embolisms are possible with the use of heparins.

POTENTIAL HARMS

Low Molecular Weight Heparins

Cautions

- All the heparins may induce thrombocytopenia. Appearance of this adverse effect should be monitored by regular platelet counts. Treatment should be discontinued immediately if the patient presents a platelet count of under 100,000/mm^3.
- Low molecular weight heparin (LMWH) should be administered with caution in the following situations:
    - Severe hepatic failure
    - Severe renal failure
    - Uncontrolled arterial hypertension
    - Hypertensive or diabetic retinopathy

Pharmacologic Interactions

LMWH should be administered with caution in patients who are treated with drugs that act on the hemostasis such as:

- Acetylsalicylic acid and other anti-platelet drugs
- Nonsteroidal anti-inflammatory drugs
- Oral anticoagulants
- Dextrans
- Thrombolytics

Adverse Reactions

Adverse reactions are more frequent with prolonged treatments over 3 months. The most characteristic adverse reactions are:

- Frequent (10–25%): hemorrhages and thrombocytopenia (within 1 to 20 days from the onset of treatment) that may be associated with thrombosis

- Occasional (1–9%): allergic disorders: pruritus, urticaria, asthma, rhinitis, fever, anaphylactoid reaction, allergic vasospastic reaction
- Rare (<1%): reaction in the site of injection, erythema, ecchymosis, bruising, cutaneous or subcutaneous necrosis
- Very rare (<1%): osteoporosis and bone fragility with high doses and in prolonged treatments (3 months or more)

Use In Pregnancy

Category B of the U.S. Food and Drug Administration (FDA). Heparins do not cross over the placental barrier. There can be increased risk of maternal hemorrhage when they are administered during the last weeks of pregnancy or in the post-partum period. With the efficacy and safety data available, they are recommended as first choice anticoagulant drug in pregnancy. The anti-factor X activity should be measured in pregnant women treated with LMWH at least once every three months, in order to maintain plasma activity levels between 0.25 and 0.35.

Oral Anticoagulants

Pharmacologic Interactions

Oral anticoagulants interact with multiple drugs. Special caution should be taken in the administration of analgesic and anti-inflammatory drugs, because the possibilities of interaction are numerous: displacement from plasma proteins, anti-platelet effect added to the anticoagulant one, or ulcerogenic effect that may become worse due to blood hypocoagulability.

Adverse Reactions

- Bleeding of different locations (gastrointestinal tract, brain, urogenital tract, uterus, liver, gall bladder, retroperitoneum, eyes, etc.) based on the intensity of the therapy, the age of the patient, and the nature of the baseline disease, but not on the duration of medication.
- Gastrointestinal discomfort (nausea, inappetence), allergic reactions in form of urticaria, dermatitis, and fever as well are irreversible loss of hair have rarely been described with coumarin derivatives.
- Some cases of haemorrhagic cutaneous necrosis generally related with congenital deficit of protein S and hepatic lesions have also been described.

Acetylsalicylic Acid

Pharmacologic Interactions

Acetylsalicylic acid strengthens the effect of acenocoumarol, warfarin, and heparin. The effect of ASA is inhibited by antacids and prednisone. The effect and toxicity of ASA are strengthened by cimetidine, ranitidine, and possibly dipyridamole.

Adverse Reactions

Very rare (<1%): nausea, dyspepsia, vomiting, gastric ulcer, duodenal ulcer, gastrointestinal hemorrhage (melena, hematemesis), urticaria, exanthematic eruptions, angioedema, rhinitis, serious paroxystic bronchial spasms, and dyspnea

Use In Pregnancy

Category C of the FDA. Sufficient studies do not exist to determine exactly the safety of the use of ASA at low doses during pregnancy. The use of this drug is only accepted if safer therapeutic alternatives are lacking.

CONTRAINDICATIONS

CONTRAINDICATIONS

Low Molecular Weight Heparins

Absolute Contraindications

- Allergy to heparin
- Thrombocytopenia in patients with in vitro aggregation to low molecular weight heparin

Relative Contraindications

- Blood dyscrasias, hemophilia
- Uncontrolled hypertension
- Brain, gastrointestinal, genitourinary haemorrhage or other organic lesions prone to bleed
- Active gastroduodenal ulcer
- Acute bacterial endocarditis
- Trauma or recent ocular or central nervous system (CNS) surgery
- Concurrent treatment with ulcerogenic or anti-platelet drugs

Oral Anticoagulants

Absolute Contraindications

- Pregnancy (embryopathies, serious disorders of the CNS, bleeding in newborns)
- Haemorrhagic diathesis
- Serious active haemorrhage or recent intracranial haemorrhage.
- Trauma or recent ocular or CNS surgery
- Difficulty for correct compliance of the therapy that can be attributed to personal or family conditioning (mental or sociocultural level, social withdrawal).

Relative Contraindications

- Recent or imminent surgery, major trauma
- Serious uncontrolled arterial hypertension

- Haemorrhagic retinopathy
- Thrombocytopenia
- Serious renal failure
- Serious hepatic failure
- Previous history of digestive haemorrhage or active peptic ulcer

Acetylsalicylic Acid

Contraindications

- Allergy to salicylates.
- History of bronchospastic reactions (in particular asthmatic patients), rhinitis, or urticaria consecutive to the administration of anti-inflammatory drugs that inhibit prostaglandin synthesis. There is crossed sensitization between the salicylates and other nonsteroidal anti-inflammatory drugs.
- Gastroduodenal ulcer or recent gastrointestinal haemorrhage
- Haemorrhagic disorders, hemophilia, or hypoprothrombinemia

Relative Contraindications

- Chronic asthma: there is a greater risk of bronchospastic hypersensitivity reaction.
- Glucose-6-phosphate dehydrogenase deficiency: at doses greater than 1 g daily, it can produce hemolytic anemia on rare occasions.
- Hepatic failure: given that it is metabolized mostly in the liver, the dose should be adjusted to the degree of its functional incapacity. Furthermore, in hepatic failure, inhibition of platelet aggregation produced by acetylsalicylic acid can increase the risk of bleeding.
- Surgery, including dental extraction: temporary interruption of treatment may be necessary before an intervention to reduce the risk of bleeding. The anti-platelet activity persists between 4 to 8 days after the drug is discontinued.

External Elastic Compression Stockings

Contraindications

- Arterial ischaemia
- Edema secondary to heart failure
- Gangrene of lower limbs

Pressotherapy with Pneumatic Compression Devices

Contraindications

- Deep venous thrombosis (acute phase)
- Varicophlebitis
- Cellulitis
- Heart failure
- Arterial ischaemia

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

It is recommended a local adaptation be made for the institutional use of the guideline, taking into account some points such as the prevalence of the conditions, the barriers to the introduction of the recommendations, the available resources, the patients´ opinions, and current costs from the setting in which the guideline is to be implemented.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

IMPLEMENTATION TOOLS

Foreign Language Translations

For information about availability, see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Staying Healthy

IOM DOMAIN

Effectiveness
Safety

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Alonso Ortiz del Rio C, Medrano Ortega FJ, Romero Alonso A, Villar Conde E, Calderon Sandubete E, Marin Leon I, et al. Prevention of thromboembolic venous disease in medical patients (PRETEMED). Cordoba: Andalusian Society of Internal Medicine (SADEMI); 2003. 111 p. [130 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2003

GUIDELINE DEVELOPER(S)

Andalusian Society of Internal Medicine - Professional Association

SOURCE(S) OF FUNDING

Aventis, Inc.

GUIDELINE COMMITTEE

Venous Thromboembolism Guideline Team

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Coordinator: Ignacio Marin León

Team Members: Carlos Alonso Ortiz del Río; Enrique Calderón Sandubete; Concepción González Becerra; Miguel Ángel González de la Puente; Francisco Javier Medrano Ortega; Manuel Rincón Gómez; Alberto Romero Alonso; Reyes Sanz Amores; José Manuel Santos Lozano; Ernesto De Villar Conde

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

The development and editing of the guideline was sponsored by AVENTIS, Inc. All the authors and panel members have declared that they have no conflicts of interest. Additionally, recommendations were arrived at without the influence of any conflicts of interest between the authors or panel members and any of the sponsors.

ENDORSER(S)

Andalusian Society of Angiology and Vascular Surgery - Medical Specialty Society
Spanish Society of Internal Medicine (SEMI) - Medical Specialty Society
Spanish Society of Thrombosis and Haemostasia - Medical Specialty Society

GUIDELINE STATUS

This is the current release of the guideline.

An update is programmed in three years, or sooner if new relevant evidence appears.

GUIDELINE AVAILABILITY

Electronic copies: Available in both Spanish and English from the Redeguias Web site.

Print copies: To obtain printed copies of the guideline, please contact francisco.carretero@aventis.com

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

None available

NGC STATUS

This NGC summary was completed by ECRI on November 5, 2004. The information was verified by the guideline developer on November 30, 2004. This summary was updated by ECRI on March 6, 2007 following the U.S. Food and Drug Administration (FDA) advisory on Coumadin (warfarin sodium). This summary was updated by ECRI Institute on June 22, 2007 following the U.S. Food and Drug Administration (FDA) advisory on heparin sodium injection. This summary was updated by ECRI Institute on September 7, 2007 following the revised U.S. Food and Drug Administration (FDA) advisory on Coumadin (warfarin). This summary was updated by ECRI Institute on March 13, 2008 following the updated FDA advisory on heparin sodium injection.

COPYRIGHT STATEMENT

This NGC summary is based on the original guideline, which is subject to the guideline developer's copyright restrictions.

DISCLAIMER

NGC DISCLAIMER

The National Guideline Clearinghouse™ (NGC) does not develop, produce, approve, or endorse the guidelines represented on this site.

All guidelines summarized by NGC and hosted on our site are produced under the auspices of medical specialty societies, relevant professional associations, public or private organizations, other government agencies, health care organizations or plans, and similar entities.

Guidelines represented on the NGC Web site are submitted by guideline developers, and are screened solely to determine that they meet the NGC Inclusion Criteria which may be found at http://www.guideline.gov/about/inclusion.aspx .

NGC, AHRQ, and its contractor ECRI Institute make no warranties concerning the content or clinical efficacy or effectiveness of the clinical practice guidelines and related materials represented on this site. Moreover, the views and opinions of developers or authors of guidelines represented on this site do not necessarily

state or reflect those of NGC, AHRQ, or its contractor ECRI Institute, and inclusion or hosting of guidelines in NGC may not be used for advertising or commercial endorsement purposes.

Readers with questions regarding guideline content are directed to contact the guideline developer.

© 1998-2008 National Guideline Clearinghouse

Date Modified: 9/22/2008