

## **PROCEDURES FOR THE OUTPATIENT MANAGEMENT OF PATIENTS WITH DEEP VENOUS THROMBOSIS**

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The Haemostasis and Thrombosis Taskforce meet every six months and will review these guidelines if any major developments occur, or by September 2008 at the latest.

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## **PROCEDURES FOR THE OUTPATIENT MANAGEMENT OF DEEP VENOUS THROMBOSIS**

### **Introduction**

Deep venous thrombosis (DVT) has an incidence which most studies place at around 1:1000 patients per year; the incidence increases with age (Carter, 1996). Prior to the development of low molecular weight heparins (LMWH) the traditional management of venous thrombosis involved the treatment of the patient with unfractionated heparin (UFH) on an inpatient basis for a period of several days (Hull, 1986). UFH has most commonly been administered via an intravenous infusion device, with regular laboratory control using an APTT ratio of patient as compared with control plasma. There is consensus that the significant inter-patient and intra-patient variability in heparin dosage requirement results in the APTT being in the therapeutic range in 50% of patients at best at any one time.

The advent over the past few years of LMWH has resulted in a sea-change in the management of venous thrombo-embolism. LMWH's have been demonstrated to be at least as effective, and probably safer, than UFH for the initial management of DVT (Siragusa, 1996)

The introduction of an anticoagulant agent, given once daily with predictable pharmacokinetics – associated with the lack of any requirement for regular blood monitoring – has resulted in a number of local initiatives to develop outpatient therapy for patients presenting with DVT (Koopman, 1996, Wells, 1998). Given that the previous management of these patients inevitably involved a significant period of hospital admission, these developments have generally been supported by hospital trusts at a time when pressure on hospital beds has been intense. These initiatives also serve to reduce the length of time that these patients need to spend in a doubtless overcrowded accident department (A/E) or medical assessment unit (MAU).

Whilst ambulatory care for DVT will quite clearly be of benefit for a substantial percentage of patients there will be a number of medical conditions and social situations which preclude outpatient therapy in some cases.

Furthermore, the advent of ambulatory therapy for DVT will necessarily involve collaboration between a number of health care agencies, including A/E and MAU's, haematologists, haemostasis nurses, radiology departments, general practitioners and district nurses. Under such circumstances there is potential for confusion unless there are clearly defined lines of responsibility in the management of patients as they progress from diagnosis to outpatient treatment and follow-up.

These guidelines therefore set out to recommend unifying standards for the outpatient management of patients with venous thromboembolism; they should be read in conjunction with task force guidelines on the diagnosis of venous thromboembolism (Haemostasis and Thrombosis Task Force, 2003) and the management of oral anticoagulation (Haemostasis and Thrombosis Task Force, 1998).

### **Target patient group**

Patients with clinically suspected DVT who would be suitable for outpatient management.

### **Evidence Base**

Wherever possible, recommendations in this document are related to formal levels of published evidence (appendix 4)

### **Criteria for outpatient therapy**

Where local arrangements exist, in uncomplicated DVT, LMWH is safe to administer on an outpatient basis. The following are unlikely to be suitable for outpatient treatment:

- Patients with co-existent serious medical pathology
- Severe acute venous obstruction (phlegmasia cerulea dolens)
- Patients in significant pain
- Significant renal impairment (creatinine in excess of 200 micromol/L)
- Known heparin allergy or heparin-associated thrombocytopenia
- Suspected problems with adherence to treatment
- Communication problems (deafness, language difficulties, lack of home telephone)
- Poor social circumstances
- Patients with limited mobility
- Patients with active bleeding
- Patients at significant risk of bleeding:
  - Active peptic ulceration
  - Liver disease (PT > 2 sec beyond normal range)
  - Uncontrolled hypertension (diastolic > 110 mm Hg, systolic > 200 mm Hg)
  - Angiodysplasia
  - Recent eye or CNS surgery (within one month)
  - Recent haemorrhagic stroke (within one month)
  - Thrombocytopenia (platelet count below 100 x 10<sup>9</sup>/L)

### **Pregnancy**

It should be noted that pregnant women were excluded from the published trials demonstrating the efficacy of ambulatory care. Furthermore, appropriate LMWH dosing schedules have not been definitively established in pregnancy and there is also continuing debate about the need for monitoring of LMWH by an anti-Xa assay during pregnancy.

Nevertheless, despite the lack of published evidence, it is reasonable to treat pregnant patients with DVT with LMWH on an outpatient basis.

### **Integrated care pathway**

There must be an integrated care pathway, with clearly defined lines of responsibility, for the management of such patients (Appendix 1 and 2). This will usually involve two separate processes:

**Diagnosis:** Whilst this traditionally falls under the responsibility of A/E departments or MAU's an as yet relatively small number of Haematology departments have taken on this function. Where this latter situation applies, this must be clearly articulated in local clinical care pathways and must be accompanied by appropriate staffing and financial resource.

**Treatment:** This will usually fall under the auspices of the Haematology department.

**Whatever the local arrangements, the patient must at all times know who to contact in the event of problems arising .**

The care pathway should be approved by all relevant stakeholders and the local clinical policy board.

### **The diagnostic process**

Updated guidelines on the diagnosis of venous thrombosis have recently been produced by the BCSH. The diagnosis of venous thromboembolism has lately been facilitated by the advent of validated clinical probability scores and second generation D-dimer assays. (Wells, 2000). This may allow the discharge of a subgroup of patients without further radiological investigation.

For an outpatient therapy programme to be effective it is important that there should be no undue delay (which might therefore necessitate admission) in the diagnosis of the patient. It is therefore essential that a number of dedicated diagnostic imaging slots should be reserved each day for the diagnosis of patients with DVT who might then be suitable for outpatient care. This will need to be discussed and agreed with local radiologists and appropriately resourced by local management.

Those patients who are considered on clinical grounds as being at high risk of DVT should be treated with therapeutic doses of LMWH pending confirmation of the diagnosis. Appropriate local arrangements will need to be established for out of hours care.

It is not considered good medical practice for the patient to be treated on this presumptive basis for more than 24 hours, as for many patients this would involve unnecessary treatment and an unacceptable degree of risk.

**The diagnosis of DVT, and possible suitability for outpatient care, is usually the responsibility of the on-call medical team/accident department, depending on local arrangements. Where by local agreement the haematology department does take responsibility for diagnosis this must be clearly articulated in local clinical care pathways and resourced appropriately.**

**The role of the haematology department in the management of these patients usually begins when a patient with objectively confirmed DVT is in the opinion of the assessing doctor suitable for outpatient care.**

**These critical lines of responsibility must be clearly articulated in local clinical care pathways.**

### **Medical assessment**

Local arrangements need to ensure that appropriate arrangements are in place for the patient to receive a comprehensive medical review at diagnosis, particularly in regard to :

- Would the patient be suitable for outpatient therapy?
- Is there any evidence of limb ischaemia?
- Are there any associated pathologies – cancer, polycythaemia etc?
- Will medical follow-up as an outpatient be required?

### **Analgesia**

The attending medical team should issue the patient with appropriate analgesia. Non-steroidal anti-inflammatory agents and aspirin containing medications should be avoided.

### **Support stockings**

The post thrombotic syndrome will affect at least 30% of patients after 8 years ( Prandoni, 1996). Arrangements should be made for the patient to receive appropriately fitting grade II compression stockings which significantly reduce the incidence of the post-thrombotic syndrome (Brandjes, 1997 – grade A recommendation, level 1B). This may best be carried out a few days after the thrombotic event, once the swelling in the affected leg has begun to reduce. The patient should then be educated in the importance of wearing the stockings for at least two years and given advice about appropriate exercise and limb elevation.

### **Possible models of ambulant care**

In practice, there are several potential models of care for the patient with DVT receiving outpatient treatment:

- Daily attendance at Haematology department/MAU/A and E
- Domiciliary care, administered by outreach haemostasis nurses
- Domiciliary care, administered by district nurses and general practitioners
- Domiciliary care, with injection of LMWH by patient or relative

Each of these systems has been shown to be a practical way of delivering effective care.

Appropriate training programmes and competency assessments must be established for patients administering their own treatment.

### **The role of the haemostasis nurse specialist**

Outpatient management care programmes for DVT are greatly facilitated by the appointment of a haemostasis nurse specialist who will act as a critical co-ordinator, liaising with the various departments involved in the care of the patient and carrying out the following functions:

- Administration of outpatient care programme
- Commencement and control of anticoagulant therapy
- Monitoring for signs of thrombus extension or PE
- Liaison with community agencies and general practitioners
- Patient information and education

## Starting anticoagulant treatment

Anticoagulation is the standard treatment for venous thromboembolism. Subcutaneous daily LMWH should be used for DVT. At this time it is agreed that no significant differences in clinical effectiveness have been established between the different preparations of LMWH. Whatever LMWH is chosen for local use it must carry a full product licence. Monitoring the APTT is unnecessary. Baseline bloods for platelet count, PT, APTT, renal and liver function should be taken.

Warfarin is started as soon as the diagnosis is made and should be given after the first injection of LMWH. Patients with previous allergy or resistance to warfarin should be treated with acenocoumarol or phenindione. Warfarin is teratogenic and must be avoided during the first trimester of pregnancy. There may be rare occasions where a pregnant patient may require warfarin during the second trimester but this should only be given in close collaboration with a consultant haematologist.

LMWH should be administered for at least five days or until the INR has been in the therapeutic range for two successive days, whichever is the longer (grade C recommendation, level IV). This is because the INR in the early stages of warfarinisation is raised due to low levels of factor VII, but full anticoagulation is not achieved until the other vitamin K dependent clotting factors (II, IX and X) become depressed. This usually takes 3-5 days. A full blood count should be arranged after 5 days on LMWH – and throughout the period of LMWH treatment - to exclude the possibility of heparin related thrombocytopenia. Patients with previous exposure to heparin within the past 100 days should also have a platelet count performed before the second dose of heparin.

Oral anticoagulant treatment should be given according to thrombosis task force guidelines (Haemostasis and Thrombosis Task Force, 1998). A baseline INR should be carried out. The initiation of oral anticoagulant treatment may be carried out according to a nomogram (grade B recommendation, level IIB), an example of which is given as appendix 3. In most circumstances, the INR will need to be checked daily until the therapeutic range (usually 2-3) is achieved. Beware of potential interactions (particularly amiodarone, tamoxifen, macrolide antibiotics and NSAID's). A lower initial dose will usually be required in the following circumstances:

- elderly (over 70)
- liver disease
- alcohol abuse
- body weight <50kg
- congestive heart failure

## Duration and intensity of anticoagulant therapy

The duration and intensity of oral anticoagulant treatment are determined by the clinical aspects of the individual case. General principles are set out in the relevant Haemostasis and Thrombosis Task Force guidelines:

- Guidelines on anticoagulant treatment (1998)
- Guidelines on investigation and management of heritable thrombophilia (2001)
- Guidelines for the investigation and management of the antiphospholipid syndrome (2000)

## **Outpatient therapy of pulmonary embolism**

Pulmonary embolism carries a higher mortality than deep venous thrombosis. Whilst many patients will require hospital admission there is a subgroup of patients who present with peripheral PE (pleuritic chest pain and/or haemoptysis) who can safely be treated on an outpatient basis (Wells, 1998).

## **Patient education**

The patient and family should be fully informed and educated prior to being discharged on an ambulatory care programme; verbal information should be supplemented by appropriate patient leaflets.

## **Lines of responsibility**

### **Diagnostic team:**

- Investigation of possible venous thromboembolism
- Provision of appropriate analgesia
- Assessment of patients with confirmed DVT for outpatient care
- Assessment of requirement for medical outpatient follow-up
- Investigation of possible DVT recurrence
- Formal medical assessment for associated pathology
- Liaison with general practitioners

### **Treatment team:**

- Administration of outpatient care programme
- Liaison with community agencies and general practitioners
- Provision of appropriate support stockings
- Patient information and education
- Thrombophilia testing where appropriate
- Commencement and control of anticoagulant therapy
- Daily assessment for signs of thrombus extension or PE

### **Clinical governance – Audit**

Ambulatory care programmes should be administered in accordance with clinical governance frameworks and should be monitored by regular clinical audit with the results being made available to relevant stakeholders.

Areas of relevant audit activity would include:

- Percentage of DVT patients on outpatient therapy
- Resource – bed days, finance etc - saved by use of outpatient DVT care
- Time from clinical presentation to diagnosis of DVT
- Use of support stockings

## **Medical notes**

Both the diagnostic and treatment processes must be clearly recorded in the patient's formal hospital record and be readily accessible.

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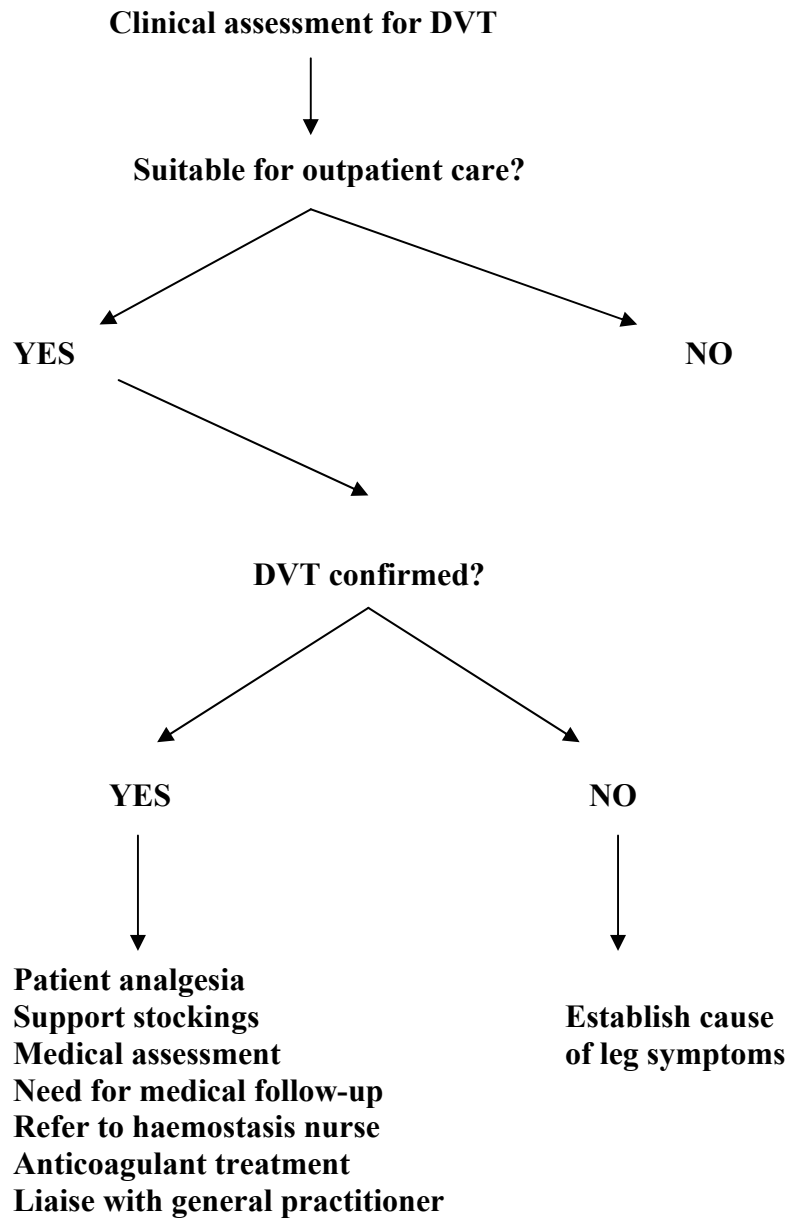
**Recommended review date**

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**CLINICAL CARE PATHWAY FOR DVT OUTPATIENT MANAGEMENT**



## Appendix 3

### Warfarin loading schedule

Warfarin dosing			Warfarin dosing continued			
Day	INR	Dose mg	Day	INR	Dose mg	
<b>1</b>	< 1.4	10	<b>4</b>	< 1.4	**	** Refer to Haematology Department for advice
				1.4	8	
<b>2</b>	< 1.8	10 (or 5 as above)		1.5	7 & 8 alt days	
	> 1.8	**		1.6 – 1.7	7	
<b>3</b>	< 2.0	10		1.8	6 & 7 alt days	
	2.0 – 2.3	5		1.9	6	
	2.4 – 2.7	4		2.0 – 2.1	5 & 7 alt days	
	2.8 – 3.1	3		2.2 – 2.3	5	
	3.2 – 3.4	2		2.4 – 2.6	4 & 5 alt days	
	3.5 – 4.0	1		2.7 – 3.0	4	
	> 4.0	**		3.1 – 3.5	3 & 4 alt days	
			3.6 – 4.0	3		
			4.1 – 4.5	miss 1 day then 2 mg		
			> 4.5	**		
			<b>5 onward</b>		As per day 4	Monitor INR daily until in range and stable. Continue heparin for at least 5 days and stop only when INR in therapeutic range.

## Appendix 4

### Levels of published evidence

Recommendation	Description
Grade A (Evidence levels Ia,Ib)	Requires at least one randomised controlled trial as part of the body of literature of overall good quality and consistency addressing the specific recommendation
Grade B (Evidence levels IIa,IIb)	Requires availability of well conducted clinical studies but no randomised controlled trials on the topic if recommendation
Grade C (Evidence level IV)	Requires evidence from expert committee reports or opinions and/or clinical experience of respected authorities; indicates absence of directly applicable studies of good quality
Ia	Meta analysis of randomised controlled trials
IIb	At least one randomised controlled trial
IIa	At least one well designed study without randomisation
IIb	At least one well designed quasi-experimental study
III	Well designed non-experimental descriptive studies
IV	Expert committee reports or opinions and/or clinical experience of respected authorities

**LINES OF ACCOUNTABILITY IN THE AMBULATORY CARE OF DVT**

<b>DIAGNOSTIC TEAM</b>	<b>TREATMENT TEAM</b>
<p><b>Investigation of initial DVT/PE</b>  <b>Investigation of recurrent DVT/PE</b>  <b>Patient analgesia</b>  <b>Assessment for ambulatory care</b>  <b>Formal medical assessment</b>  <b>Medical follow-up as indicated</b>  <b>Liaison with GP's</b></p>	<p><b>Administration of ambulatory care</b>  <b>Support stockings</b>  <b>Patient education</b>  <b>Thrombophilia testing</b>  <b>Anticoagulant therapy</b>  <b>Liaison with GP's</b></p>

