



# Management of Patients with Stroke

IV: Rehabilitation, Prevention and  
Management of Complications,  
and Discharge Planning

**A National Clinical Guideline  
recommended for use  
in  
Scotland  
by the  
Scottish Intercollegiate  
Guidelines Network**

**Pilot Edition  
April 1998**



**S I G N**

*Getting validated guidelines into local practice*

The definitions of the types of evidence and the grading of recommendations used in this guideline originate from the US Agency for Health Care Policy and Research<sup>1</sup> and are set out in the following tables.

Level	Type of Evidence
Ia	Evidence obtained from meta-analysis of randomised controlled trials.
Ib	Evidence obtained from at least one randomised controlled trial.
IIa	Evidence obtained from at least one well-designed controlled study without randomisation.
IIb	Evidence obtained from at least one other type of well-designed quasi-experimental study.
III	Evidence obtained from well-designed non-experimental descriptive studies, such as comparative studies, correlation studies and case studies.
IV	Evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities.

Grade	Recommendation
A	Required - at least one randomised controlled trial as part of the body of literature of overall good quality and consistency addressing specific recommendation. (Evidence levels Ia, Ib)
B	Required - availability of well conducted clinical studies but no randomised clinical trials on the topic of recommendation. (Evidence levels IIa, IIb, III)
C	Required - evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities. (Evidence level IV) Indicates absence of directly applicable clinical studies of good quality

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## Notes for users of the guideline

### **Development of local guidelines**

It is expected that this guideline will be adopted after local discussion involving clinical staff and management. The Area Clinical Effectiveness and Audit Committee should be fully involved. Local arrangements may then be made for the derivation of specific local guidelines to implement the national guideline, reflecting local circumstances in individual hospitals, units and practices. Staff groups who may be involved in development and implementation of local guidelines derived from this national guideline are noted in Annex 1. The local guidelines should be discussed with and circulated to all relevant staff, and displayed in all areas where acute strokes are managed.

SIGN consents to the copying of this national guideline for the purpose of producing local guidelines for use in Scotland

### **Statement of intent**

This report is not intended to be construed or to serve as a standard of medical care. Standards of medical care are determined on the basis of all clinical data available for an individual case and are subject to change as scientific knowledge and technology advance and patterns evolve.

These parameters of practice should be considered guidelines only. Adherence to them will not ensure a successful outcome in every case, nor should they be construed as including all proper methods of care or excluding other acceptable methods of care aimed at the same results. The ultimate judgement regarding a particular clinical procedure or treatment plan must be made by the doctor in light of the clinical data presented by the patient and the diagnostic and treatment options available.

Significant departures from the national guideline as expressed in the local guideline should be fully documented and the reasons for the differences explained. Significant departures from the local guideline should be fully documented in the patient's case notes at the time the relevant decision is taken.

A background paper on the legal implications of guidelines, prepared by Dr Pamela Abernethy of Simpson & Marwick W.S., is available from the SIGN secretariat.

### **Review of the guideline**

This guideline was issued in April 1998 and will be reviewed in 2000. Comments are invited to assist the review process. All correspondence and requests for background information regarding the guideline should be sent to:

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# Summary of recommendations

Grade

## *Rehabilitation following acute stroke*

- ⟨ Acute inpatient care for patients with major stroke should be organised as a **multidisciplinary stroke service based in designated units.** **A**
- ⟨ Rehabilitation should be started as soon as the patient's condition permits. **B**
- ⟨ **Rehabilitation aims**, with short and long term rehabilitation objectives, should be established and agreed by all parties including the patient and carers. **C**

## *Information provision*

- ⟨ **An identified member of the team** should be responsible for providing information about the nature of the stroke, stroke management, rehabilitation and expectations of outcome to the patient and carer, with full discussion of their roles in the rehabilitation process. **A**
- ⟨ All information given to patients and carers should be **documented** to preclude passing conflicting information from different team members. **A**
- ⟨ Information should be presented both **verbally and in written form** to the patient and family or carers. **B**

## *Continuing assessment and review*

- ⟨ **Assessment should be ongoing**, taking account of the patient's changing needs and environment. **C**
- ⟨ **Post discharge review** should be arranged for 2-3 months after discharge. The date and location of such review should be agreed and documented prior to discharge. **C**

## *The role of the multidisciplinary team*

- ⟨ **Targets** should be set for referral and assessment for each profession within the multidisciplinary team. **C**
- ⟨ Hospital-based rehabilitation should be carried out by a **specialist multidisciplinary team**, co-ordinated by a **consultant with a specific interest in stroke.** **B**
- ⟨ Stroke services should ensure an adequate level of **nursing staff** with appropriate specialist training. **C**

- ⟨ Nurses should expand the realm of care to include family and carers of stroke patients, to ensure that they receive information in an easily understood format. **C**
- ⟨ **Physiotherapy** should aim to promote recovery of motor control, independence in functional tasks, optimise sensory stimulation, and prevent secondary complications such as soft tissue shortening and chest infections. **C**
- ⟨ The broad role of **occupational therapy** in the rehabilitation of stroke patients should be recognised. Early referral for assessment is appropriate. **C**
- ⟨ All patients with a communication problem resulting from stroke should be referred for **speech and language therapy** assessment and treatment. **A**
- ⟨ Intensive speech and language therapy should be initiated as soon as the patient's condition is stable and may require to be continued over the long term. **B**
- ⟨ Where intelligible speech is not a reasonable goal, the speech and language therapist should augment speech attempts and enable communication through means other than spoken language. **B**

### *Prevention and management of complications of acute stroke*

- ⟨ Each hospital should have a guideline for **swallowing assessment**. **B**
- ⟨ **Urinary catheters** should be used with caution and alternative methods for the management of continence explored. **C**
- ⟨ All those involved in moving stroke patients should receive training in **moving and handling of the upper limb**. **C**
- ⟨ **Low dose heparin** may be used for **thromboprophylaxis** in stroke patients considered at risk from DVT and PTE. **B**
- ⟨ **External compression stockings** should be used where heparin is contraindicated. **B**
- ⟨ The benefits of treatment of established DVT and PTE with heparin and warfarin should be considered against risk of using these agents in both ischaemic stroke and primary intracerebral haemorrhage. **A**
- ⟨ Awareness of the possibility of **depression** should lead to prompt evaluation and treatment. **B**

### *Discharge planning*

- ⟨ There should be an explicit discharge policy for stroke patients to identify future needs. **C**

# 1 Introduction

- 1.1 The natural course in the aftermath of a stroke, whether ischaemic infarct or intracerebral haemorrhage, is highly variable. Immediate mortality is high and approximately 19% of cases will be dead within the first 30 days.<sup>2</sup> For hospitalised patients, the Scottish average 30-day mortality is 28%.<sup>3</sup>

For those who survive, the recovery of neurological impairment takes place over a variable time span. About 30% of survivors will be fully independent within three weeks and by six months nearly 50% will be independent.<sup>4</sup>

- 1.2 For stroke patients who do not make an immediate recovery, the first three months are critical and the greatest recovery is thought to occur during this period,<sup>5</sup> but for patients with aphasia, therapy commenced after this period has also been shown to be effective, provided it is given in sufficient quantity and frequency.<sup>6-8</sup> Rehabilitation provides the main form of intervention to assist patients through the recovery phase. Rehabilitation may be defined as the restoration of optimal levels of physical, psychological, functional and social ability within the needs and desires of the individual and his or her family.<sup>9</sup>

As the pattern of disability will vary, a range of services is required to tailor a rehabilitation programme for each patient. Depending upon the disability which is identified, inputs may be required from physiotherapy, occupational therapy, speech and language therapy, nursing, medical staff and others. These individual services are available to some extent in the community and also within hospitals where provisions are made for treatment on both an in- and out- patient basis.

- 1.3 Medical complications can occur at any stage during the recovery phase and may affect 60% of hospitalised patients.<sup>10</sup> In about two-thirds of cases the complications may be multiple. Death in the first week after stroke is predominantly related to the stroke itself. Deaths after the first week have been found to be related to complications such as those secondary to immobility.<sup>11</sup>

- 1.4 The high mortality associated with stroke either in the early or later phases indicates the importance of giving consideration to the needs of stroke patients and their carers in this situation. These needs will be the same as those of others facing terminal conditions, e.g. symptomatic care, dignity, privacy and support for relatives.<sup>12</sup>

- 1.5 For those who require a period of rehabilitation the stage is reached when the necessity for intervention ceases and discharge from therapy is warranted. A planned discharge is important so needs are identified and a co-ordinated care plan established for the future.

## 2 Aim of the guideline

- 2.1 The aim of this national guideline is to assist individual clinicians, primary care teams, hospital departments and hospitals to produce local guidelines for:
- (a) rehabilitation strategy for those with a residual disability immediately post-stroke
  - (b) prevention and management of complications following a stroke
  - (c) co-ordination of discharge planning following the completion of a rehabilitation programme or when the patient is being discharged from hospital.

- 2.2 Rehabilitation can occur in a variety of settings: in the home, utilising community based rehabilitation services, hospital outpatient clinics, and inpatient care. Most of the evidence available relates to hospital practice, but the principles apply also to community-based rehabilitation. The guideline is presented in a format which would allow these principles of care to be applied in primary care, hospital-based and shared-care settings.

The management of an individual patient will be influenced by the cause, type and severity of the stroke, the presence of co-existing disease and the patient's social environment.

- 2.3 This guideline is the fourth in the series of four SIGN guidelines to assist in the delivery of good quality clinical care following an acute stroke:

- I** Assessment, investigation, immediate management, and secondary prevention
- II** Management of carotid stenosis and carotid endarterectomy
- III** Identification and management of dysphagia
- IV** Rehabilitation, prevention and management of complications, and discharge planning.

## 3 Rehabilitation following acute stroke

### 3.1 Timing of rehabilitation

Evidence from clinical trials suggests that early rehabilitation intervention leads to improved physical and functional outcomes.<sup>13-16</sup> The amount of therapy which should be provided to effect improvement has not been clearly established and clinical judgement based upon regular re-assessment currently forms the basis of clinical practice.<sup>17-19</sup>

The first three months following stroke are seen to be the most critical period when greatest recovery is thought to occur.<sup>5</sup> However, benefits may accrue from late intervention with therapy following a stroke.<sup>20,21</sup>

***Rehabilitation should be started as soon as the patient's condition permits***

*Grade B, extrapolated from evidence level Ib*<sup>14</sup>

### 3.2 Initial rehabilitation setting

It is likely that stroke patients with a more severe disability will be admitted to hospital for rehabilitation but this is not necessarily the case. The availability of a home-care service for management of acute stroke was not shown to influence hospital admission rates nor improve outcome at six months.<sup>22</sup>

#### 3.2.1 Home or hospital?

There is no other evidence at present relating to the initial rehabilitation setting, but a trial is in progress.

#### 3.2.2 General ward or specialist unit?

The pattern of care for stroke patients admitted to hospitals is varied. Following the acute phase they may remain in acute medical wards or transfer to specialist rehabilitation units, stroke or geriatric medicine rehabilitation units, or community hospitals. An overview of stroke units compared with management on general wards has shown that there is an improved outcome following admission to hospital with a reduction in risk of death, dependency and long term care in an institution at one year.<sup>23</sup> The principal feature common to such stroke units is that care is co-ordinated by a multidisciplinary team of professional staff interested and knowledgeable about stroke.

***Acute inpatient care for patients with major stroke should be organised as a multidisciplinary stroke service based in designated units***

*Grade A, level Ia*<sup>23</sup>

### 3.3 **Rehabilitation planning and information sharing**

The principles on which a multidisciplinary team works are based on professional standards and observation of clinical practice. Thus it has been noted that managed care plans ensure the delivery of a defined quality of care with great reliability.<sup>24,25</sup>

Incorporating patients and relatives, using goal setting and judgement are essential components of a rehabilitation team's activities.<sup>26</sup> In addition to benefits to stroke care-givers, the combination of care-giver education and counselling results in improved patient adjustment.<sup>27</sup>

*An identified member of the team should be responsible for providing information about the nature of the stroke, stroke management, rehabilitation and expectations of outcome to the patient and carer, with full discussion of their roles in the rehabilitation process*

*All information given to patients and carers should be documented to preclude passing conflicting information from different team members*

*Grade A, level Ib*<sup>27</sup>

*Information should be presented both verbally and in written form to the patient and family or carers*

*Grade B, level III*

*Rehabilitation aims, with short and long term rehabilitation objectives, should be established and agreed by all parties including the patient and carers*

*Grade C*

### 3.4 **Continuing assessment**

Continuing assessment is integral to the rehabilitation process, addressing both primary and secondary problems.<sup>28</sup> No method has been found accurately to predict outcome for an individual patient.<sup>18,29</sup> Factors which may indicate a poorer prognosis include urinary incontinence, age, and arm function.<sup>4</sup>

*Assessment should be ongoing, taking account of the patient's changing needs and environment*

*Grade C*

### 3.5 **Duration of rehabilitation**

Rehabilitation should continue when required following discharge home from hospital, although there is conflicting evidence of the advantages of different rehabilitation services following hospital discharge. Domiciliary therapy and attendance at day hospital are associated with further functional improvements.<sup>30</sup> Home-care services have been shown to lead to reduced hospital stay and improvement in long term outcome.<sup>31,32</sup>

Further rehabilitation after an initial phase can also bring about improvements even one year after a stroke and can prevent deterioration.<sup>20, 33-36</sup>

***Post discharge review should be arranged for 2-3 months after discharge to identify patients in whom further multidisciplinary intervention would be beneficial***

***The date and location of such review should be agreed and documented prior to discharge***

*Grade C*

## 4 The role of the multidisciplinary team

Stroke rehabilitation is fundamentally a multidisciplinary process, with a variety of professional therapy staff contributing to the overall management of patients. The multidisciplinary team will most often comprise doctors, nurses, physiotherapists, occupational therapists and speech and language therapists. However, where resources permit, clinical psychologists, dietitians, social workers, pharmacists and other professionals may be included. Within this framework, individual recommendations for the contribution of each discipline, based upon clinical trial evidence and the professional standards of each profession, can be highlighted.

***Targets should be set for referral and assessment for each profession within the multidisciplinary team***

*Grade C*

### 4.1 Education and training

Continuing professional education and the degree of previous experience with this patient group are important elements of stroke care. Each profession within the multidisciplinary team will have its own College or other recommendations regarding training requirements. For example, the Royal College of Speech and Language Therapists professional standards state that the speech and language therapist with specific responsibility for aphasia must have at least three years' experience working with an aphasia caseload fully supported by a senior colleague and must have postgraduate education and training in subjects relating to aphasia.<sup>37</sup>

### 4.2 The role of the doctor

Standards for inpatient care of acute stroke patients are met more often by rehabilitation teams led by consultants with a specific interest in stroke management.<sup>38</sup>

***Hospital-based rehabilitation should be carried out by a specialist multidisciplinary team co-ordinated by a consultant with a specific interest in stroke***

*Grade B, level III*

### 4.3 Nursing

*'Through their handling of the patient, physically, emotionally and socially, nurses can probably do more harm or good than any other profession.'*<sup>39</sup>

The quotation emphasises the pivotal role of the nurse in the rehabilitation team—particularly in terms of communication and liaison between team members, patient and family—and reflects the continuous involvement of the nurse in the patient's management.

***Stroke services should ensure an adequate level of nursing staff with appropriate specialist training***

Grade C<sup>40</sup>

Rehabilitation of stroke patients that takes place in stroke units is generally considered to be advanced in terms of nursing developments such as primary and team nursing, the use of nursing models and the evaluation of care. Rehabilitation of stroke patients lends itself to primary nursing since patients are in hospital long enough to form a relationship with a particular nurse and for the quality of care they receive to have some impact. Nurses also have responsibility for detection of complications which may compromise the patient's recovery.<sup>41</sup>

***Nurses should expand the realm of care to include the families and carers of stroke patients, to ensure that they receive information in an easily understood format***

Grade C<sup>42</sup>

#### 4.4 **Physiotherapy**

The initial physiotherapy assessment forms the basis of treatment planning, permitting goals to be set in conjunction with the patient, carer and other members of the multidisciplinary team. The assessment allows the selection of the most appropriate intervention strategies to resolve problems and achieve goals.<sup>43</sup>

Physiotherapists do not expect all stroke patients to regain functional movement of the hemiplegic side. However, most therapists will usually attempt to promote movement before promoting a compensatory approach to recovery for newly diagnosed stroke patients. The physiotherapist should aim to promote recovery of motor control, independence in functional tasks, optimise sensory stimulation, and prevent secondary complications such as soft tissue shortening and chest infections.

Therapist-induced mobilisation of the shoulder has been shown to be less pain inducing than mechanical means.<sup>44</sup>

***All staff involved in rehabilitation should be trained by a named senior physiotherapist or occupational therapist in techniques of handling and positioning to prevent the onset of painful shoulder***

Grade C

#### 4.5 **Occupational therapy**

Occupational therapy uses activity to enhance function, re-educate in home, leisure and vocational activities, and improve function of the upper limb.<sup>45,46</sup> A neurological, functional, perceptive and cognitive assessment is essential for effective treatment planning and therapeutic intervention.

***The broad role of occupational therapy in the rehabilitation of stroke patients should be recognised. Early referral for assessment is appropriate***

*Grade C*

When rehabilitation occurs in the hospital setting, a functional assessment within the patient's own home environment is of benefit.<sup>47,48</sup> A collaborative approach between hospital-based occupational therapists and social services occupational therapy services may also provide benefit.<sup>34</sup> Further studies to address this are in progress.

#### **4.6 Speech and language therapy**

Speech and language treatment is aimed at maximising communication and reducing linguistic or motor speech difficulties resulting from stroke. Dysphasic patients receiving treatment have been shown to make significantly more improvement than untreated patients.<sup>49,50</sup> Family therapy involving aphasic patients and other family members improves knowledge of the aphasic handicap and reduces depression and emotional and social isolation in patients.<sup>51-53</sup>

The efficacy of treatment for dysarthria has rarely been addressed, but benefits of early intervention are indicated.<sup>54,55</sup>

***All patients with a communication problem resulting from stroke should be referred to a speech and language therapist for assessment and treatment***

*Grade A, level Ib*<sup>49</sup>

##### **4.6.1 Timing and duration of treatment**

The response of aphasic patients to speech and language therapy is highly correlated to both early initiation of therapy and the number of treatment sessions received by the patient.<sup>56</sup>

Patients with communication deficits have added psychosocial problems which may adversely affect rehabilitation, which has implications for early involvement of the speech and language therapist.<sup>51</sup> For aphasia in particular, therapy may require to be long term, as the outcome of aphasia intervention is related most closely to intensity and duration.<sup>49,56</sup>

***Intensive treatment directed at communication deficits should be initiated as soon as the patient's condition is stable and may require to be continued over the long term***

*Grade B, level III*<sup>15,49,56</sup>

4.6.2 Alternatives to spoken language include a variety of approaches such as gesture, drawing, communication charts and computerised systems.<sup>57,58</sup>

***Where intelligible speech is not a reasonable goal, the speech and language therapist should augment speech attempts and enable communication through means other than spoken language***

*Grade B, level III*<sup>57,58</sup>

#### 4.6.3 **Dysphagia**

Identification of swallowing problems is an important part of the initial assessment of patients. Swallowing difficulties may be identified safely by nursing staff and junior doctors using a recognised screening test.<sup>59-61</sup> Further assessment may be carried out by a speech and language therapist and, if appropriate, videofluoroscopy or other instrumental examination may be used to verify silent aspiration or to confirm a management plan.

***Each hospital should have a guideline for swallowing assessment***

*Grade B, level III*<sup>59,60</sup>

*For further details, see the SIGN guideline on management of patients with stroke, part III: identification and management of dysphagia.*<sup>62</sup>

#### 4.7 **Other disciplines**

Complex perceptual and cognitive impairments may arise following stroke. These require to be assessed by either a clinical psychologist or occupational therapist depending upon resource availability so that specific management strategies may be implemented.

For discussion of the role of dietetics in managing risk factors relating to dysphagia and in managing the fluid and nutritional needs of stroke patients, including artificial nutritional support, see the SIGN guideline on dysphagia.<sup>62</sup>

The involvement of other professional disciplines and voluntary agencies, e.g. Chest, Heart & Stroke Scotland should be sought where indicated. Referral to such voluntary agencies should be made via the member of the multidisciplinary team responsible for coordinating rehabilitation when the appropriate stage in rehabilitation has been reached.

## 5 Complications of acute stroke

### 5.1 Introduction

Complications commonly occur in the recovery phase from acute stroke. The incidence rate varies with case mix and the complications examined – rates of 40 to 96% for total complications have been reported.<sup>63-66</sup> The majority of cases of death after the first week following a stroke are related to complications which may be associated with immobility, such as chest infection or pulmonary embolism, although death may be due to other vascular events – either cerebral or cardiac.<sup>2</sup>

Complications not only contribute to post-stroke death, but also hinder rehabilitation and, for those in hospital, may contribute to increased length of stay. Early detection and effective treatment of complications has been claimed to be one reason why management in stroke units is associated with a reduced length of stay compared with general wards.<sup>67</sup>

### 5.2 Prevention and treatment of complications

The table below indicates the most common complications which have been found to occur in a hospital-based population:<sup>10</sup>

Complication	Frequency
<i>Falls</i>	22%
<i>Pressure sores</i>	18%
<i>Urinary Tract Infection</i>	16%
<i>Chest Infection</i>	12%
<i>Depression</i>	5%
<i>Confusion</i>	5%
<i>Painful shoulder</i>	4%
<i>Epileptic seizure</i>	4%
<i>DVT</i>	3%
<i>Pulmonary embolism</i>	1%

The extent to which these complications can be prevented or reduced is not known. The strategies discussed below are supported by clinical consensus and, as such, it would be expected that local standards of care for stroke patients should incorporate these. Prevention and management of complications will be enhanced by development of local guidelines.

*Note: treatment of many of these complications is not specific to stroke, but related to normal management of that condition, e.g. treatment of urinary or chest infection. Specific recommendations for treatment of complications are therefore made only where particular evidence relates to its management in stroke patients.*

### 5.3 Urinary tract infection

Urinary tract infection following stroke is associated with incontinence and incomplete bladder voiding,<sup>68</sup> and with the use of indwelling catheters for management of incontinence or urinary retention.

***Urinary catheters should be used with caution and alternative methods for the management of incontinence explored***

Grade C

### 5.4 Chest infection

This complication is a common cause of death in the first few weeks following a stroke.<sup>69</sup> It is associated with immobility, poor cough reflex, and dysphagia.<sup>70</sup> Detection of swallowing problems and aspiration is seen as a significant contributory factor in prevention of pneumonia. (See SIGN guideline on identification and management of dysphagia.<sup>62</sup>) Management of posture and early mobilisation also form part of preventive care.

### 5.5 Painful shoulder

The reported frequency of this complication varies from 16-72%, although the time period studied and definitions used may be factors in this.<sup>71,72</sup> Prevention is based upon ensuring correct moving and handling, and avoidance of trauma to the upper limb by all those involved, including the patient, family and multidisciplinary team members. Other techniques for prevention have been described but their value not fully evaluated.<sup>73</sup>

In addition to pain relief treatment, techniques facilitating normal movement and tone appear to be beneficial if a painful shoulder has developed.<sup>74</sup>

***All those involved in moving stroke patients should receive training in moving and handling of the upper limb***

Grade C

### 5.6 Deep venous thrombosis and pulmonary thromboembolism

Deep vein thrombosis (DVT) and pulmonary thromboembolism (PTE) are common after stroke.<sup>75,76</sup> The peak incidence is in the first week after stroke but the risk of venous thromboembolism persists thereafter. The risk is highest in those who have limb paralysis and are non-ambulatory.<sup>77,78</sup>

### 5.6.1 Prevention

Methods of DVT prophylaxis following ischaemic stroke which have been shown to be effective in reducing both venous thrombosis and pulmonary embolus include low-dose subcutaneous heparin<sup>79-81</sup> and low molecular weight heparinoids.<sup>82, 83</sup> The use of low-dose heparin (5,000 units twice daily) did not affect the frequency of pulmonary embolism in the recent International Stroke Trial (IST), although overall the rate of reported pulmonary thromboembolic events was low in this trial. However, IST did show that the risk of adverse effects, such as significant intracranial and extracranial haemorrhage, was limited by comparison to larger doses of heparin where the risks are such that side effects outweigh any advantages in the reduction of pulmonary embolic events.<sup>84</sup>

Evidence from studies in surgical patients suggests that external compression stockings reduce the risk of DVT and pulmonary embolus, although severe peripheral vascular disease is a contraindication to their use.<sup>85, 86</sup> It has become common practice for external compression stockings to be used in patients with stroke when heparin is contraindicated, either in the acute phase of primary intracerebral haemorrhage or in ischaemic stroke where there are contraindications to the use of anticoagulants, such as peptic ulcer disease. There is no apparent reason why both heparin and stockings should not be used, but there is no evidence for this.

***Low dose heparin (5,000 units twice daily) should be considered for thrombo-prophylaxis in stroke patients considered at risk from DVT and PTE***

*Grade B, level IIa*<sup>74-82</sup>

***External compression stockings should be used where heparin is contraindicated***

*Grade B, level III*<sup>84, 85</sup>

The length of time for which prophylaxis should be used is uncertain. A minimum of two weeks in patients at risk should be considered; longer for those who remain at high risk because of immobility or paralysed lower limbs.

*(See SIGN guideline on prophylaxis of venous thromboembolism.<sup>86</sup>)*

### 5.6.2 Treatment

Treatment of DVT and PTE usually takes the form of intravenous heparin followed by oral anticoagulants. The necessity for intervention should be judged against the risks of introducing anticoagulation in acute intracerebral haemorrhage or following an ischaemic infarct.

***Benefits of treatment of established DVT and PTE with heparin and warfarin should be considered against risk of using these agents in both ischaemic stroke and primary intracerebral haemorrhage***

*Grade A, level Ib*

### 5.7 Depression

Depression is common in stroke patients, occurring in about 25% in the first three months<sup>87</sup> and may have a significant adverse effect upon rehabilitation.<sup>88</sup> Patients with communication difficulties have added psychosocial difficulties with implications for aphasia treatment.

***Awareness of the possibility of depression should lead to prompt evaluation and treatment***

*Grade B, level III<sup>88</sup>*

### 5.8 Ethical dilemmas

Ethical dilemmas may face members of the health care team in the management of complications of stroke, e.g. in relation to hydration, nutrition, or treatment of infections. Management decisions should take into account the views of patients, relatives and members of the multidisciplinary team. It is important that these decisions are communicated to relevant parties, including junior doctors.

## 6 Discharge planning following inpatient rehabilitation

- 6.1 The end result of a rehabilitation programme, whether in hospital or in the community, should be a final assessment to define what level of support an individual may require to enable them to fulfil physical, psychological and social functions whatever their final place of residence, including institutional care. This may require liaison with social workers and community care assessment.

All stroke patients leaving hospital need formal discharge planning due to the high risk of functional regression and physical and psychological problems following discharge. Discharge should be carefully planned and take into account the patient's functional, environmental, psychological and social status.

If there are complex care needs, discussion with the general practitioner and primary care team is essential.

*There should be an explicit discharge policy for stroke patients to identify future needs*

*Grade C*

### 6.2 Countdown to discharge from hospital

Discharge from inpatient care will take place on the decision of the doctors concerned in consultation with the multidisciplinary team. Discharge planning should begin as soon as the patient is medically stable. Figure 1 provides an example of a model for discharge planning which can be adapted to local circumstances.

*Figure 1*

#### **Countdown to discharge**

##### **STAGE I**

*The following should be considered at the earliest possible stage in the patient's recovery:*

- Identification of potential problems**, e.g. living alone
- Projection of expected outcomes**, shared between the different disciplines, clearly documented and shared with the patient and significant others
- Multidisciplinary care plan** with stated long term and short term goals combining medical nursing and rehabilitation care plan with discharge aim

*As soon as there is a firm estimate of functional outcome and normally not less than one week prior to discharge the second state of discharge planning can be entered:*

## STAGE II

- Revised or reaffirmed projection of expected outcomes**, shared with the patient, carers and all staff
- Home assessment** where required, by appropriate team members led by the occupational therapist. Confirm provision of adaptive equipment essential for patient safety
- Alternatives to immediate discharge home** considered (i.e. use of pre-discharge accommodation, short-home stay or placement scheme and nursing home or other)
- Identification of potential discharge date**
- Self-medication ability** confirmed and appropriate training and education given to the patient and/or carers
- Assignment of responsibility for co-ordination of discharge arrangements**, including transport, to a key individual
- Social work involvement** for community, finance and employment needs
- Communication with the community services** via the stroke liaison sister (where available) or other nominated member of the team who should be aware of all identified needs and services and should ensure and document liaison with community nursing services, day centres, rehabilitation services and voluntary support services (e.g. Chest, Heart & Stroke Scotland)

*When the discharge date is confirmed Stage III will be initiated:*

## STAGE III

- Patient, relatives, carers and all team members** (including primary healthcare team) **informed**
- Pharmacy** advised re prescription needs at least 24 hours prior to discharge
- Transport arrangements** should be confirmed. If ambulance service is required this should be arranged according to local guidelines, ensuring time of pick-up, assistance, and direct route if required
- Arrangements should be documented and carers informed**
- The designated co-ordinator to **confirm the availability of community services** and that they are appropriate. A checklist should be used
- If services are required, a **morning discharge** early in the week should be the aim. Discharge should not be on a Friday, weekend or a bank holiday
- Discharge documentation** should be completed\*
- A patient-held discharge record** with contact numbers and services to be provided should be issued. Problems often start after discharge and patients must have adequate information on who to contact if problems occur.

\* See SIGN guideline on the Immediate Discharge Document<sup>89</sup>

6.3 The role of social work departments and health care professionals needs to be clearly defined in terms of provision of:

- < Information about the health of the stroke victim and prospects of recovery
- < Information about the effect of stroke on behaviour and social functioning
- < General information about stroke disease
- < Information about financial aspects (e.g. benefits)
- < Support for carers, (e.g. support groups, respite services)
- < Information on services available from health and social work departments.

There may be a role for a nominated individual, (e.g. community stroke liaison nurse), to support patients and ensure good communication and coordination of services.

#### 6.4 **Ongoing support for disabled stroke patients and their carers**

Knowledge should be available within the health care team of voluntary agencies who may provide ongoing support through voluntary workers and stroke clubs, e.g. Chest, Heart & Stroke Scotland.

A review process to identify problems should be undertaken after a designated period by an identified person, with problems referred to appropriate health or social work professionals to offer support to patients and carers. The contribution from carers is crucial in maintaining many disabled stroke patients in the community and it should be recognised that the carers may require additional support or periods of respite.

A variety of problems may arise in the long term, e.g. epilepsy, central post stroke (thalamic) pain, contractures, depression, failing function. Although there is no evidence that long term follow up or rehabilitation prevents these, the stroke patient should have the opportunity to have such problems assessed by an appropriate member of the specialist multidisciplinary team (*see section 3.5*).

## 7 Implementation of the guideline

Rehabilitation, prevention and management of complications and effective discharge planning may be promoted in the following ways:

### 7.1 Patient-specific reminders

Patient-specific reminders at time of consultation or admission may include proformas in case records; display of tables or flow diagrams in staff rooms, nursing stations, outpatient clinics and surgeries where patients may present with initial symptoms. An example of a case record form is provided at Annex 2.

### 7.2 Continuing education

Continuing education of relevant staff (medical, nursing, pharmacy, professions allied to medicine) at hospital, unit and general medical practice and community levels by lectures, tutorials, policy reviews, national courses and visits to other units. Hospitals and units may wish to appoint a staff member to co-ordinate this activity, which may be most appropriately delivered by multidisciplinary stroke team.

### 7.3 Audit

Hospital managers and professional directors should consider these guidelines in audit planning, especially in units where a large number of such patients are admitted acutely (e.g. general medical and geriatric assessment units).

#### 7.3.1 Audit of key outcome indicators

*See Annex 3.*

#### 7.3.2 Audit of process

Audit of process at ward level is strongly recommended. The minimum provisions and clinical core dataset required for audit of process are listed in Annex 4. It will be advantageous to establish current baseline practice against which change may be measured.

#### 7.3.3 Audit of benefits of long term follow-up and interventions

This is recommended as an area for further research.

### 7.4 Quality assurance and continuous quality improvements

Hospital managers and clinical directors, involving their hospital audit committees as appropriate, should ensure that performance in providing appropriate care for the stroke patient in terms of clinical assessment, investigation and introduction of secondary prevention in appropriate patients is satisfactory.

### 7.5 **Funding**

Adequate funding should be included in commissioning to ensure that effective and appropriate care is given to all stroke patients.

### 7.6 **Research**

Relevant medical, professions allied to medicine, and nursing staff should be encouraged to identify topics for research directed towards rehabilitation interventions and prevention of complications in acute stroke care and appropriate audit tools for assessment of stroke care in these areas. Funding and adequate time for such activities should be made available to all members of a multidisciplinary team. One particular area requiring investigation is the link between dysphagia and severity of stroke to identify whether dysphagia is an independent prognostic factor.

# Annex 1

## **Staff groups who require to be involved in development and implementation of local guidelines derived from this national guideline**

- Hospital and primary care medical staff
- Nursing staff in hospital and community
- Pharmacy staff
- Occupational therapy staff
- Physiotherapy staff
- Speech & language therapy staff
- Dietetics staff
- Social workers
- Clinical psychologists
- Voluntary agencies (e.g. Chest, Heart & Stroke Scotland)
- Area clinical effectiveness and audit committees
- Deans and Postgraduate Deans of University Faculties of Medicine in Scotland and other relevant professional educational bodies.

## Annex 2

Example of a display-table acting as a patient-specific reminder in general hospital or primary care

KEY MULTIDISCIPLINARY TEAM MEMBER			Observe for
Is there a swallowing problem?	Speech & Language Therapy / Dietitian	Dehydration Poor nutritional status	
Is there a communication problem?	Speech & Language Therapy		
Is there a movement and handling problem?	Physiotherapy	Pressure sores Shoulder position Falls	
Is there a functional problem or perceptual problem?	Occupational Therapy	Feeding difficulties Seating difficulties	
Is the patient incontinent of urine?	Primary Nurse	Urine retention Infection Promotion of continence	
Are there medical problems?	Doctor		

## Annex 3

### Key outcome indicators

For the component of stroke care covered by this guideline, the quality of care given can be defined by:

- (1) Level of morbidity (e.g. incidence of pressure sores, episodes of septicaemia, deep vein thrombosis and pulmonary embolus) due to complications within hospital, and relationship to stroke severity
- (2) Functional ability at end of rehabilitation programme
- (3) Mortality rate at one month and six months post stroke
- (4) Length of hospital stay
- (5) Placement at end of rehabilitation programme
- (6) Patient satisfaction questionnaire
- (7) Readmission following discharge
- (8) Delivery of discharge plan

These outcome indicators are amenable to audit in either primary or secondary care centres. The quality of the audit will in part be dictated by the way in which clinical information is recorded and, in the hospital setting, how effectively episodes of care are coded.

Note: all the above outcome indicators are influenced by casemix.<sup>90</sup>

## Annex 4

### Minimum provisions and core dataset required for audit of process by hospital units

#### Provisions

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- Access to unit case records, prescription forms and patients
- Access to unit protocols, care plans and procedures
- Lists of admissions
- Time for audit

#### Core dataset for audit

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##### *Clinical assessment*

- Initial diagnosis on admission
- Identification of neurological impairment
- Degree of functional disability
- Measurement of handicap

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