Irish Heart Foundation Council on Stroke

Health Service Executive
National Stroke Strategy
Submission

July 2007

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Irish Association of Rehabilitation Medicine
Irish Association of Speech and Language Therapists
Irish Association of Social Workers
Irish Association of Vascular Surgeons
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Volunteer Stroke Scheme

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Introduction

Approximately 10,000 people experience stroke every year in the Republic of Ireland (ESRI). The Irish Heart Foundation estimates that over 30,000 people in Ireland are living with stroke. Heretofore Irish stroke services have been poorly structured and resourced. The lack of reliable Irish data on stroke incidence, prevalence, associated morbidity and mortality, has had a knock-on effect on failure to develop stroke services in both acute and community settings. The findings of the first Irish National Audit of Stroke Care (INASC) will be available in the autumn of this year, 2007, and should provide stakeholders with a clearer picture of the state of stroke care in this country. Stroke can be associated with considerable physical, communicative, cognitive (thinking and memory abilities), emotional and social changes. It often brings with it considerable emotional, psychological and social, communicative and physical consequences. However, modern management and support offers huge advances on previous possibilities, and it is hoped that the development of a National Stroke Strategy will bring huge advances for all those affected by stroke.

One of the reasons that James Joyce gave for leaving Ireland was to escape the 'hemiplegia of the will' of living in his native country. This phrase, transposed from stroke medicine, neatly captures the former indifference of the Irish health service to stroke. Despite the twin imperatives of the enormous burden of stroke disease – which kills more people than breast cancer, lung cancer and bowel cancer combined – and the overwhelming evidence for over a decade that Stroke Unit care can reduce death and disability by 25%, provision of services has been sorely neglected, and the Council on Stroke of the Irish Heart Foundation welcomes the Irish National Audit of Stroke Care, and the opportunity to submit its considered view of how development of stroke services might most effectively occur. It is encouraged in this regard by the reponse of the Irish health system to clear deficits in services for cancer and cardiovascular disease: the Department of Health had committed a cumulative total of €550 million of new spending on the former and 800 new posts for the latter between 1999 and 2002 (Coughlan, O'Neill 2004).

The background to the development of organised services and advocacy for stroke is relatively recent in Ireland. The first description of the outcome of stroke in Ireland dates from 1990 (Crowe et al. 1990), and of an organised stroke team dates from 1996 (Horgan et al. 1996): an interdisciplinary initiative involving geriatric medicine, rehabilitation medicine, physiotherapy and nursing, describing a stroke team model of care. This pattern of interdisciplinary working has been evident in a range of publications since this time, and is also a welcome feature of the Council on Stroke. Following this paper, there were further key papers on: the development of the first acute stroke service (Collins et al. 2000), an overview of the problems facing patients with stroke after discharge from hospital (Noone et al. 2001), a description of a regional stroke register (Fan et al. 2000), an audit of the inadequacies of infrastructure (Crowe, Delargy 2000), the costs of stroke in a teaching hospital (McGowan et al. 2003), overviews of delays in processing patients with stroke for thrombolysis (Collins et al. 1999; Pittock et al. 2003), room for improvement with prevention strategies (White et al. 2004), participation in

international multi-centre trials (IST, TAIST) and European comparison studies (Gray, 2006), stroke unit research (Walsh, 2006) and developments in meta-analysis and review papers in major journals (Cronin et al. 2006; Donnellan et al. 2006; McCabe and Rakhit 2007).

Council on Stroke

The Council on Stroke of the Irish Heart Foundation was set up in 1997 by way of a concerted action between the Irish Heart Foundation and interested health and social care professionals in stroke, as well as the national advocacy organisation for stroke, the Volunteer Stroke Scheme. Dr Desmond O'Neill, consultant geriatrician at the Adelaide and Meath Hospital was invited by the IHF to chair the group, and rapidly a modus operandi to ensure national representation of all interested parties was developed. This was by way of stipulating that each national organisation could send up to three delegates to the Council, so all were representative, rather than attending as individuals in their own right.

As of 2007, the following bodies are represented:
Association of Internal Medicine
Association of Occupational Therapists in Ireland
An Bord Altranais
Faculty of Public Health RCPI
Faculty of Radiology RCSI
Irish Association of Rehabilitation Medicine
Irish Association of Speech and Language Therapists
Irish Association of Social Workers
Irish Association of Vascular Surgeons
Irish College of General Practitioners
Irish Society of Chartered Physiotherapists
Irish Nutrition and Dietetics Institute
Institute of Public Health Nursing
Psychological Society of Ireland
Irish Consultant Neurologists' Association
Irish Society of Physicians in Geriatric Medicine
Volunteer Stroke Scheme

The Council, with the active support of the IHF, has become one of the most active councils of the IHF, running a number of activities, including: an annual national professional study with attendances of 200-400 (Horgan, O'Neill 1999) a quasi-annual lay information day, updating of a patient information booklet for those affected by stroke, the Mick Doyle Memorial Lecture, providing a high focus publication on stroke

At an advocacy level, the Council produced the first Irish strategic plan for stroke prevention and care, *Towards Excellence in Stroke Care* (IHF, 2001), which espoused four main priority actions: a stroke prevention programme, development of stroke units in general hospitals, development of community rehabilitation and support, and the

development of a national stroke register. Arising out of this work, the impetus for an Irish National Audit of Stroke Care has developed, the Council on Stroke warmly welcome the embracing of this concept by the Irish Heart Foundation and Irish Department of Health and Children, and the leadership of the Minister for Health and Children, Mary Harney.

The Council on Stroke of the Irish Heart Foundation Report '*Towards Excellence in Stroke Care*' (IHF 2001) made four principal recommendations to the Irish Government in 2000. These have yet to be adopted. The report recommended the following:

1. Prevention and health promotion: to develop active programmes for primary, secondary and tertiary prevention for stroke. Primary prevention could most usefully be undertaken in conjunction with the National Cardiovascular Health Strategy. Secondary and tertiary prevention should be based in Stroke Services.

2. Acute treatment and rehabilitation: that in every general hospital admitting patients with acute stroke, people with stroke should be admitted to a Stroke Service under the care of a dedicated specialist(s) in stroke care, associated interdisciplinary team, appropriate diagnostic technology (e.g. CT/MRI) and a clearly defined continuum of care. Access to tertiary services (e.g. carotid endarterectomy) should also be available. Rehabilitation strategies should start from admission and should be continued during the hospital stay.

3. Community rehabilitation: Out-patient rehabilitation should be made available for all patients of all ages in each Health Board area, on the basis of 250-300 patients discharged to the community/year per 250,000 population. These should encompass the full interdisciplinary team with either a domiciliary focus or adequate transportation if provided as out-patient care. Services should be available at any age and the model of the stroke services at Baggot St Hospital (Dublin) should be considered. The activities of the Volunteer Stroke Scheme should be developed and supported.

4. Stroke Register: As stroke is such a devastating and costly illness, and since little data is available on stroke in Ireland, a register of people with acute stroke should be established as a priority, similar to that of the cardiac surgery, coronary care and cancer registries.

Irish National Audit of Stroke Care

The first parts of the Irish National Audit of Stroke Care (INASC), commissioned by the Irish Heart Foundation in association with the Department of Health and Children, reveal huge shortcomings in stroke care in Ireland (INASC Report 2007).

Stroke Unit Provision and Organisation of Care

- Stroke services in Ireland were notable by the complete absence, with one exception, of the recommended standard of stroke units for optimal care of patients following stroke. Only one hospital, representing 3% of relevant Irish hospitals, had a stroke unit. This compares with 91% of hospitals in the United Kingdom (Intercollegiate Working Party for Stroke Sentinel Audit UK 2006). Five additional hospitals describe models of stroke care that did not fulfil the full definition of a Stroke Unit, but represented an intermediate stage in organised stroke care. Even if these were included, the total of 16% with some level of organisation is in marked contrast to the UK audit.
- When surveyed, there were 411 acute stroke inpatients among the 10,399 hospital bed capacity of the 37 hospitals. There were only 12 designated stroke unit beds nationally. These figures indicate an overall ratio of 0.03 beds per stroke patient in comparison to 0.82 beds per stroke patient in the UK (Intercollegiate Working Party for Stroke Sentinel Audit UK 2006).

Managing Stroke as a Medical Emergency

- Thrombolysis services for persons with stroke were not available in Ireland. There is an urgent need to develop arrangements with paramedical services for rapid transfer of patients with suspected stroke to hospital.
- Not all hospitals have access to facilities for brain scanning, MRI or carotid endarterectomy. It is of significant concern that 30% of hospitals did not have routine access to routine CT scanning within 48 hours of stroke, and the level of access to emergency MR scanning was only 41%. The low access to Carotid Doppler scanning within 2 weeks after a transient ischaemic attack (TIA), and its non-availability in 14% of sites admitting patients with stroke, is also a cause of serious concern. This issue needs to be addressed so that better acute stroke services can be delivered in Irish hospitals.

Management of Transient Ischaemic Attack (TIA)

- Only 16% of Irish hospitals had TIA services. The UK National Clinical Guidelines for Stroke (Intercollegiate Working Party for Stroke National Clinical Guidelines for Stroke 2004) recommend that patients be seen and a management plan instituted within a week of the onset of symptoms. Improved communication and service infrastructure is needed to establish agreed protocols for managing TIA and stroke between acute and primary care services.

Staffing and Specialist Roles, Medical Nursing and Allied Health Professionals

- Many hospital consultants provide care for stroke patients. In terms of leadership however, only one third of hospitals could identify a lead consultant physician for stroke care. Furthermore, this role was recognised with a formal sessional commitment to stroke care in only five centres.
- The first stage of the Irish National Audit on Stroke Care (INASC Report 2007) presents a bleak view of nursing staff throughout the 37 hospitals, with wide variation in staffing levels, and low skill mix. There were very few specialised nursing positions, with only five clinical nurse specialists in stroke care nationally.
- In terms of provision of the multidisciplinary team necessary to address the many challenges of stroke, there was a lot of variability across hospitals. The overall profile was however, of a very limited and usually non-specialist service with services from some disciplines relatively more frequently available (e.g. occupational therapy, physiotherapy) and others almost non-existent (e.g. clinical psychology / clinical neuropsychology).
- Overall, staffing levels and profiles indicate a lot of stroke service provision by interested staff with little opportunity to specialise or consolidate either stroke services or related professional skills.

Processes of Stroke Care

- Only 5 (14%) Irish hospitals had a mobile stroke team in contrast to 23% of hospitals in the UK (Intercollegiate Working Party for Stroke Sentinel Audit UK 2004).
- Team meetings were not generally held for patients who were based outside a stroke unit or generic rehabilitation unit within the acute hospital. This is a concern as early coordination and communication of the care of professionals is important in the delivery of effective multidisciplinary treatment.
- Team meetings did always take place on stroke units and generic rehabilitation units. However, the concern for these is that they were often not truly multidisciplinary and not stroke-specific on the generic rehabilitation unit. While a detailed evaluation of multidisciplinary team needs was not conducted, the absence of clinical psychology / clinical neuropsychology and under representation of social work and dietetic professionals are a cause of concern.

Access to Rehabilitation, Community Services and Discharge

- The majority of hospitals (81%) had access to a generic rehabilitation unit, however the majority (two thirds) were off site which, given the complexity of much stroke care, is a cause of concern. Furthermore staffing levels were low. Particularly notable was the very limited access to rehabilitation for younger patients (only five hospitals routinely accept stroke patients under 65 to their rehabilitation unit).
- Discharge from hospital following stroke can be a very difficult time for those with stroke and their families. Only eight hospitals provided people with a named patient contact on discharge to the community.
- There was universal concern among the senior hospital staff interviewed about the lack of availability of community services. There was seen to be no specialised stroke care in the community, with the majority of sites accessing generic services, which would be very limited regarding the delivery of longer-term management for stroke patients.
- Persons with stroke under age 65 years were seen to experience particular difficulties in accessing community services.
- Evidence on staff training and information provision made clear that much work needs to be done to provide training opportunities for staff and to improve communication and meet the information needs of those with stroke and their families.

Plans for Stroke Services

- Commitment to improvement in stroke service provision in Ireland was evident not least in the active participation of senior administrative and health professional staff in all relevant centres in this first national organisational audit.
- It was clear that front line staff throughout Ireland, without specific national investment in stroke care, had improvised and set up services in an *ad hoc* way in order to best address the daily challenges of stroke care. While not either a satisfactory or comprehensive solution, these activities can form the basis of a more strategic and clearly resourced service in the future. Most encouraging was the finding that 23 hospitals had already submitted service plans for stroke care to local health service executive (HSE) health managers.
- What is clear from experience elsewhere, particularly the evolving profile of service improvement across the three rounds to date of the Sentinel UK audit, is that improvement can be achieved in a reasonable timeframe through a continuous cycle of investment, evaluation and planning. In view of the evidence of organised stroke unit care, many lives can be saved: extrapolating UK data, it is likely that 350-500 deaths a year could be saved by the introduction of stroke unit care.

Community Audit: National Survey of General Practitioners, 2006

- There was little or no organised system of care for the prevention and management of stroke within primary care in Ireland. However, there were encouraging signs of development. General Practitioners (GPs in practices involved in *Heartwatch* and those with good or excellent access to practice nurses were more likely to engage in evidence-based activities to manage stroke.
- There was little evidence of systematic primary prevention of stroke in general practices. This was true to an even greater extent in relation to secondary prevention of stroke. Regarding the acute management of stroke, it was of concern that nearly a fifth of GPs (17%) reported initially managing at least a substantial minority (20%) of their patients at home. The majority of GPs viewed existing rehabilitation services for their stroke population as inadequate. Overall, there was little evidence of structured organisation for long-term follow-up of stroke patients.
- While GPs were well informed regarding stroke prevention and management issues, there was evidence of the need for ongoing education on treatment and guidelines developments.
- More recently qualified GPs were over-represented in responders compared to non-responders. Since it is not clear if their management style differs from those longer in practice, we caution that the results of this survey may not provide a full reflection of stroke awareness and care in general practice.

Community Audit: National Survey of Allied Health Professionals and Public Health Nurses, 2006

- The findings of this study are indicative of major gaps in the community in the provision of multi-disciplinary team services for people with stroke. All managers and disciplines wanted further development in multi-disciplinary team services for people with stroke, but indicated a range of barriers to achieving this goal. These include absence of a strategic plan (akin to the National Cardiovascular Health Strategy), funding, employment embargos, as well as barriers to service provision based on age.
- Where services existed, they were generic in nature, rarely multi-disciplinary in function, and either deficient in (or completely deprived of) certain disciplines, notably occupational therapy, speech and language therapy, clinical nutrition, social work and clinical psychology / clinical neuropsychology. These are some of the significant challenges that must be addressed in order to have in place a system of comprehensive, community-based stroke rehabilitation and long-term management.
- The findings from this project will be integrated with others in the overall National Audit of Stroke Care, as components are completed. In particular, views of community PHNs and AHPs will be combined with the Phase 2 project assessing patient and carer experiences of needs and services after hospital discharge. The nursing home and GP studies will provide other perspectives on

services provided by community-based services. Finally, the hospital clinical chart review will give a profile of the status of patients as they are discharged into the community, community study findings providing insights on the continuing trajectory of recovery and living with stroke, once the patient leaves hospital.

North Dublin Population Stroke Study (NDPSS)

The North Dublin Population Stroke Study (NDPSS) and Irish National Audit of Stroke Care (INASC) are mutually complementary studies which together comprise the National Stroke Review as recommended in the 1999 National Cardiovascular Strategy. These studies were jointly funded by the Irish Heart Foundation and other agencies, including the Health Research Board, Health Service Executive, Department of Health, and National Lottery.

The aim of the NDPSS was to gather comprehensive and accurate data on the frequency and outcomes (mortality, case fatality, disability and recurrence) of stroke and transient ischaemic attack (TIA) in a large section (approximately 7%) of the Irish population. Data collection is near-complete at the time of writing. Preliminary analysis has revealed that the crude annual incidence of Stroke and TIA was 2.38 per 1000 population, indicating that approximately 10,090 new Stroke/TIA cases occur each year nationally. 69% of all stroke occurred in older adults (over 65 years), while 31% occurred in young or middle aged adults. At 3 days, 75% of individuals with stroke had some disability, while 50% were either seriously-disabled (unable to walk) or had died. Only 18% were treated in a Stroke Unit, and only one (0.002%) received emergency ‘clot-busting’ thrombolysis treatment, which is widely-available internationally.

Chapter 1
Primary Prevention of Stroke

1. A number of risk factors are associated with stroke, and can be categorised as modifiable and non-modifiable. The latter include older age, gender, race and family history of cardiovascular or cerebrovascular disease. However, it is possible to reduce the incidence of stroke by addressing the known modifiable risk factors. These can be further categorised as medical (hypertension, atrial fibrillation, diabetes, hyperlipidemia, obesity) and behavioural (smoking, alcohol intake, diet).

2. **Medical Risk Factors**
   Hypertension: it has been clearly established that the risk of both haemorrhagic and ischaemic stroke can be reduced by the adequate control of blood pressure in hypertensive patients (Psatey et al 1997) even in patients over 80 years old (Gueyffier et al 1999). It is therefore essential that people with hypertension are identified, appropriately treated and their blood pressure monitored over time, as risk may be related to the quality of control of blood pressure (Du et al 1997).

   Atrial fibrillation: it has also been shown that the risk of stroke among patients with atrial fibrillation can be reduced by almost 70% by the use of anti-coagulants (Albers 1994). Because one of the most serious complications of atrial fibrillation is stroke, it has been suggested that all patients over 65 years of age with risk factors should be receiving anti-coagulant treatment (Gorelick et al 1999), unless there is a contra-indication. Some advise that anti-platelet therapy alone may be sufficient for patients under 65 years of age who have atrial fibrillation but no other risk factor. Among Irish patients, studies (White et al 2004, McDonnell et al 2000), have clearly shown sub-optimal use of anti-coagulants in the prevention of stroke.

   Diabetes, Hyperlipidemia, Obesity: the presence of diabetes also increases the risk of stroke. In addition, there is an association between the lowering of stroke risk among hyperlipidemic patients with ischaemic heart disease by the use of lipid lowering agents, even though a link between hyperlipidemia per se and stroke has not been clearly established. Likewise with abdominal obesity, although the risk factors of diabetes, hyperlipidemia and obesity frequently occur together.

3. **Behavioural Risk Factors**
   Smoking Alcohol, Physical Exercise: smoking is a major risk factor for stroke, not only in itself but also in combination with other risk factors; hypertensive smokers have 20 times the risk of stroke of normotensive non-smokers (Aldoori & Rahman 1998). Exposure to environmental tobacco smoke (passive smoking) is also a risk factor for stroke. The risk of stroke among previously light smokers (less than 20/day) rapidly decreases within five years from cessation of smoking to that of life-long non-smokers (Wannamethee et al 1995). The risk among heavy smokers is also reduced but may still remain slightly higher risk than non-

smokers. Women who smoke and are also taking oral contraceptives are at increased risk of stroke. There is evidence of an increased risk of stroke as a result of excessive alcohol consumption. On the other hand, regular moderate physical exercise is protective against stroke and cardiovascular disease.

It is therefore important that primary prevention is an essential component of a stroke strategy. There should be screening at regular intervals (e.g. every two years) of adults for risk factors for stroke, with particular note of the following: **Medical risk factors:** Blood pressure, Pulse rate (for atrial fibrillation), Weight and Body Mass Index, Family history of cerebro/cardiovascular disease, Fasting blood sugar and Lipid profile. **Behavioural risk factors:** to include Smoking status, Alcohol intake, Physical activity and Diet.

Chapter 2
Transient Ischaemic Attack (TIA) / Neurovascular Clinics

1. The single strongest risk factor for stroke is having had a prior TIA or stroke. Up to 40% of stroke patients and 30% of TIA patients will experience a further cerebrovascular event within 5 years of their initial event. The period of maximal risk is in the days and weeks immediately following the index event. The Oxford Vascular Study found that 8% of TIA patients and 11% of mild stroke patients have a further event within seven days of their first event. Urgent intervention can help dramatically reduce the risk of such recurrence. The EXPRESS study has shown that urgent assessment and prescription of secondary preventative treatment on the day of TIA or minor ischaemic stroke onset reduces the relative risk of recurrent stroke at 90 days by 80% (Rothwell PM et al, 2008).

2. Assessment at a Neurovascular clinic is effective at preventing recurrent stroke if people can be seen urgently. However due to the complexity of neurological symptomatology, approximately 40-60% of patients who are referred to these clinics with a suspected TIA by physicians who are not specialists in stroke care will have an alternative diagnosis. Staff operating these clinics must have the training to identify these 'TIA-stroke mimics', and resources and protocols must be available to enable appropriate investigation, treatment, or onward referral, as appropriate.

3. We recommend the establishment of daily rapid-access facilities to permit comprehensive assessment of patients with suspected TIAs by Physicians with expertise in stroke care, tailored to the needs and circumstances of individual hospitals. This should facilitate accurate diagnosis of these patients and urgent institution of secondary preventative treatment, or immediate admission of high risk patients who need urgent intervention e.g. carotid endarterectomy or stenting. These clinics may be organised at single institutions, or on a network basis via collaboration between different rapid access services at nearby hospitals (as in North Dublin). Alternative rapid-access services e.g. urgent specialist team assessment in Accident and Emergency, Medical Admissions Units or Day Hospitals may represent an alternative way of providing services in the absence of a dedicated daily Neurovascular Clinic where geographical issues prevent a network approach.

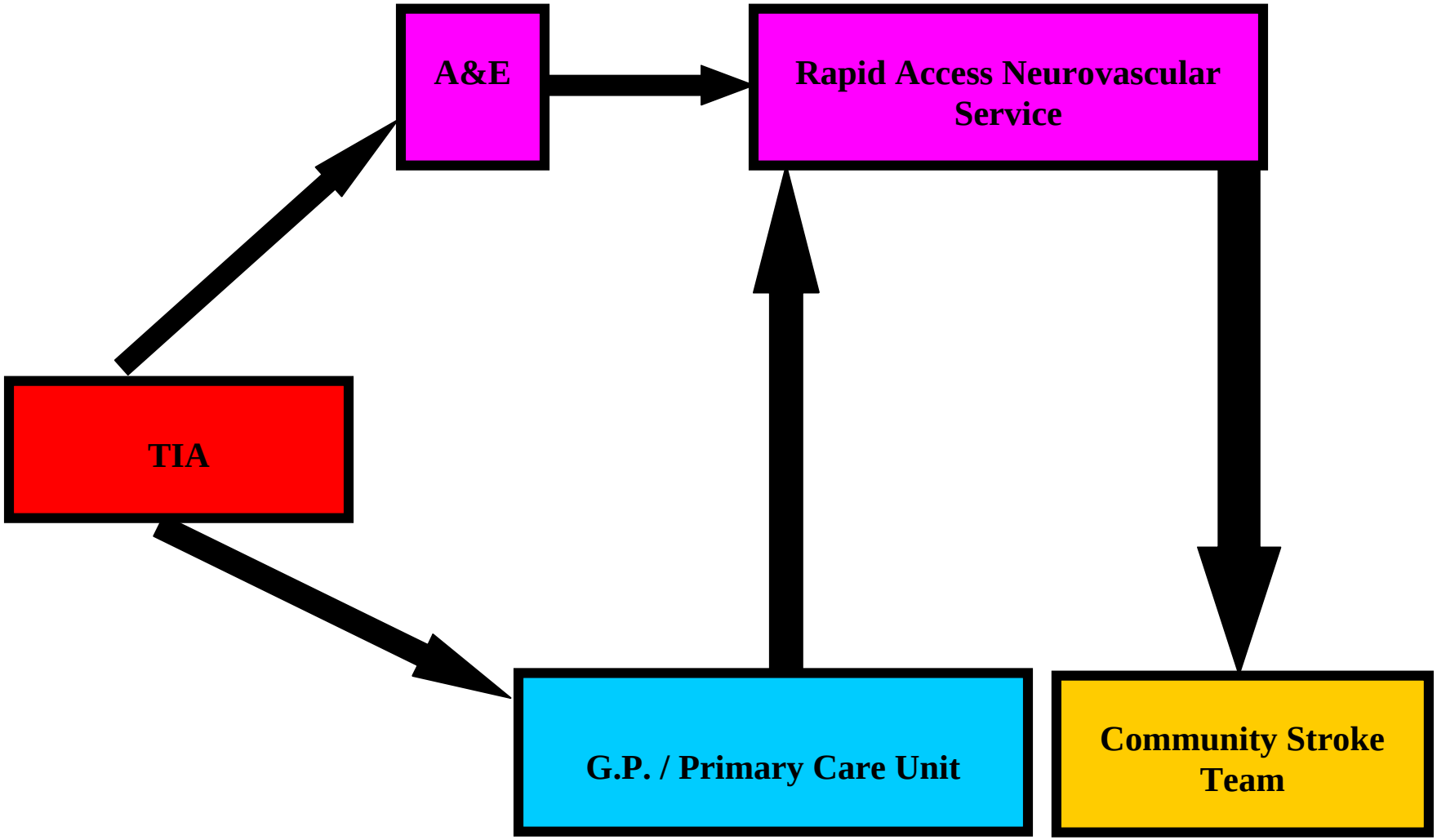
4. Physicians coordinating these rapid-access Neurovascular clinics or services must have access to urgent laboratory investigations and diagnostic neurovascular imaging (brain CT or MRI, colour Doppler ultrasound of carotid and vertebral arteries by validated vascular technologists or radiologists, or MRA/CTA in appropriate cases. Systems should be in place for the care of those developing symptoms at times where urgent assessment or investigation is not possible e.g. over weekends or on public holidays. Facilities should also be maintained to permit admission of such patients who are felt to be at high risk of recurrent TIA

or stroke by the assessing stroke team, or where urgent outpatient assessment is not possible.

5. Carotid endarterectomy is proven to prevent recurrent TIA or stroke in patients with severe carotid stenosis. Endarterectomy should be performed as soon as possible following TIA or minor stroke to maximise its benefit in reducing the risk of further cerebrovascular events. Pathways must be developed in all hospitals to permit urgent referral to specialist integrated vascular surgical units for assessment and intervention in all suitable patients, and for consideration re carotid endovascular treatment in selected patients.

6. Neurovascular services should have access to inpatient and outpatient rehabilitation therapy, medical social work, clinical nutritional advice, and smoking cessation services. Mechanisms must be in place for urgent administration of prescribed medications and timely communication of results and care plans to primary care.

Figure 1 Clinical Pathway for TIA



Chapter 3
Hospital Care of the Person with Stroke

1. Acute stroke morbidity, mortality and long term prognosis are significantly improved if persons with stroke admitted to hospital are cared for in Stroke Units. This is accepted internationally as the expected 'standard of care' and reduces mortality by 20-25% with a number needed to treat of 14 to prevent 1 death or high dependency outcome. Every General and Regional Hospital in Ireland must have a Stroke Unit as part of an expert Stroke Service and which will deal with all aspects of care, from initial presentation, assessment and treatment right through to completion of rehabilitation and further follow up as required. Only in this way can individuals with stroke in Ireland, similar to their counterparts elsewhere in the developed world, be guaranteed the improved outcomes in terms of morbidity, mortality and functional status that are associated with Stroke Unit/Service care. Stroke Unit care may vary from hospital to hospital and may encompass both acute and/or rehabilitation management.

2. The Stroke Unit in each hospital must have an adequate number of ring fenced beds in a geographically defined location, have proper multidisciplinary staffing levels and have adequate capacity for acute physiological monitoring (to include non-invasive BP, ECG, Oxygen saturation, temperature, blood glucose etc). Medical leadership, in this multi-disciplinary unit, should be provided by an identified Clinical Director of Stroke Services.

3. In Ireland, we are facing a significant increase in the number of older persons in coming decades. Their care needs need to be planned for now. The number of over 80s, in particular, is going to increase dramatically. Many persons with stroke have multiple existing medical co-morbidities and complex care needs following stroke. Many require extended acute medical intervention and expertise and high level para-medical, allied health professional and nursing input for several weeks following their stroke in a stroke unit. Adequate hospital bed capacity and specialist staffing levels are paramount to maximise functional outcomes and to minimise need for long-term care placement.

4. All general hospitals should provide a Stroke Service and all require core diagnostic infrastructure to include standard CT, Carotid imaging, trans-thoracic echocardiography and 24 hour ECG recording. Within the increasing provision of multi-slice CT scanners throughout Ireland, many general hospitals will be able to provide CT angiography and CT perfusion. Many general hospitals can also currently provide trans-oesophageal echocardiography. Videofluoroscopy imaging for swallowing assessment should be provided by speech therapists with expertise in this area.

5. Between5 and30% of patients in leading international centres are treated with emergency thrombolysis ('clot-busting)' stroke therapy in the setting of a Stroke

Unit, depending on the degree of stroke service development and level of education of the public. This treatment reduces mortality and disability with an efficacy equivalent to the impact of Acute Stroke Unit care itself. It is recommended by expert international bodies and is rapidly becoming best practice internationally. It should be available to all patients in Ireland irrespective of where they live, and on a 24/7 basis. All general hospitals with appropriate diagnostic facilities, trained and willing staff should be able to deliver intravenous tPA therapy for suitable acute ischaemic stroke patients. International experience from Europe (SITS-MOST) and Canada (CASES) shows that lower volume hospitals, provided staff have been trained appropriately and have the necessary diagnostic support, can deliver this treatment with results similar to those seen for high volume hospitals. Locally accessible thrombolytic therapy in General Hospitals is therefore a very realistic option especially in a country like Ireland with a large rural population. In the future, if proven effective, some people may require transfer to Regional Hospital which can provide more invasive interventions such as intra-arterial thrombolytic or endovascular intervention.

6. Adults of all ages with stroke may be cared for during the acute and rehabilitation phase of their illness, in a flexible manner, by 'Stroke specialists' who can actively manage the full course and range of complications pertaining to their illness, and who, by training, may be Geriatricians or Neurologists with the support of the Rehabilitation Physicians. The configuration of the stroke service in each hospital should be the subject of local agreement amongst local key clinicians.

7. It is acknowledged that care of those with stroke, in order to maximise outcomes, involves care (acute and rehabilitation) both in the acute hospital and ongoing therapy in community settings. Both are essential to maximise functional outcomes and both should be equally valued and adequately resourced.

8. Strong consideration should be given to a system of accreditation of acute stroke services by Health Information and Quality Authority (HIQA), on the basis of the Irish National Audit of Stroke Care methodology. This will help to drive forward the development of acute stroke care in Ireland.

9. The Irish National Audit of Stroke Care should be repeated regularly at 2-3 year intervals to monitor standards in the process and outcomes of stroke care in Ireland.

Stroke Partnerships

All General and Regional Hospitals in Ireland must have a Stroke Unit. However, it is acknowledged that not all hospitals can or will be able to provide the entire spectrum of acute stroke care. Some services can only be provided at a Regional level. The term 'Stroke Partnership' refers to groupings of hospitals providing a comprehensive stroke service to a large population in an agreed manner and guided by clinical protocols and

service level agreements. One approach would be to align such 'Stroke Partnerships' with the existing 8 HSE Acute Hospital Networks, provided timely (within 90 minutes) access to a hospital with a 24/7 Emergency Stroke Team is guaranteed for the majority (90% or more) of inhabitants within each Partnership. Examples of such Regional stroke care, which may not be provided by every acute hospital Stroke Unit could include some of the following:

A. Emergency stroke thrombolysis in specific settings:
   - Out of routine working hours (ie. Weekends, evenings and nights). It should be noted that neighbouring acute general hospitals may co-operate and agree (depending on their resources) to provide an acute thrombolysis service on some or all days of the week on a 24/7 basis.
   - At times when a Stroke Unit physician at the General hospital is on leave or otherwise unavailable

B. Higher level expertise relevant to specific unusual, complex or uncommon cases:
   - Neurology
   - Clinical Psychology / Clinical Neuropsychology
   - Rehabilitation Physicians
   - Neuroradiology
   - Neurosurgery
   - Neurocritical Care beds
   - Vascular Surgery
   - Complex care needs e.g. dialysis

C. Advanced diagnostic imaging:
   - Neurovascular MRI / MRA
   - Intra-arterial cerebral angiography
   - Transcranial Doppler Ultrasound.

Neuro-Imaging

1. It is essential that neurological and neurovascular imaging capability is present within each Stroke Partnership, to ensure equitable and accessible care.

2. At the level of the General Hospital, it is essential that the following are available: standard CT, Carotid imaging (either Doppler ultrasound or CT angiography). Within the increasing provision of multi-slice CT scanners throughout Ireland many general hospitals will be able to provide CT angiography and CT perfusion imaging. Videofluoroscopy imaging for swallow assessment should be provided in addition to all hospitals with a Stroke Unit.

3. At the Regional Hospital level, the above imaging modalities should be available. In addition, it is essential that advanced diagnostic imaging is provided, including

brain and neurovascular MRI, diagnostic catheter cerebral angiography, and ideally transcranial Doppler ultrasound.

4. More complex neuro-imaging modalities and procedures (e.g. interventional catheter cerebral angiography for aneurysm coiling, PET scanning, SPECT) may be provided on a supra-regional basis.

5. It is essential that at least one trained Neuroradiologist, based at the Regional Hospital, is appointed per partnership. She/he may provide a service to the General Hospitals, via broadband connections if feasible. A weekly Neurovascular Radiology conference to discuss cases between this Neuroradiologist and Consultant members of the Stroke Group is essential to avoid misdiagnosis, provide expert feedback for the Emergency Stroke Team, and ensure good communication and high quality of care.

6. A model of further centralisation of Neuroradiology services (e.g. at a supra-regional level for common diagnostic imaging) is strongly discouraged by the Stroke Council, due to the high likelihood of difficulties with access to the Neuroradiologist to clinically inform the team re the diagnostic tests performed, and discuss the interpretation of neuroimaging findings on a one-to-one basis. This face-to-face regular communication between experienced Consultants is considered an indispensable component of modern Stroke management.

- An extended Radiographer service (either evening shifts and/or on-call) is essential within each Partnership to allow emergency CT imaging for urgent Stroke patients. If distance prevents a timely arrival to hospital from the out-of-hours radiography service, this should be provided on an in-house on-call basis.

Key Features of 'Stroke Partnerships

1. It is expected that most Stroke Partnerships will comprise a number of hospitals working together to provide a comprehensive range of services needed for optimal Stroke care.

2. A single larger hospital within the Partnership will provide the Regional services listed above, which are not expected to be available at all local hospitals

The Stroke specialists at the General hospitals and Stroke specialists (Geriatricians and Neurologists) at the Regional hospital will work together in an integrated manner in Stroke Groups.

3. These Stroke Groups will operate regular academic and audit meetings integrated between specialties and between the individual hospitals in the Stroke Partnership to ensure continuing medical education and to maintain high standards of clinical care within the Partnership. These meetings may be facilitated by video-conferencing to ensure participation by all members of the Stroke Group.

4. Regular integrated contact between all Stroke Specialists within the Stroke Group will facilitate good communication where input is required regarding management of individual patients within the Stroke Partnership.

5. Where required, timely access to expertise (whether by video-conferencing or transfer) in Neurology, Neuroradiology, Rehabilitation and Vascular Surgery, and to the advanced diagnostics located in the larger Regional hospital will be guaranteed for patients treated in General hospitals within each Stroke Partnership. This will be essential to ensure the ongoing viability of such Stroke Partnerships.

6. Future delivery of a 24/7 emergency thrombolytic therapy will require formal agreement within each Stroke Partnership defining exactly when and where such therapy can be provided. Specific arrangements for thrombolytic therapy may vary between Stroke Partnerships depending on many factors including acute hospital geography and availability of clinical expertise from other Geriatricians, Neurologists and interested physicians. It is expected that on-call rotas for thrombolytic therapy will need to be formally agreed by the clinicians from the various hospitals within each Stroke Partnership.

7. Accounting for leave entitlements (7 weeks per Consultant annually, not including rest days), a minimum of 7-10 Consultant Physicians with a primary responsibility for Stroke care are the minimum required to enable delivery of a 24-hour 7-day emergency Stroke service within each Stroke Partnership. The Stroke Service in each hospital should be capable of dealing with each patient's course from initial admission and assessment through the rehabilitation phase with later out-patient follow up.

Specialty Numbers and Ratios within Stroke Groups

8. Assuming an example Stroke Partnership model of two General Hospitals and one Regional hospital, a significant investment in Stroke-trained Consultant Physicians per Stroke Partnership is required. The exact number of Stroke specialists in each Partnership will need to take account of local demographics, hospital locations and resources, transport infrastructure etc. A minimum of 7 must be guaranteed to participate in a 24/7 Consultant-delivered rota for emergency thrombolytic therapy. A further and more detailed development of the Council on Stroke's suggestions on how this development might be achieved is currently underway, and will take the form of an addendum to be prepared for the HSE.

9. We expect that the implementation of these additional Consultant appointments will be overseen by an implementation body with proportionate representation from Geriatric Medicine and Neurology and will take place within an agreed time

frame. National roll out of these posts must be balanced and equitable between the Stroke Partnerships.

10. At the General Hospital, there will need for additional Consultant Physicians for Stroke care, in addition to the Acute Stroke Unit Directors, to bring the complement of Stroke specialists to a minimum of 2 per general hospital. Provision of 2 such posts will ensure year round presence of a Specialist Stroke specialist in the General Hospital. Within each Stroke Partnership, the Regional Hospital will require at a minimum 5-6 Stroke specialists.

11. For several hospitals, re-designation of an existing Consultant Geriatrician or Neurologist as a Stroke specialist may be feasible, depending on the background of the individual Consultant. However it is emphasised that this will require re-assignment of significant clinical commitments for non-Stroke activities currently provided by those physicians to newly-appointed colleagues.

Non-Consultant Hospital Doctors

12. It is essential that provision for allocation of non-Consultant Hospital Doctors (NCHDs) to the proposed Stroke Groups is made as part of service planning for the Stroke Strategy. This is important for training of young physicians so that they will be eligible for future Consultant Stroke specialist appointments. The service plan described above is clearly Consultant-provided, with teams of Consultants performing daily ward rounds and working in shared 24/7 rotas. Even within such a Consultant-provided service, medical assistance from NCHDs is vital to allow Consultants to maintain throughput of large numbers of inpatients and clinic patients, and to allow Consultants time to perform teaching, audit, service planning, and administrative duties. These NCHD posts should rotate for periods between Regional and General Hospitals.

13. We recommend that at least 3 NCHDs are designated for every 2 Stroke Consultants appointed, to allow for NCHD cross-cover arrangements during holiday and study leave. These may be provided by a combination of targeted new appointments for the service expansion represented by the Stroke Strategy, and by re-assignment of NCHDs from other services within individual hospitals.

Location and Number of Stroke Partnerships

14. Proscriptive recommendations about the locations of each Partnership cannot be made at this time in the absence of accurate data on ambulance call-out and transfer times (anticipated in early 2008). Consideration will need to be taken of other factors including acute hospital geography, demography and clinical workloads etc.

15. To ensure equitable access to comprehensive and holistic stroke care, including time-sensitive and potentially life-saving emergency stroke treatments, we

strongly recommend that Partnerships are geographically located so that the great majority (90% or more) of the Irish population are located a maximum of 90 minutes ambulance transfer time (including arrival time, pick-up, and transfer time) to a hospital providing a 24/7 Emergency Thrombolysis Service for Stroke. Provided that this essential condition to ensure equity of access to Emergency Stroke Care is met, it is accepted that Partnerships should conform to existing HSE Network areas as much as is practically possible.

16. To support Stroke Services nationally, we recommend that close study be given to the options of a Stroke Telemedicine Service and Emergency Helicopter Transfer service for selected patients from isolated populations to allow access to emergency Stroke assessment and treatment.

Research, Training, and Education

17. To lead national research, training, and education of healthcare staff involved in Stroke care, we recommend that a minimum of 5 Academic Consultant appointments in Neurovascular and Stroke Medicine are established nationally. These should include at least 3 Professorship level appointments at leading academic centres.

18. Significant patient-centred training and education of undergraduate and postgraduate medical trainees and other healthcare disciplines is currently performed by Consultants in local and regional hospitals without protected time or formal recognition from affiliated universities and postgraduate bodies. We recommend that this activity be recognised by a formal appointment to affiliated third and fourth-level institutions, and that protected time be built into the job description of selected existing Consultants and new Consultant appointees under the Stroke Strategy. Training of General Practitioners will be essential to link community with acute hospital services so as to prioritise and fast-track the assessment and treatment of TIA and acute stroke cases.

19. Internationally, it is accepted that poor levels of knowledge amongst the general public about the significance of TIA/Stroke symptoms plays a major role in explaining the long delays seen in accessing health care assessment and treatment. Delayed seeking of medical care by stroke and TIA patients leads to suboptimal outcomes. Major public education and awareness programmes will be essential to facilitate improved health outcomes following stroke and TIA. Such education will need to cover risk factors for stroke, primary and secondary prevention and how they can be actively modified, as well as informing the general public as to the appropriate urgent actions required and the appropriate time scales for those patients or family members with TIA or symptoms of acute stroke (dial 999 for the latter). The Act FAST campaign in the UK is an example of such a public education strategy.

20. Ambulance services will need to uniformly designate that acute stroke calls demand the highest level of acute response, equivalent to that unquestionably given to acute myocardial infarction, so as to facilitate rapid patient transfer to a hospital providing a comprehensive Stroke Service, including Emergency Stroke care. Paramedical staff will require training in use of one of the tools to facilitate rapid recognition of acute stroke in the field. Such early recognition, rapid transport and advance notification of A&E Departments will greatly expedite emergency assessment of acute stroke patients. This initial rapid assessment and treatment coupled with prompt expert nursing, allied health professional input and ongoing care will improve the outcomes for Irish stroke patients to those levels seen internationally. Prioritisation of prompt patient transfer for stroke patients coupled with stroke-specific training of ambulance para-medical staff in stroke recognition is possible as recently demonstrated at Midland Regional Hospital Mullingar and the Midlands Ambulance Service. A&E Medical and Nursing staff will require training in acute stroke recognition and expedited care following specific care protocols or clinical pathways. Finally, ambulance dispatch staff will need training to facilitate rapid recognition of possible stroke calls.

Rehabilitation in the General Hospital and Community

21. Many people, of all ages, suffer from significant impairment, and resulting activity limitations and participation restrictions following acute stroke. Rehabilitation following stroke starts from the day of admission, and will reduce disability, enhance independence and quality of life and will reduce need for long-term care placement. Current arrangements in terms of rehabilitation during the course of care of stroke in the General Hospital are patchy and frequently poorly resourced. The rehabilitation needs of younger adults with stroke are particularly poorly served, but rehabilitation of older people with stroke is also substantially under-funded. The poor level of rehabilitation services for those of all ages has negative impacts on throughput in acute medical beds with resultant pressures on acute bed availability in our Emergency Departments.

22. In addition to a shortage of on-site General Hospital rehabilitation beds and facilities, there are major shortcomings in staffing amongst all disciplines in the multi-disciplinary team including nursing, occupational therapy, physiotherapy, speech and language therapy, dietetics, clinical psychology / clinical neuropsychology, social workers, pharmacists and administrative staff.

23. All acute hospitals should have on-site rehabilitation units, properly resourced and staffed with good linkages with community health services.

24. Many people with mild to moderate levels of disability achieve at least equivalent outcomes if discharged earlier from acute/rehabilitation beds to dedicated and properly resourced community rehabilitation teams. Such Early Supported Discharge programmes have been shown to reduce in-patient length of stay as well as long-term dependency and admission to long-term care (Rudd et al 1997, Langhorne et al 2005). In the larger urban areas such community-based rehabilitation could be accomplished via dedicated Community Stroke Rehabilitation teams whereas in rural areas a more practical approach would be to use existing and newly created and enhanced generic Community Rehabilitation teams. For those with higher level and complex medical problems in need of more intensive medical surveillance, Day Hospital attendance may be the most appropriate option. Irrespective of which pathway a patient follows, it is imperative that close integration of all facets of the acute and rehabilitation services within any Stroke Partnership is put in place to facilitate optimal patient outcomes and value for money.

25. The Irish National Audit of Stroke Care (2007) has clearly identified major deficiencies in the level of service currently available in Ireland. Rehabilitation is a proactive, person-centred and goal-oriented process that begins the first day after stroke. Its aim is to improve function and/or prevent deterioration of function, and to bring about the highest possible level of independence.

Development of a comprehensive integrated care system involving Rehabilitation Medicine, Neurologists, Geriatric Medicine, General Practitioners, Nurses and Allied Health Practitoners can bring access to specialist multidisciplinary stroke rehabilitation, in Ireland, to international levels. The integrated stroke service should aim to deliver fully integrated, timely, skilled interventions of appropriate intensity and duration in the most appropriate location and format, including follow up, in a shared care system with the Primary Care Teams. This Chapter outlines the specific and core fundamental role of physicians with expertise in rehabilitation - Rehabilitation Medicine and Geriatric Medicine - within this model of care, from vital early intervention in Acute Stroke Partnerships, through dedicated Rehabilitation Stroke Units, and on into the integrated Community Rehabilitation services for all people with stroke. The model proposed is underpinned by evidence base from current literature and expert international consensus in order to achieve best practice within the DOHC and HSE frameworks. It seeks to address both urban and rural needs of the community to be served in an equitable fashion, as well as providing care that crosses the range of secondary disability and handicap encountered as a consequence of stroke. Finally this model proposes that all age groups affected by stroke manage to access appropriate services fairly, meeting the needs of young and old alike. The proposed model also outlines reorganisation of long-term care for those with stroke to ensure ongoing appropriate rehabilitation resources are available. Significant recruitment of Rehabilitation and Geriatric Medicine personnel and multidisciplinary staff will be required to complete the National Stroke Partnerships. A further and more detailed development of the Council on Stroke's suggestions on how this development might be achieved is currently underway, and will take the form of an addendum to be prepared for the HSE by 19th October 2007.

26. The Irish National Audit of Stroke Care (2007) has clearly identified major deficiencies in the level of service currently available in Ireland.

27. The focus of rehabilitation service development will transform rehabilitation services for stroke. Developing an integrated care system involving Rehabilitation Medicine, Neurologists, Geriatric Medicine, General Practitioners, Nurses and Allied Health Practitioners will bring access to specialist multidisciplinary stroke rehabilitation, in Ireland, to international levels.

28. The core elements are timely, skilled interventions by specialist stroke rehabilitation services delivering appropriate intensity and duration early management interventions in the most appropriate location and format. Follow up, in a shared care system, with the Primary Care Teams will afford continuing care in an integrated care model.

29. Rehabilitation, as provided under leadership of Geriatric and Rehabilitation Medicine, intervenes in acute stroke when people with stroke are referred during their admission to the Acute Stroke Partnership. The Swedish service in Lund –

Orup Rehabilitation Department is referred to, in Appendix 6 of the National Audit Office Department of Health UK Report (2005-6), as an example of best Rehabilitation practice involving a specialised service of high intensity Rehabilitation for younger adults with stroke. Geriatric Medicine has traditionally delivered a fully integrated approach covering all aspects of stroke care beginning with the acute phase, through to rehabilitation, secondary prevention and finally discharge back to the community or long term care. Many patients (both young and old) who develop a stroke have multiple co-morbidities and complex medical as well as social needs. In view of this Geriatricians, often in conjunction with Rehabilitation Physicians, have developed the role of rehabilitation in specialised stroke rehabilitation units such as the Royal Hospital in Donnybrook, Peamount Hospital and St. Camillus's, Limerick. Day Hospitals run by Consultant Geriatricians facilitate regular follow-up of persons with complex stroke needs and co-existing medical problems.

30. The General Practitioner is the traditional referral source for community-based patients in Ireland. The development of Primary Care Teams (PCT) and the enhancement of Stroke Rehabilitation services will help enable shared care to develop between hospitals and the community. The PCT can develop an integrated team response to stroke discharges. The PCT can also manage the referral process for review by the rehabilitation Stroke Medicine physician and multidisciplinary team, as part of integrated long term care.

31. Initial Rehabilitation assessment is delivered while the patient is receiving acute stroke management in the Stroke Partnership. **Rehabilitation commences within the first 24 hours of admission post-stroke**. The American Stroke Association, (Recommendations for the Establishment of Stroke Systems of Care. *Stroke* 2005; 36: 690-703), the National Institute of Neurological Disorders & Stroke (www.ninds.nih/gov) have identified the role of the Rehabilitation Medicine physician as an integral part of this process; equally the role of the Geriatrician in early rehabilitation of stroke has been recognized by the National Service Framework for Older People in the UK in its Standard on Stroke. (http://www.dh.gov.uk/en/Policyandguidance/Healthandsocialcaretopics/Olderpeoplesservices/DH_4002292) .

32. Typical early Rehabilitation and Geriatric Medicine specialist interventions in the Acute Stroke Partnership include spasticity management, advice on wheelchair seating, positioning and orthotics, cognitive and neurobehavioural management, communication deficits and swallowing impairments.

33. As well as advising on and managing medical complications of Stroke, Geriatric and Rehabilitation Medicine physicians are especially skilled at coordinating appropriate discharge of 'delayed discharge' patients who are unable to return home without a comprehensive care package.

34. Community Rehabilitation supports will typically focus on continuing multidisciplinary OPD Rehabilitation inputs, vocational guidance, environmental control system delivery or long term care issues.

35. Integration with Primary Care Teams will improve community management. Ideally members of the community team, in partnership with Rehabilitation and Geriatric Medicine, will develop lead roles in Community Stroke management as per current General Practitioner roles in Diabetes, Asthma and the Methadone programmes. Reduction in readmissions should follow from improved shared care arrangements between Geriatric and Rehabilitation Medicine multidisciplinary teams and Primary Care Teams.

36. The Clinical Guidelines for Stroke Rehabilitation and Recovery, National Stroke Foundation, Australia (2005) provides a useful descriptor of the interdisciplinary process and individual team member roles (Appendix 5).

Evidence Base

40. The Rehabilitation and Geriatric Medicine components of the Stroke Strategy are underpinned by the evidence base from current literature and expert international consensus. International best practice recommends that people with stroke should be admitted to a dedicated Rehabilitation facility within 2 weeks of stroke.

41. Geriatric and Rehabilitation Medicine maximize the delivery of multidisciplinary care through a core goal oriented interdisciplinary approach (SIGN 64 Guidelines Scotland 2002). The multidisciplinary team service recommendations are tailored to deliver best practice within the DOHC and HSE frameworks.

42. The National Clinical Guidelines for Stroke (UK 2005) recommend that specialist medical and rehabilitation services must recognise the particular physical, psychological and social needs of younger adults with stroke. Further, those services are provided in an environment suited to their personal needs. Unfortunately most literature on stroke does not address the specific rehabilitation needs of the younger stroke population despite prevalence. A considerable proportion of younger stroke rehabilitation principles have to be inferred from studies on the older stroke population.

43. Rehabilitation Medicine teams have particular expertise in the service needs of younger people with stroke who may be a wage earner, have young children or be in the process of acquiring educational or vocational skills at the onset of the Stroke (Kersten et al 1998, 2002 and Roding et al 2003).

44. The National Clinical Guidelines for Stroke (UK 2004) have identified the need for specific and specialised attention to work prospects and continuing parental roles.

45. Separate guidelines have been produced for stroke in children. (Clinical Guidelines for Childhood Stroke, Royal College of Physicians, UK 2004).

46. The Heart and Stroke Foundation of Ontario in its Report, 'A System for Stroke Rehabilitation' recommends that stroke rehabilitation expertise needs to be certification supported. The Ontario report also recommends a regionalised system. A Similar approach, in Ireland, would serve to standardise service levels nationally (Appendix 6).

Organisation of Rehabilitation Services

47. Organisation of services in the Irish context needs to support existing best practice and develop a network of stroke services to encompass urban and rural access. Both Geriatric Medicine and Rehabilitation Medicine have played a major role in rehabilitation and reintegration back into the community of persons with stroke, but personnel and infrastructure have lagged considerably behind national and international norms. Irish government policy norms for rehabilitation beds for older people have not been achieved in any HSE region or LHA, and equally provision of Rehabilitation Medicine facilities has been under-resourced.

48. Organised Stroke Rehabilitation Medicine will be delivered (under direction of both Geriatricians and Rehabilitationists) with the emphasis on the continuum of care from Acute Stroke Partnerships, rehabilitation units and into the Community.

49. The rehabilitation services will involve Acute Stroke Partnership inpatient consultation, inpatient multidisciplinary Rehabilitation in the Rehabilitation Units, multidisciplinary Rehabilitation OPD services, including Day Hospitals and Day Stroke Services, and Community Rehabilitation to facilitate Early Supported Discharge (Appendix 7).

50. The multidisciplinary approach begins in the Acute Stroke Partnership. All Acute Stroke Partnerships will need sufficient Rehabilitation Medicine and Geriatric Medicine rehabilitation sessions to meet the referral volume.

51. A proportion of people with complex stroke will need ongoing hospital based rehabilitation which will involve transfer from the Stroke Unit to either an on-site or off-site Rehabilitation Unit.

52. Each Acute Stroke Partnership will need to determine whether the volume of referrals to rehabilitation will require development of 10-bedded integrated acute site Stroke Rehabilitation Units with accompanying OPD/day service units to continue the early rehabilitation in the Stroke Unit and facilitate the patient throughput from the Stroke Unit.

53. Further, each Acute Stroke Partnership will need to determine the volume of referrals more appropriate to a large centralised regional multiservice, multidisciplinary Stroke Rehabilitation Unit (taking into account individual preferences e.g. when the patient and family deem family access for visiting essential to an individual's psychological needs.)

54. A small proportion of people with stroke will have experienced very severe strokes and be most suited to a "slow to recover" patient care service until they are rehab ready. Such slow to recover stroke services need to be certified as capable of delivering expert 24-hour care. These cares include the skills and supports for PEG feeding and tracheostomy care, maintenance therapies for those who are slow-to-recover, and appropriate medical cover at NCHD and consultant level. The multidisciplinary team case conferencing process can determine eventual rehab readiness, or transfer to long-term care are core to 'slow to recover' stroke care.

55. The balance struck between affording local access to facilitate regular family visiting and the operational requirements and critical mass needed for an expert, efficient service, which can deliver confidence in 24/7 medical Stroke specialist and skilled multidisciplinary inputs for complex patient needs will determine the location of regional Rehabilitation units and, in turn, the throughput in each Acute Stroke Partnership.

56. Ideally, each Stroke Unit would access a local specialist 'slow-to-recover' care service with appropriate capacity. Otherwise, Stroke Units will not be able to discharge the most severely disabled people to appropriate onward care in a timely fashion.

57. The critical mass needed to develop a local 'slow-to-recover' care unit, to serve each Acute Stroke Partnership could be more readily achieved by combining resources with two other high dependency groups in the case of Rehabilitation Medicine facilities: a) The cohort of people with Acquired Brain Injury who have focal contusion brain injury, have similar care needs, and b) those requiring a high dependency respite care programme. Combining such services will facilitate provision of viable regional units which can be supported by comprehensive specialist multidisciplinary teams. Another possibility is the combining of this form of stroke rehabilitation with slow-stream rehabilitation in Geriatric Medicine rehabilitation facilities.

Reorganisation of Long Term Care for People with Stroke

58. In tandem with improvements in Acute Stroke Partnership and Stroke Rehabilitation Unit care, long term care needs considerable reorganisation. Based on the premise that each phase of stroke care needs a specialised team approach, long-term care units need their own specialised team.

59. Following Acute Stroke partnership care, people with stroke who require slow-to-recover rehabilitation services – this is sometimes referred to as Step Down care. **Step Down is a flawed terminology which should be replaced by a more appropriate descriptor**. It is an outdated negative term which has acquired common usage in HSE and DOHC planning. Step down infers a reduction in services delivered by a less-skilled team, instead of describing an appropriate standard of specialised care, extended care.

60. Historically, extended care facilities have typically involved badly maintained poorly resourced and inadequately staffed units. Most 'new' extended care units have been established in buildings which were no longer needed for their original purpose. It is rare for an extended care unit to have been specifically designed or purpose built.

61. Extended care units appear to occupy bottom ranking in the health finance priority list. The units are mainly operationally and geographically distant from the acute hospital. They have difficulty accepting people who are not guaranteed to remain medically stable. Operational linkage with the referring hospitals is often limited. Many extended care Units are themselves in need of rehabilitation.

62. The staff frequently remains isolated from mainstream healthcare developments including educational opportunities. Despite being an essential specialist service, which facilitates acute hospital throughput by accepting heavily dependent patients, there is no national focus group or special interest group serving the further development of these units.

63. Unlike nursing homes, which have a designated inspection process, there is no agreed certification process for public or voluntary extended care units (until the implementation of HIQA inspections), and published audit of activity is uncommon.

64. Appropriate specialist 24-hour medical cover is unlikely to be available despite the ongoing care needs of the population served.

65. Patient transfer from the acute hospital may, on a needs-must basis, appear to be more focused on freeing up a much needed acute bed, than on ensuring that ongoing rehabilitation resources are available.

66. In some cases, the day-to-day care in the extended care unit may be a step up from that available in the acute hospital, which is a measure of the skills and dedication of their nursing staff in particular. However, the transfer of medical care for these heavily dependent patients is rarely from acute care specialist to rehabilitation specialist, in the younger population in particular.

67. These service deficiencies in longer term stroke care need to be addressed as part of the National Stroke Strategy so that Acute Stroke Partnerships can deliver appropriate throughput.

Transport Issues

68. After the hospital based phase, provision of a comprehensive transport system for dependent people with stroke will be essential to facilitate access to community based rehabilitation services from home or long term care.

Personnel Requirements for Rehabilitation: Rehabilitation Medicine and Geriatric Medicine

Significant recruitment of physicians trained in rehabilitation - Rehabilitation Medicine and Geriatric Medicine - will be needed (as members of comprehensive recruitment approach in forming a network of multidisciplinary teams) to complete the National Stroke Partnerships and meet the needs of each Acute Stroke partnership, regional Rehabilitation Unit and Community Care Partnership. A more comprehensive plan for rehabilitation service unit and personnel development will form part of the Addendum to be delivered to the HSE by October 19 2007.

Chapter 4

Nurse Staffing of Stroke Services in Hospital and Rehabilitation Settings

1. Nursing people with stroke requires nurses with knowledge, skills and interest to deliver effective therapeutic care and rehabilitation, and requires education and training in stroke care.

2. Stroke nursing is a continuous 24 hour process throughout the person's journey of care, wherever the setting. Guidance has been prepared drawing on research evidence that identifies the link between nursing staff and skill mix ratios, and service and patient outcomes. As for most professional groups contributing to stroke services, evidence about appropriate staffing levels does not relate directly to stroke care. General evidence has therefore been supplemented with:
   - The nursing profiles of international flag ship stroke services
   - An analysis of imminent demands in the UK on the nursing workforce to facilitate the delivery of best practice i.e. thrombolysis
   - A detailed analysis of the nursing requirements of stroke patients in the immediate post stroke period (Watkins, 2007, see Appendix 1).
   - SIGN guidelines (2002)

   There is substantial evidence that higher nursing staff and skill mix ratios are important in reducing patient mortality, acquisition of healthcare associated infections and falls (Aiken, 2002). These ratios are also important in improving job satisfaction, recruitment and retention rates. There is also evidence that important elements of stroke nursing share much in common with specialist nursing of older people (Pound, 1999), and appropriate training is a critical success factor for development of high quality stroke care.

Levels of Nursing Staff required providing good Stroke Unit Care:

3. The levels of nursing staff relate directly to the provision of good stroke care. Nursing staffing levels and skill mix should be appropriate to the size of the stroke unit and dependency of the patients (Langhorne, 2002).

4. A minimum establishment of **12.5 WTE nurses for every 10 beds** is required to meet the demands of the nursing contribution to stroke care. The ratio should not include the nurse-in-charge. (This corresponds to 3.5 nurses on an early shift, 3 nurses on an evening shift and 2 nurses on a night shift and 4 care assistants (CA) for every 10 beds).

5. The recommendations for the Royal College of Nursing (2006) for general health care services suggest that the appropriate skill mix ratio is **65% Registered Nurses to 35% Care Assistants**. This is a realistic reference skill mix for stroke services, but may vary according to the type of stroke service i.e. acute stroke unit, rehabilitation unit, etc. International expertise would suggest that a 'high dependency' model of nurse staffing for stroke patients in the first 36 hours after stroke. Where a stroke unit has combined acute and rehabilitation beds, the nursing staffing establishment should be increased to ensure that during every shift, **2 hyper acute patients are cared for by one registered nurse.** This recommendation reflects the requirement for the intensive monitoring of patients, the potential for thrombolysis, the increased risk of stroke progression, and the profile of interventions required to deliver an appropriate standard of care.

Rehabilitation Services

6. It may be argued that patients in the rehabilitation phase do not require such intensive intervention and that the nurse: patient ratio could be reduced for non-acute stroke patients. On the contrary, there is no evidence to support a dilution of this ratio in this situation. As stroke services become more proactive in patient management with the implementation of early mobilisation and high patient throughput, an adequately staffed rehabilitation service is essential.

Clinical Nurse Specialist in Stroke (CNS) and Advanced Nurse Practitioners (ANP)

7. The role of the CNS/ ANP has greatly developed in Ireland since the Commission on Nursing (Government of Ireland, 1998) in its responsiveness to service needs.

8. The CNS is a nurse in specialist practice who has undertaken formal recognised post registration education relevant to stroke at higher diploma level. Such formal education is underpinned by extensive experience and clinical expertise in stroke care. The specialist practice will encompass a major clinical focus, which comprises assessment, planning, delivery and evaluation of stroke care given to patients and their carers in hospital, community and outpatient settings. The specialist nurse will work closely with medical and paramedical staff and may make alterations in prescribed clinical options along agreed protocol driven guidelines. The specialist also participates in nursing research and audit and acts as a consultant in education and clinical practice to nursing colleagues and the wider multidisciplinary team. The development of the post must be based on service need and should reflect epidemiological and demographic trends within the region. The core concepts include clinical focus, patient advocate, education and training, research and consultancy.

9. The ANP is an autonomous practitioner and is highly experienced in clinical practice education to Master's degree level (or higher). The ANP promotes

wellness and offers healthcare interventions and advocates healthy lifestyle choices for patients and their families and carers in collaboration with other health care professionals in accordance with agreed scope of practice guidelines. The ANP role is grounded in theory of practice of nursing, related research, management and leadership skills and the role includes a vision of the area. The ANP roles are developed in response to patient/ client need and healthcare service requirements at local, national and international levels. ANP's must have a vision of areas of nursing practice that can be developed beyond the current scope of nursing practice and a commitment to the development of these areas. The core concepts include autonomy in clinical practice, expert practice, professional and clinical leadership and research.

10. The INASC, 2006 revealed that there were only 5 CNS in Stroke out of the 37 hospitals audited. The role of the CNS in Stroke was valued where introduced. Although the job descriptions varied, all posts were accredited by the National Council for the Professional Development of Nursing and Midwifery (NCNM). All hospitals should consider the introduction of CNS in Stroke, according to their service needs with a view to role expansion to Nurse Practitioner level. These positions should not be limited to hospital services, but should consider providing a seamless service throughout the community.

Chapter 5

Allied Health Professionals input to Stroke Services in Hospital, Rehabilitation and Community Settings

The overriding principal of effective stroke care is that it should be is an inter-disciplinary team effort. Leonard et al (2004) states that 'A group of specialists each with a unique background and particular skills is likely to identify, understand and treat a disorder more comprehensively and more effectively than an individual caregiver.'The person with stroke and their family are integral members of the team in this collaborative consultation. This approach "allows for an interactive process that enables people with diverse expertise to generate creative solutions to mutually defined problems" (Idol et al 1995). It results in productive solutions that are different from those that the individual team members would produce independently. This has a direct effect on clinical outcomes as comprehensive and effective programmes are provided within the most appropriate context.

Core Principles of Stroke Rehabilitation

1. Multi-disciplinary team working in an inter-disciplinary manner. The team's role is in early diagnosis, ongoing assessment and treatment as appropriate to the person's needs. A multi-disciplinary assessment using a formal procedure or protocol should be undertaken within five working days of admission (UK College of Physicians Guidelines 2004).

2. Effective communication and teamwork is essential for the delivery of high quality, safe patient care (Leonard et al 2004).

3. Stroke rehabilitation needs to be person-centred. A "one size fits all" approach is not appropriate for this client group. Routine implementation of care pathways for acute management and rehabilitation is not recommended (New Zealand Guidelines for Management of Stroke 2003).

4. The person with stroke should be involved at every stage of the goal setting process thereby increasing the likelihood of objectives being attained. Goals should be individualised, meaningful and achievable and should be set in collaboration with the entire multi-disciplinary team, patient and family (Royal College of Physicians, UK 2004).

5. Equality of access to an appropriate stroke service in either the acute or community setting, that is not geographically or age determined.

6. A stroke service should be delivered in an appropriate setting that is culturally acceptable to the individual and takes into account the needs of those with attention, cognitive and / or language difficulties.

7. There should be ongoing re-evaluation of the person's status and review of goals as appropriate by the inter-disciplinary team in conjunction with the person and his / her family. Outcome measures with established validity and reliability should be used where possible on initial assessment and also re-assessed at appropriate intervals. These measures should be used to facilitate decisions regarding discharge and length of treatment.

8. At least one formal stroke specific team meeting involving all team members should be held each week. This provides the opportunity to discuss each individual case, identify any problems, review rehabilitation goals and plan discharge (New Zealand Guidelines 2003).

9. The patient's family and carers should be involved in the rehabilitation process.

10. Emotional and psychological needs should be addressed at an early stage and the appropriate psychological support should be provided as the needs of the person with the stroke and their family can change over the months and years following the stroke.

11. MDT assessment should commence within 48 hours after stroke. Intervention should be based on the highest quality evidence available to ensure best practice. "Where possible and available clinicians should use assessments or measures that have been studied in terms of validity and reliability" (Royal College of Physicians 2004). The time frame for rehabilitation should be withdrawal of rehabilitation should only occur when 1) the person with stroke wishes to exit from a formal rehabilitation programme or 2) no new achievable goals can be identified.

12. In rehabilitation the team aims to optimise the person's potential and should empower the person to achieve this.

13. Ongoing education, training and support should be available to those with stroke and their families.

14. There should be regular audit of stroke services similar to the Irish National Audit of Stroke Care 2006/7. Part of the quality assurance process should involve regular feedback from service users to evaluate and further develop services.

15. A stroke service should be adequately resourced. This will include provision for the following staff: Stroke specialists, Nursing staff, Physiotherapists, Occupational Therapists, Speech & Language Therapists, Clinical Nutritionists, Social Workers, Clinical Psychologists and/or Clinical Neuropsychologists, Clerical Staff, Porters, and

Therapy Assistants as core team members. There should also be access to Psychiatry services, Audiologists, Counsellors, Vocational Training services.

16. A stroke service should be well equipped in order that the person's needs in rehabilitation are fully met. Such equipment may include assessment and therapy materials, computer equipment, communication aids, weighing scales, height measures. Appropriate infrastructure should be in place.

17. Appropriate technology should be utilised where appropriate to assist in rehabilitation, e.g. speech and language software programmes for those with communication deficits, dietary analysis software, and cognitive and perceptual computer software packages. Technology may also be used to transfer and share clinical and service information and may be particularly useful in the audit process.

18. Education resources should be made available to the team to support continuing professional development. This includes financial support to attend conferences, workshops, and courses. Study leave should also be made available for this purpose. Education resources should be made available in providing information and training to those affected by stroke, e.g. materials for education on stroke such as DVDs, posters, books and other reading material, props for education on swallowing, manual handling, medical aspects of stroke. Such material should be adapted to a format that is accessible to those with aphasia and / or those whose first language is not English.

19. Ongoing research will require support to aloow protected staff time. Financial support needs to be considered as a priority to facilitate staff time for research. Significant patient-centred training and education at undergraduate and postgraduate level for all allied health professionals. In the case of postgraduates, there should be protected time or formal recognition from affiliated universities and postgraduate bodies in relation to education and training needs.

Early Assessment Hospital Acute Setting

All people admitted to hospital with acute stroke should have an initial assessment by rehabilitation professionals as soon as possible after admission, preferably within the first 24-48 hours Canadian Best Practice (2006). Stroke rehabilitation should commence from day one or once the person is medically stable, alert and cooperative. The initial focus during the first week will be in establishing need through assessment as well as implementation of protocol, e.g. re feeding, positioning, handling etc. Once the person is medically stable and in a position to participate in a therapy programme, the focus should be joint goal setting with the team (person and family at the centre), implementing a therapy plan, and planning discharge.

Physiotherapy

The person with stroke should be seen within **48 hours** by a Physiotherapist. As a priority the Physiotherapist will assess the person in relation to their needs for positioning,

moving and handling, in addition to determining risk of respiratory complications and shoulder pain, and implement necessary protocols for this. A thorough functional neurological assessment will also be performed. The primary aim of physiotherapy is to work with other team members to promote recovery. Key elements of individualised treatment strategies may involve restoring balance, re-educating mobility, and promoting functional movement. The roles and responsibilities of the Physiotherapist are described in Table 1 Appendix 2.

Occupational Therapy

The person with stroke should be seen within 48 hours by an Occupational Therapist, whereby they will assess the person for seating, splinting, positioning and pressure needs Intervention after the first **48 hours** should include full cognitive, perceptual and movement screen and full assessment of persons skills and ability in carrying out self care, domestic work and leisure where applicable to determine possible impact on performance. Discharge planning and an environmental assessment in the form of a pre-discharge home visit are often essential roles of the Occupational Therapist. The roles and responsibilities of the Occupational Therapist are described in Table 2 Appendix 2.

Speech & Language Therapy

The Speech and Language Therapist (SLT) assesses diagnoses and treats swallowing difficulties and communication difficulties. The SLT will evaluate a person's ability to communicate and interact effectively. A sudden change in the ability to communicate may have a devastating effect on the person. After a stroke communication is especially important, for example, asking questions, taking in information, conveying fears and anxieties. The SLT also helps the person and their family to come to terms with changes in communication. Dysphagia (swallow disorder) is common especially in the early stages post stroke. The SLT's role is to diagnose dysphagia and to treat and manage it as appropriate. The person with a stroke should be seen **within 48 hours**, to assess the person in relation to swallow status and speech, language and communication skills. A swallow screening tool may be in use where non-SLT can screen for presence for dysphagia. Dysphagia guidelines in accordance with the Irish Association of Speech & Language Therapists (IASLT) Position Paper on Standards of Practice for Speech & Language Therapists on the Management of Feeding, Eating, Drinking and Swallowing Disorders (Dysphagia) 2007 should be consulted. The roles and responsibilities of the Speech and Language Therapist are described in Table 3 Appendix 2.

Clinical Nutrition

Nutritional assessment should be carried out within the **first 48 hours** using a validated screening tool i.e. Mini Nutrition Assessment (MNA), Malnutrition Universal Screening Tool (MUST), Subjective Global Assessment (SGA). Swallow assessment by the Speech & Language Therapist should highlight any person requiring dietetic intervention and allow for referral on to dietetic services. Care plans agreed at local level should be in place for weekend services to allow for commencement of enteral feeding. The role of clinical nutrition is integral to the management of dysphagia in stroke as outlined by SIGN (2004) Management of patients with stroke: Identification and management of

dysphagia. The roles and responsibilities of the Clinical Nutritionist in stroke rehabilitation are outlined in Table 4 Appendix 2.

Social Work

Social Workers carry out an initial comprehensive psychosocial assessment, which determines the subsequent intervention with each individual person. Social workers provide information about the emotional impact of stroke and offer emotional support and counseling. They provide information about financial and legal issues. They liaise and refer to a wide variety of community support services. They organise and facilitate family meetings and case conferences. They advocate on behalf of people who have had a stroke for funding and resources. The social worker requires a wide knowledge of resources in the community so that he / she is able to advise the team and the patient about what is available for the patient on discharge. As well as being aware of the physical problems of stroke the social worker should also be aware of the psychological and emotional effects of stroke illness, so that he / she can best understand the patient's needs. Some patients will need advice and information from the social worker early in their journey of care because of financial, relationship, or housing problems (SIGN, 2002). A psychosocial assessment involving the person and their family by a social worker should be carried out within five working days.

Clinical Psychology **/** Clinical Neuropsychology

The Clinical Psychologist or Clinical Neuropsychologist's expertise is in the assessment and treatment of cognitive, emotional and behavioural changes and the empirical investigation and evaluation of same. With certain clinical presentations (usually more complex and or unusual clinical profiles) the services of a Clinical Neuropsychologist may be indicated; this is a Clinical Psychologist who has undertaken further training in Clinical Neuropsychology and usually works within a facility for people who have a neurological diagnosis. Neuropsychological assessment usually involves estimating pre-stroke and post-stroke abilities (cognitive, executive, perceptual, mood and behaviour) and identifying how these may be used to compensate for the changes associated with stroke. The emotional and behavioural changes people can experience may be the direct result of the stroke and the associated changes in the brain (e.g. pathological crying /laughter or disinhibition), or they may represent an emotional response to this significant life event. Addressing cognitive, emotional and behavioural needs requires psychotherapeutic interventions, which depending on the person's needs may be undertaken individually, with families and or carers and other professionals. The efficacy and effectiveness of such interventions is important to evaluate in order to guide best practice and this is an important part of the work of the Clinical Psychologist/Neuropsychologist. The application of new technologies (e.g. computerised programmes to enhance attention and virtual reality) to rehabilitation following stroke is an important and developing part of the clinical interventions. The clinical interventions that are being investigated by Clinical Psychologists in collaboration with other professionals aim to try and address the specific cognitive and behavioural problems that can be associated with stroke. The roles and responsibilities of the Clinical Psychologist are described in Table 5 Appendix 2.

Allied Health Professional Staffing Requirements

Acute Setting Staffing Ratio per 10 beds:

Staffing recommendations are based on a ratio per 10 beds in a stroke rehabilitation unit (Table 6). The figures represent a minimum standard based on international guidelines but may need to be adapted an Irish health system as more evidence and population data becomes available e.g. need to be adapted on a local basis according to factors such as service model, population, level of dependency, skill mix (e.g. a Clinical Specialist role necessitates a proportion of protected time for research as per the (RCP Concise Guidelines, 2006, Langhorne 2000, BASP 2005).

Table 6 - Allied Health Professional Staffing Recommendations are based on a ratio per 10 beds in a Stroke Rehabilitation Unit

Discipline	**WTE Numbers**
Physiotherapy	1 Clinical Specialist or Senior, 1 Basic Grade, and 1 Physiotherapy Assistant
Occupational Therapy	1 Clinical Specialist or Senior, 1 Basic Grade, and 1 Occupational Therapy Assistant. In certain circumstances an additional 0.5 may be needed where an early supported discharge model is in place.
Speech & Language Therapy	1 Clinical Specialist or Senior, 1 Basic Grade, and 1 Speech & Language Therapy Assistant
Social Work	1 Senior
Clinical Nutrition & Dietetics:	1 Senior, 1 Dietetic Assistant with one national Clinical Specialist
Clinical Psychology / Clinical Neuropsychology	1 Senior Clinical Neuropsychologist and 1 Psychology Assistant
Activities Coordinator	1
Porters	4 dedicated to portering for therapy staff
Pastoral care	On consultation basis
Psychiatry	On consultation basis
Clerical	1 dedicated per ward.

* In the Partnership Model, a large hospital should have clinical specialist and general hospital could have either specialist or senior. A key-worker may be required to facilitate an early supported discharge model and this person should be the professional most appropriate to the person's individual circumstances.

Physical Environment of the Stroke Unit

A stroke unit is a multidisciplinary team including specialist nursing staff based in a discrete ward, which has been designated for stroke patients (Royal College of Physicians, UK 2004, 2006). When planning the physical layout of a stroke unit, we recommend consulting a framework document such as the "NHS: Health Building Notes, 1997". In addition, the environment should comply with SARI infection control guidelines, with particular respect to toilet and showering facilities and space for cleaning of equipment. The specific requirements of the stroke unit are described in Appendix 3.

Community Rehabilitation

All community dwelling individuals living with stroke should be entitled to access rehabilitation services as necessary. Such services may be required many years after the stroke so as to provide individuals with ongoing support and advice with regard to their condition, and also to provide new treatment approaches, which may have been developed since the person was last seen by the stroke team. All people with acute stroke not admitted to hospital should undergo a comprehensive outpatient assessment, which includes a medical evaluation and functional assessments preferably within two weeks (Canadian Best Practice, 2006).

Core Principles of Community Stroke Team

- People with stroke should continue to have access to specialised, inter-disciplinary rehabilitation after leaving hospital. Hospital discharge to generic rehabilitation services is not recommended (Royal College of Physicians, UK 2004, 2006)
- The quality and intensity (if deemed necessary) must be equitable to that available in the hospital (Canadian Best Practice 2006 and Royal College of Physicians, UK 2004, 2006).
- Rehabilitation in the community should be timely and occur seamlessly and without delay (Royal College of Physicians, UK 2004, 2006).
- Options for community rehabilitation and the environment in which it occurs should be flexible and account for the varying and complex needs of clients and their caregivers.
- Services should account for existing local provisions; A variety of non-specialist models already exist, including PCCC, District Care Units (DCU) and day hospitals and might be adapted or developed to incorporate specialist teams.
- Systems should be in place for ongoing monitoring and evaluation of services.
- Community rehabilitation services must be adequately resourced with appropriate treatment space and equipment.
- People with stroke and their carers should have their individual psychosocial needs assessed on a regular basis (Canadian Best Practice, 2006).
- Vocational issues for younger persons with stroke need to be appropriately addressed in conjunction with employers and services such as FAS.

Recommended Model of Community Stroke Team

We recommend a model of care where the community stroke team provides specialist rehabilitation to those with stroke. This team will provide a prompt service to those discharged from hospital or rehabilitation centres. Each person should have a key-worker assigned to them, whose responsibility it is to coordinate the rehabilitation programme, act as an advocate, and liase with other community and voluntary services. The length and intensity of intervention should be needs led, with a focus on the person's goals. A modular type package of care with short intensive periods of rehabilitation followed by phased treatment and education modules may be considered. Once the person has had adequate intervention with the community stroke team, the duty of care may be handed over to the Primary, Community and Continuing Care (PCCC) team. The community stroke team will also have the capacity to provide a service to those in extended care facilities on referral from local Primary, Community and Continuing Care (PCCC) teams. The Royal College of Physicians National Clinical Guidelines for Stroke (2004) recommends "Any patient with reduced activity at 6 months or later after stroke should be assessed for a period of targeted rehab". This will ensure that anyone with stroke is given equal opportunities for rehabilitation as and when required. This system of periodic review also serves the family well and helps them come to accept living with stroke. This is dealt with in more detail in Chapter 7.

Community Staffing Recommendations

The number of staff required to provide a comprehensive service to those affected by stroke in the community is difficult to determine. Factors such as the prevalence of stroke in the community, the model of service delivered, the geographical area being served, and the presence or absence of associated support services such as social services, voluntary agencies and other health service providers, will all have an impact on staffing levels. The estimation was based on Census 2002 figures (RCSLT 2006, Appendix 3). Based on these figures we have estimated the ratio of staff per 100,000 population for the community stroke team (Table 7).

Table 7 Staffing Levels for Community Stroke Team.

Discipline	WTE Numbers Based on 100,000 population
Physiotherapy	2 Senior Grade under the direction of a Clinical Specialist Physiotherapist
Occupational Therapy	2 Senior Grade
Speech & Language Therapy	2 Senior Grade
Social Work	1.5 Senior Grade
Clinical Nutrition & Dietetics	0.4 Senior Grade
Clinical Psychology / Clinical Neuropsychology	1 Senior Clinical Psychologist / Clinical Neuropsychologist and 1 Psychology Assistant
Therapy Assistants	2 therapy assistants per team

Extended Care Facilities

We recognise the needs of those who require extended care after an in-patient stay in either an acute setting or rehabilitation centre. Heretofore, residents in extended care facilities in this country have had little or no access to rehabilitation. We recognise that timing is all-important in stroke rehabilitation and that for some the optimal time for rehabilitation may be many months after the event. By this time, people may have been discharged from rehabilitation services and may face barriers to accessing any kind of follow-up rehabilitation. Failure to access rehabilitation at this time may lead to increasing the chances of patients becoming institutionalised and being readmitted to hospital. Increased institutionalisation and hospital re-admissions, added disabilities, and barriers to independence. A system of periodic review and active treatment phases from the community stroke team will maximise independence in mobility, communication and lifestyle.

Ongoing Support

Leisure

Studies have shown a marked reduction in both the number of leisure activities and the frequency of participation after stroke. This has negative implications for dependency on carers, depression, self-confidence and altered roles. Sedentary pursuits are more likely after stroke with implications on overall fitness and conditioning. People with stroke should be offered advice on achieving their desired social and leisure activities and goal-setting in the community should incorporate this. People with stroke must have access to public or private transport to facilitate this participation (New Zealand Guidelines 2003).

Chapter 6
Recommendations for a Community Stroke Service

There is now substantial data to indicate that those with stroke benefit from specialised care from a dedicated community stroke service. A community stroke service should be delivered by a defined community stroke team. Therapy based rehabilitation services targeted at selected patients resident in the community after stroke improves the ability to undertake personal activities of daily living and reduce the risk of deterioration in ability. (Out-patient Service Trialists, 2004). The ultimate goal of rehabilitation is to allow people with stroke to lead a high quality life, independently, in the community, however this may not be achievable for some individuals who require extended care in appropriate facilities. Research has shown that for every 100 people with stroke resident in the community receiving therapy based rehabilitation services, 7 would not deteriorate (Out-patient Service Trialists, 2004). This implies that 7 people will not need re-admission to hospital or possible placement in extended care facilities The NHS Scotland (2007) expresses the view that rehabilitation services should provide "added value through earlier anticipatory interventions and the prevention of unnecessary admissions to hospital or other care environments". This submission offers proposals to maximise the individual's capacity to live with stroke well. The potential benefits to the person with stroke of access to a dedicated team such as this include:

1. Delivery of optimal evidence based care.
2. Improved outcomes i.e. reduced mortality, reduced activity limitation and reduced participation restriction.
3. Reduced institutionalisation as a result of extended hospital stay.
4. Reduced demand for long term care beds due to improved outcomes.
5. Optimised patient care in the community resulting in fewer re-admissions to hospital.
6. Facilitates primary and secondary stroke prevention.
7. Facilitates audit process and comparisons between community services.
8. Provides ongoing education and training for service users and professionals.

The community stroke service has structural and staffing requirements in the community. The core members of the community stroke team include: Stroke specialist, Clinical Nurse Specialist, Senior Physiotherapist, Senior Occupational Therapist, Senior Speech & Language Therapist, Senior Clinical Nutritionist, Senior Social Worker, Senior Clinical Psychologist, Vocational Officer, Rehabilitation Assistants, and Clerical Staff. All clinical team members should have expertise in stroke care. The Allied Health Professionals (AHP) may be appointed at clinical specialist level in some centres. The community stroke team is **integrated** into the hospital stroke services by the Stroke specialist and Clinical Nurse Specialist who liaise between hospital and community services. In addition a key worker from the Allied Health Professionals may also be assigned to a case to ensure smooth transition from hospital to community services.

The objectives of the community stroke team are:

- To deliver high quality stroke rehabilitation that is evidence based.
- To promote and develop stroke care in the community.
- To promote healthy living as part of primary and secondary prevention strategies.
- To conduct quantitative and qualitative research into stroke.
- To collect accurate statistics, and carry out regular audit of the service.
- To educate those affected by stroke, colleagues, and service planners.
- To integrate care and develop links with other partners in stroke care, i.e. hospital, other rehabilitation facilities, other community services, voluntary services.

The community stroke team should have an operational policy which is tailored to the locality in which it operates.

Description of Current Community Services

Currently a gap exists following discharge from hospital, where the person may find themselves with little or no follow-up services. The person with stroke not only has to come to terms with a changed life, but is also faced with many barriers to accessing information, support services, continued rehabilitation etc. There has been little or no investment in community based stroke services in this country to date. Current community stroke services are available in some parts of the country but are under resourced and cannot provide a specialist service to those with stroke. Some current models of stroke provision in this country are outlined below.

District Care Unit

A primary care rehabilitation team, the District Care Unit or Home from Hospital Scheme may see people requiring rehabilitation (but not exclusively stroke) for a defined period of time. They accept referrals for those over the age of 65 only. The District Care Units are comprised of a multi-disciplinary team which provides increased levels of therapy and/or nursing supports for a period of up to 12 weeks (Department of Health & Children 1988). This approach is working at different levels of delivery throughout the country and would benefit from evaluation. Many GPs value this service highly as an alternative to hospital admission.

Community Rehabilitation Teams

Community rehabilitation teams do exist in some areas around the country e.g. the Midlands, Portlaoise, Mullingar, and Galway city. These teams provide rehabilitation to those over the age of 65. Therapy may be provided in the home or in a health centre. These teams provide a service to any person over the age of 65 who requires rehabilitation; including cardiovascular disease, diabetes, respiratory disease, orthopaedic rehabilitation etc. Issues arise in terms of transport, limited time frames for participation in rehabilitation programmes, limited infrastructural and personnel resources.

Outreach Services

An outreach post from St. Colmcille's Hospital Loughlinstown exists for Speech & Language Therapy (SLT). There exists 1 WTE Senior SLT only for the South Dublin /

North Wicklow area, who will follow up any adult with acquired communication and swallowing difficulties admitted to St. Colmcille's Hospital Loughlinstown and discharged into the community. This service also includes extended care facilities. This is not a stroke specific service but approximately 50% of the caseload is stroke. The person is seen within a month or 3 months which is specified by the referral source. There are no age restrictions and the person may be seen in their home or in Loughlinstown. However no transport service exists. This model is to be commended for providing a service to those who live in extended care. However, there is not a team approach to the overall care of those with stroke on this caseload, save for direct liaison with community therapists, and public health nurses. While these models above provide an excellent generic service, the literature is explicit about the value of organised specialist stroke care (British Association of Stroke specialists 2005).

Baggot Street Community Stroke Rehabilitation Unit
This model provides a dedicated stroke rehabilitation service to those in the community. There is no restrictive acceptance criteria such as age limits, catchment area, hospital attended, number of therapies required. In this model the person has access to the rehabilitation team for as long as she/he continues to make gains. This service also provides long-term follow up for those with stroke, and has the capacity to take cases on for rehabilitation many years after the onset of stroke. However, those in extended care facilities cannot be seen. A waiting list system is in operation with prioritisation criteria in favour of those who have received little or no rehabilitation. People may have to wait some time before being seen by the team, average waiting time is 1-2 months. Transport to the unit is also an issue due to restricted health service transport system. This submission proposes a model similar to the Baggot Street one but with strong links to hospital and other community services through shared appointments, providing a seamless model of care, enabling smooth transition for the person with stroke to the community, without waiting times for further rehabilitation.

Proposal for Community Stroke Services in Ireland

Well-developed Community Stroke Services would reduce the number of bed days spent in hospital. Many people spend a considerable length of time in hospital following stroke, because they depend on specialist rehabilitation skills that are not available elsewhere. If professionals with these skills were available in the community, it would facilitate the person with stroke getting home to a familiar preferred environment. One of the most significant factors following a Cochrane review in 2002 by the Royal College of Physicians was the recommendation of a well resourced, coordinated specialist multidisciplinary team to support early discharge and follow on post-discharge support. An added bonus is the corresponding reduction in hospital bed days when the person with stroke is treated in the community setting. In addition, health gains for individuals and communities with increasing opportunities for some to return to active employment should form the vision for a modern flexible and responsive service following such conditions as stroke.

Community stroke services should be provided by a team of diverse professionals who work closely together utilising collective skills, communicating well, and with a clear common objective for their patient (Duncan et al 2005). Different models of community stroke services exist and should be considered when planning community based services for stroke. The following service types were identified by Geddes & Chamberlain (2001):

- ***Early supported discharge community rehabilitation*** – brings discharge forward and provides an alternative to hospital rehabilitation. It also has the capacity to facilitate early discharge such as prompt provision of rails, equipment etc. This service also has a budget for home care and provides day or night nursing cover.
- ***Post-discharge community rehabilitation*** – provides seamless care from hospital to home. The community rehabilitation team may link with the hospital and overlap with the discharge process.
- ***Late community rehabilitation*** – this service commences months rather than weeks after stroke. Referrals may come from community personnel, carers or the person with stroke.
- ***GP-oriented post-stroke community rehabilitation*** – This is "available to patients not admitted to hospital and provides an alternative to hospital rehabilitation (or no rehabilitation at all)" (Geddes & Chamberlain, 2001).

There are some cases which do not require hospitalisation post stroke and therefore may never access appropriate rehabilitation, e.g. the person with no physical deficits but with communication and or cognitive deficits. These people also require specialist input provided by a dedicated stroke team in the community. Such a community stroke team would also be in a position to provide a service to all persons in the community living with stroke-related activity limitations and participation restrictions. The community stroke team should also provide long-term reviews for people with stroke.

Stroke services within the community setting should reach out to those who are vulnerable and traditionally find services difficult to access and subsequently present late for treatment (Scottish Executive, 2006). In addition this stroke team should use its expertise to reach out and identify risk factors for stroke in this susceptible group and address them. This emphasises the importance of delivering services locally that communities have identified as being most significant to them (HSE Primary Community and Continuing Care Transformation document 2006). The new service model for primary care as described in the 2001 Primary Care Strategy is designed to deliver locally accessible services to communities particularly to those with long-term conditions such as stroke. The Transformation Programme 2007-2010 promoted by the HSE sets out six priorities which are planned for the next four years: the development of integrated services across all stages of the care journey with increasing management of chronic illnesses such as stroke is one such priority.

Aims of Community Stroke Team

People with stroke may deteriorate functionally when first discharged from hospital to the community if services are not promptly available. From the patient's perspective the literature states community based services should aim to provide ongoing assessment and rehabilitation as well as support following discharge from hospital. An additional aim should incorporate sufficient support to prevent and / or reduce hospital re-admission. This submission supports a community stroke team model which is centre based but with the facility to provide domiciliary visits as appropriate. The input of a Consultant Geriatrician or Consultant in Rehabilitation Medicine is documented as an essential component of the community stroke team. The HSE Transformation Programme, which is in the initiation phase, should support the delivery of such a community stroke service with the development of primary care multi-disciplinary teams and networks. These teams / networks should provide expertise such as clinical psychology / clinical neuropsychology, psychiatry and social work in addition to GP, Nursing and Allied Health Professionals. Stroke research has recommended the importance of Clinical Nutritionists in primary and secondary prevention strategies as well as management of nutritional issues in those with stroke. There should be clear individual patient goals as a common objective for such teams / networks including suitable and adequate information sharing (Department of Health, Social Services and Public Safety 2004). The aims should be to:

- Deliver high quality stroke rehabilitation that is evidence based.
- Promote strategies to prevent stroke and promote general health.
- Promote and develop stroke care in the community.
- Educate colleagues, patients, carers and service planners.
- Integrate care and develop links with partners in stroke care – i.e. hospital, extended care facilities, respite services, voluntary agencies and service planners.
- Conduct research into stroke.
- Collect accurate statistics and audit the service on a regular basis.

Requirements of a Community Stroke Team

Core Team Members include
Stroke specialist e.g. geriatric or rehabilitation medicine (joint hospital / community appointment), medical team, Clinical Nurse Specialists (liaison between hospital and community), Senior Occupational Therapist (OT), Senior Physiotherapist (PT), Senior Speech and Language Therapist (SLT), Senior Clinical Nutritionist, Senior Social Worker, Clinical Psychologist / Clinical Neuropsychologist, Physiotherapy, Occupational Therapy, and Speech & Language Therapy Assistants, Clerical support.

Location
The Community Rehabilitation Unit can be part of an existing facility but should be dedicated to the rehabilitation of the person with stroke. The unit should be equipped with

all the necessary items for multidisciplinary rehabilitation. Specifically the facilities should include; PT gym, OT assessment and treatment area, facilities to conduct SLT assessment and treatment, area for education and group work, and consultation rooms for team members. A primary care unit may also provide these facilities.

Scope of the Community Stroke Service
Referrals sources to the community stroke team may include; hospital stroke units, other rehabilitation facilities, General Practitioners (GPs), and other community sources. This service is community based and hospital rehabilitation units are not part of this service but are closely linked i.e. transfer of patients in both directions as appropriate.

Access to Community Stroke Services
The community stroke team is stand-alone but is integrated with hospital stroke units by operational policies, joint appointments (consultant), specific liaison roles of clinical nurse specialist and allied health professionals. There is therefore access between the community stroke team and hospital services in both directions. This would ensure that those who are not admitted to hospital post stroke would have equal access to diagnostic investigations and medical follow-up as necessary. Examples of this include; community outreach specialist stroke clinics; day hospital; Out Patient Departments (OPD) e.g. neurovascular / stroke prevention clinics, vascular laboratory, cardiology services, neurology inpatient services, and radiology. The community stroke team should have strong links with vocational training schemes such as FAS, voluntary services such as the Volunteer Stroke Scheme (VSS), Headway, Brainwave and Peter Bradley Foundation.

Planning Community Stroke Services
A whole systems approach will be required with good strategic planning through evaluation of care pathways for people following stroke. It is essential that service monitoring and development is in place. This will include computer systems with links with national and international databases to compare standards and effectiveness of the service. Such systems could provide a means of communication between stroke team members as well other hospital and community services. Regular audit is vital to monitor satisfaction levels, maintenance of standards of care, and preparation for accreditation processes.

Service-User Evaluation
A user survey (including person with stroke and their family) should be carried out following discharge from the community and following ongoing review.

Costing
Service planning is organised in accordance with the Health Act 2004. The main priority focus is improving the health of our nation and to enable them to live healthier and more fulfilled lives. Therefore in the development hospital and community stroke services specific deliverables and outcome measurements ensuring added value should be clearly documented. Measurement principles such as access to service, integrated care and quality of service should be clearly specified in the scope project. Measurement outcomes

e.g. reduction in re-admission, recurrence rates and other quality indicators should be clearly outlined in the scope statement.

Research & Education Needs
Education resources should be made available to the team to support continuing professional development. This includes financial support to attend conferences, workshops, and courses. Study leave should also be made available for this purpose. Research should be ongoing in order to add to the evidence base for intervention in stroke. Research bursaries may be put in place in order to facilitate staff time for research.

Staffing Requirements for Community Stroke Team

There are no clear guidelines on staffing levels for a community stroke team. The number of staff required to provide a comprehensive service to those affected by stroke in the community is difficult to determine. Factors such as the prevalence of stroke in the community, the model of service delivered, the geographical area being served, and the presence or absence of associated support services such as social services, voluntary agencies and other health service providers, will all have an impact on staffing levels. Our suggested staffing levels outlined in Table 8 below are based on 100,000 population. The medical posts are joint appointments and therefore have an inherent role in integrating hospital and community stroke services.

Table 8 Community Stroke Team Staffing Levels

Discipline	Numbers Based on 100,000 population
Physiotherapy	2 WTE Senior Grade
Occupational Therapy	2 WTE Senior Grade
Speech & Language Therapy	2 WTE Senior Grade
Social Work	1.5 WTE Senior Grade
Clinical Nutrition & Dietetics	0.4 WTE Senior Grade
Clinical Psychology / Clinical Neuropsychology	1.5 WTE Senior Grade
Medical	1 WTE Consultant Post (two joint appointments both linked with hospital services) 2 Specialist Registrars (also joint appointments)
Nursing	3 WTE Clinical Nurse Specialists
Clerical Staff	1 WTE Grade 6 & 1 Grade 4
Therapy Assistants	3 WTE, 1 WTE for each of PT, OT, SLT

More research on the staffing requirements to meet the needs of those with stroke in the community should be a priority. Current barriers relating to staff ceiling levels impose considerable difficulties on the recruitment process and we recommend that this be addressed as a matter of priority so that a quality stroke service may be provided.

Liaison with Hospital Services

Well-defined, explicit discharge planning will have to be developed in consultation with hospital colleagues in each area (Hobbs & Murray 1999). Planned discharge is vital for positive outcomes in stroke. The GPs, community nurses and allied health professionals must receive adequate information prior to discharge. Collaborative discharge summaries have been recommended as fundamental for continuity of care. The Scottish Intercollegiate Guidelines Network (SIGN) (2002) emphasise early assessment of the needs of each person on discharge including a pre-discharge home visit where indicated. Discharge planning and the transfer of care to the community stroke team should involve a detailed discharge document. SIGN (2002) also recommended the need for GPs to be kept informed of the person's discharge plan and anticipated community services.

Transport

The person with stroke may be unable to drive for many months and therefore will need transport to attend rehabilitation services. In Ireland, lack of transport remains a barrier to accessing the existing rehabilitation services. In Scotland they recognised this and recommended a joint health transport strategy, which should include inter-hospital transfer services and non-emergency transport. It is important to have a national structured approach to care of people with long-term conditions such as stroke that is consistent across the country. Any unit-based community stroke service will necessarily require a transportation service to allow equal access to this service. This is essential for those who live in rural communities. The transport may be ambulance, minibus or taxi, depending on the needs of the person but in all cases must have safe easy access for the wheelchair user.

Long-term Functional Disability

There are 30,000 people with residual disability from stroke including an estimated 22% who cannot walk, 24 – 53% who need help with activities of daily living (ADL) and 33% with cognitive impairment (IHF Council on Stroke, 2001). Many achieve a good functional outcome but others do not achieve enough recovery (physical, cognitive or both) to allow them to live at home. This group of people may be admitted to nursing homes or other extended care facilities. Approximately 15-30% of people with stroke have severe functional disabilities and this requires a different approach when developing care plans (Duncan et al 2005). A formal, organised, well coordinated, evidence based approach to service delivery is essential. This will ensure complications and impairments are reduced to a minimum with optimum increase in functioning and participation (Department of Health, 2002). This deterioration in function should be monitored closely to prevent the onset of post stroke complications.

Extended Care Facilities

Currently, services for those with severe functional disabilities after stroke in extended care facilities are at best sparse but usually non-existent. It is essential that this group of people with severe functional and cognitive problems is included in planning for dedicated community stroke services. Limb contractures and poor nutrition due to difficulty swallowing (dysphagia) are two examples of the serious issues that require input from the community stroke team in extended care facilities. In relation to the above, regular evaluation and management by the Physiotherapist, Occupational Therapist, Clinical Nutritionist and Speech and Language Therapist is essential for maximum benefit to the person with stroke. The role of the community stroke team in extended care facilities includes setting up treatment programmes to manage the consequences / complications of chronic stroke and to educate relevant staff in the care plan. Therapy assistants would also be beneficial to provide treatments in extended care facilities under the supervision of more experienced staff.

Support for Carers and those with Stroke

Lincoln et al (2004) compared outcomes between a community stroke team of specialists and routine care. Those treated by a stroke team were more satisfied with the emotional support they received and their carers were under less strain and were more satisfied with their knowledge of stroke recovery, the emotional support they received and overall satisfaction with services. This provides evidence to support the setting up of community stroke teams who can provide a holistic service to both the person with stroke and their carer. Often carers are ill-prepared for the physical and emotional consequences of caring for the person with stroke at home. It is important that stroke rehabilitation is holistic in nature and looks beyond the functional limitations imposed by stroke and takes participation restriction into account. Cardol et al (2002) identified emotional distress in those with stroke as one major factor in preventing them from resuming or maintaining family roles, employment, and personal and social relationships. O'Loughlin (2007) described a carer education programme in an Irish context which aims to not only prepare family and carers for the practical and emotional consequences of acquired brain injury but also to enable them to gain maximum benefit from the rehabilitation programme for themselves as well as their relative. A community stroke team is ideally placed to provide support to those affected by stroke and their social network as well as addressing rehabilitation needs and training for carers. Such training may include safe transfer methods, positioning of limbs, safe swallow techniques, facilitating communication strategies, and use of assistive devices such as bath lifts and hoists (Hopkins & Stapleton 2007). Patel et al (2004) highlighted the cost effectiveness of caregiver training such as this and concluded that there was reduced cost of care while also improving overall quality of life in caregivers at one year.

Ongoing Care and Secondary Prevention

Primary and secondary prevention should be considered an integral part of the role of the community stroke team. Primary prevention targeting family and friends of those with stroke is within the remit of the community stroke team. Secondary prevention is also an important role for the community stroke team. This should include advice to reduce or eliminate risk factors for stroke such as smoking, high cholesterol, obesity and high blood pressure. Such programmes may be delivered on an individual or group basis through information leaflets, lectures, group discussion, support groups, social events and general physical fitness classes.

General Physical Fitness

The literature has identified that the person with stroke often deteriorates functionally at home as time progresses. A study by Pettersen et al (2002) reported that 20% of 142 people with stroke had deteriorated within three years, according to the Barthel Index. Their median age was 75 years. The deterioration was related to recurrent stroke and arthritis. Another small study identified quadriceps weakness (primary leg muscle) in the non affected stroke limb, two weeks after stroke onset (Harris et al, 2002). If a person with stroke is unable to walk because one leg is too weak, it is logical to suggest that the non affected lower limb will also become weak through lack of use. Studies have shown that lower limb circuit training (Dean et al, 2000) and aerobic exercise (Pang et al, 2006) improved walking ability and aerobic capacity respectively in people with chronic stroke. The American Heart Association (2006) guidelines have recommended that those who are capable of engaging in physical activity should be involved in "at least thirty minutes of moderate-intensity physical exercise most days to reduce risk factors." The lack of long term community services can lead to deterioration in physical ability. Lennon et al (2007) have concluded that people with stroke did not maintain levels of physical activity after one year. Participants cited lack of access to appropriate exercise equipment as one of the barriers. Exercise classes are a good social event also and should be scheduled regularly for those with stroke living in the community and could be provided in the community stroke unit.

Appropriate Medical Follow-up

Many people with stroke have multiple risk factors as well as co-existing medical history and therefore require regular health checks. This will require access to consultation services such as radiology, neurology, gastroenterology, psychiatry, cardiology, vascular surgery, orthopaedics, urology, neurosurgery, dentistry, ophthalmology, pharmacy, and rheumatology. Community stroke care should be considered as an ongoing process, providing intensive rehabilitation as required and ongoing review and evaluation. This model may reduce hospital re-admissions and inappropriate referrals to other services. The benefits that community stroke teams offer include:

- Delivery of optimal evidence based care.
- Improved outcomes i.e. reduced mortality, reduced activity limitation and reduced participation restriction.

- Reduced institutionalisation as a result of extended hospital stay.
- Reduced demand for long term care beds due to improved outcomes.
- Optimised patient care in the community resulting in fewer re-admissions to hospital.
- Facilitates primary and secondary stroke prevention.
- Facilitates audit process and comparisons between community services.
- Provides ongoing education and training for service users and professionals.

Implementation of this model will require appropriate investment in improved infrastructures and increased staffing at all levels.

Figure 2 Clinical Pathway for Mild or Moderate Stroke

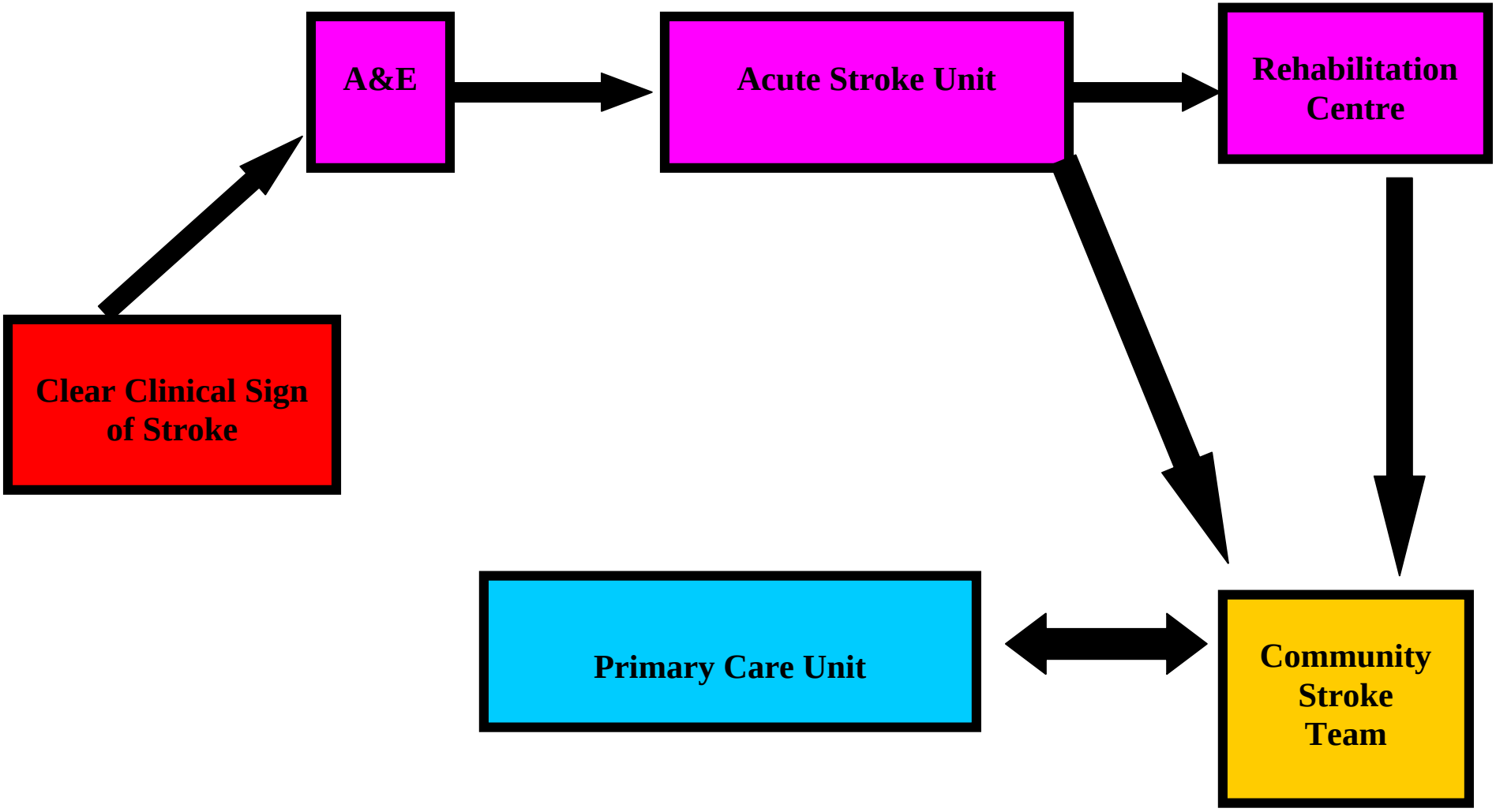
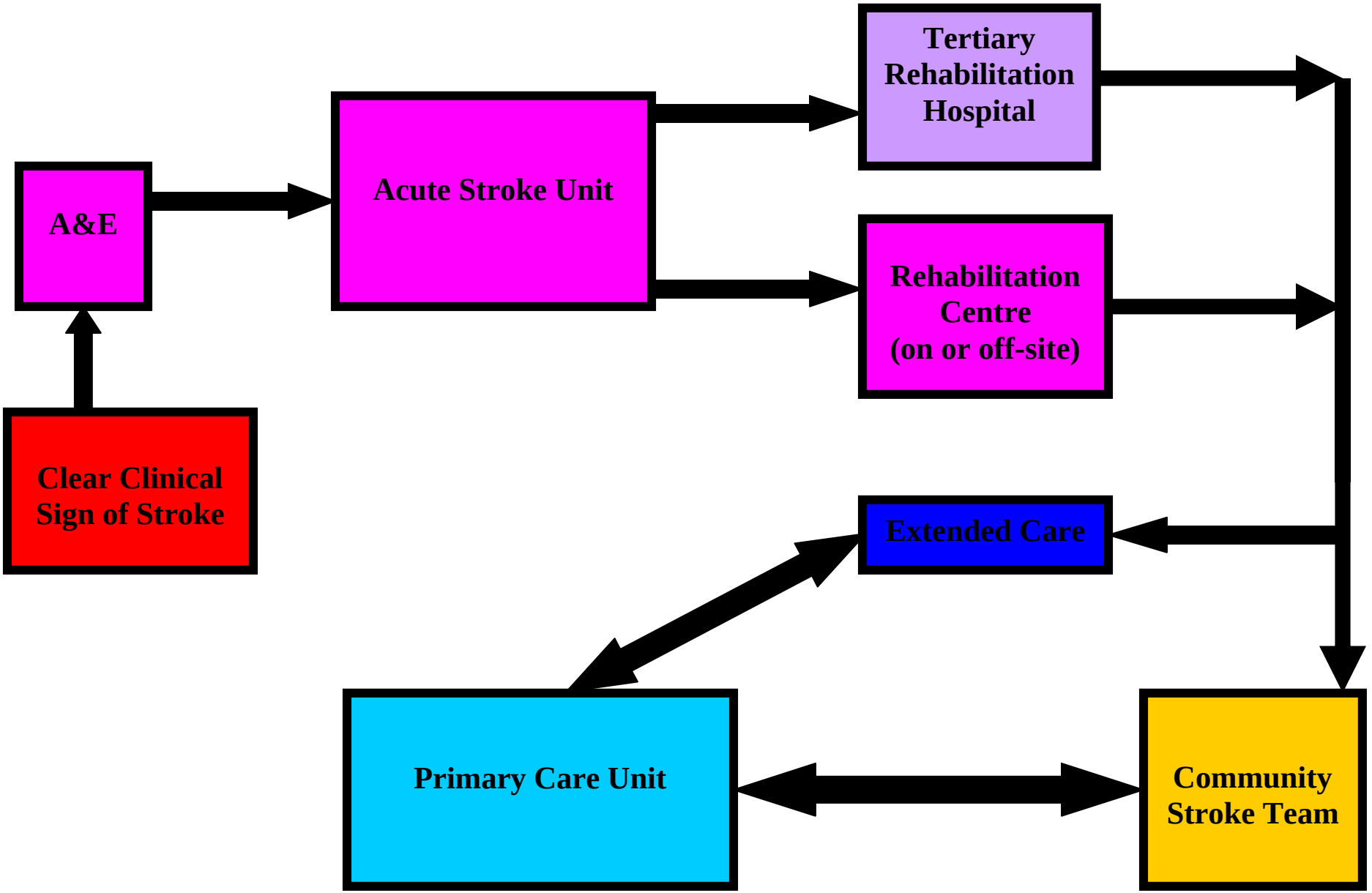


Figure 3 Clinical Pathway for Severe Stroke



Chapter 7

The Volunteer Stroke Scheme

The Volunteer Stroke Scheme (VSS) was established in 1983. Its aims are to support stroke sufferers and their families, and to create a greater awareness and understanding of stroke through effective and relative publicity. The VSS provides the following services:

- A helpline.
- A website: www.strokescheme.ie <http://www.strokescheme.ie/>
- Publications on all aspects of stroke.
- Stroke clubs where members meet on a weekly basis, allowing recovery to take place through mutual support. (4 such clubs are in the Dublin area; many more countrywide.
- Weekly physiotherapy group sessions.
- Counselling service for VSS members and their families.
- An annual holiday and many daily outings.
- Meetings for carers.

These services are provided by the VSS free of charge.

A recent study carried out on behalf of the VSS of its members, gives solid support to what the VSS has known for many years: stroke sufferers experience severe disability across a wide range of activities, which greatly impacts on their quality of life. To compound this difficult situation, many are not receiving sufficient post-stroke services. Research in our stroke clubs show that; 87% of members never received psychological / psychiatric service following stroke 56% never received a Social worker visit 58% were readmitted to hospital within months of being discharged 39% need help with bathing and showering 56% could no longer climb stairs without assistance 32% were unable to walk more than 50 yards without help 43% could no longer wash-up after meals 25% were unable to shave, wash their own face or brush their teeth and hair 27% needed help transferring from bed- chair. This catalogue of real-life facts indicates the high level of dependency post-stroke.

The reality is that care is being given by spouses or other family members with little or no input from state services. The burden is often backbreaking. The input of the VSS is extremely beneficial to those we reach.

Developing services to cope with stroke is a real challenge. It is a shameful reality that in the 24 years since the VSS was established, minimal improvement has taken place in acute or rehabilitation services. This is not a criticism of the quality of care delivered, but in the lack of available resources in the delivery of that care.

The VSS structure is completely voluntary: 70 volunteers with 2 part-time paid staff. Government funding through the HSE, is €32,000 annually. The full cost of running the service is 4 times this amount, i.e. €130,000. This costing does not take into consideration the fact that the VSS pays no salaries or expenses to volunteers who run the organisation on a daily basis. In order to continue our valuable work we urgently need increased funding.

Our model of support helps people to help themselves, fostering independence not dependence; concentrating on ability not disability.

Our ambition is to see a community service in place that supports stroke sufferers and their families in a timely and appropriate way.

The VSS will continue its work and give full support to any such community initiative.

Chapter 8
Support for Patients, their Families and Carers

Stroke Family Support Worker
The provision of a stroke family care worker should be considered as part of a strategy of improving the care of families affected by stroke. The key worker may also be assigned to a case to ensure smooth transition from hospital to community services and the organisation of ongoing care and liaison with professional and voluntary agencies (SIGN 2002).

Continence Management
Every service caring for persons with stroke should have local continence guidelines including advice on appropriate referral (SIGN 2002). Every hospital should have a Clinical Nurse Specialist in Continence management; there should be liaison with specialist trained staff in the community.

Mood Disturbance after Stroke
Mood disturbance such as anxiety and depression are common after stroke. All persons with stroke should be screened for mood disturbance. This should occur initially and at key stages during the rehabilitation process. There should be adequate provision of specialist staff including stroke specialists, liaison psychiatry and clinical psychology / clinical neuropsychology to allow timely referral and comprehensive assessment and management.

Driving and Transport
Standardised guidelines are needed when offering advice and assessment to persons with stroke who wish to return to driving. Driving and transport ability should be assessed routinely and an on-road driving assessment and re-training should be routinely offered to those who need it. This assessment should be carried out by someone with specialist skills who has a good understanding of the physical, cognitive, and perceptual deficits that may be encountered after stroke.

The person with stroke may be unable to drive for many months or may never return to driving. In Ireland, lack of transport remains a barrier to accessing existing rehabilitation services, and it is important that suitable alternative transportation is offered to those who have difficulty with driving or accessing transportation.

Sex after Stroke
It is important that health professionals talk to those with stroke and their partners about sexuality and provide advice and information to address any concerns. Currently there is only one Clinical Nurse Specialist in Sexual Health in the Republic or Ireland.

Vocational Rehabilitation and Returning to Work

The person with stroke who is planning to return to work should have access to the rehabilitation team and range of professionals who can advise them on issues relating to return to work which may include, vocational rehabilitation, coping with attention and neuropsychological difficulties, fatigue, and / or communication deficits. Rehabilitation Medicine teams have particular expertise in the service needs of younger people with stroke who may be a wage earner, have young children or be in the process of acquiring educational or vocational skills at the onset of the stroke.

Health Promotion and Public Awareness in Relation to Stroke

Internationally, it is accepted that poor levels of knowledge amongst the general public about the significance of TIA/stroke symptoms plays a major role in explaining the long delays seen in accessing health care assessment and treatment which may lead to suboptimal outcomes. Major public education and awareness programmes will be essential to facilitate improved health outcomes following stroke and TIA. Such education will need to cover risk factors for stroke, primary and secondary prevention and how they can be actively modified as well as informing the general public as to the appropriate urgent actions required and the appropriate time scales for those patients or family members with TIA or symptoms of acute stroke. The Act FAST campaign in the UK is an example of such a public education strategy.

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Appendices

Appendix 1

Estimate of Nursing Time Requirements for 1 stroke patient during the first 24 hours after stroke.

Activity	Time (minutes)	N per shift	Total time
Anti-embolic stockings (putting on)	5	1	5
Anti-embolic stockings (checking)	2	2	4
Bathing / shower	20	1	20
Washing / grooming	10	1	10
Tissue viability / pressure damage risk	5	1	5
Toileting	5	4	20
Oral hygiene	10	2	20
Initial assessment (below*)	30	1	30
medical history*			
social history*			
previous functional state* (m&h risk assessment)			
previous and current mood status*			
previous & current nutritional status*			
current neurological assessment (NIHSS)*			
Neurological assessment (SNOBS)	5	4	20
Blood Pressure	3	4	12
Oxygen saturation	1	4	4
Pulse - rate and rhythm	1	4	4
Temperature	2	4	8
Respiration	1	4	4
Meal time / Feeding / NG tube	20	1	20
Swallowing ability	10	1	10
Blood Sugar	5	1	5
Fluid balance chart (include IV fluid)	10	3	30
Weighing	10	0.33	3.3
Monitoring for depression	0	0	0
Medication	10	2	20
Mobilisation & positioning	15	6	90
Ward Rounds	10	1	10
Relative - discussions	5	4	20
patient - discussions	5	4	20
CT scanning (one third to account for 3 shifts)	10	1	10
Investigations / tests	10	1	10
Handover & Report writing	10	2	20
Breaks	30	1	30
Total time (minutes)			**464.3**

Please note this overview does not include time for any of the following activities: mentoring and staff training; management of complex disabilities, falls, incontinence and dementia/agitation; provision of palliative care,p ain and other symptom control; thrombolysis/drug trial monitoring/documentation; participation in multi-disciplinary team working; bed management and advising on care of outliers; telephone referrals; working with translators.

For further information on this analysis, please contact Professor Caroline Watkins, Professor of Stroke and Older People's Care, University of Central Lancashire, Preston, PR1 2HE (Tel: 01772 895140; Email clwatkins@uclan.ac.uk).

Appendix 2 - Role and responsibilities of therapy members of the MDT adapted from SIGN 2002 Guidelines

Table 1 Physiotherapy

Assessment	**Communication between Physiotherapists and other team members**
• Respiratory function • Muscle tone • Body alignment and range of joint motion • Movement status • Sensation • Undesirable compensatory activity • Balance • Mobility-walking, transfers, stair-climbing	• Attending multi-disciplinary meetings and case conferences • Specific liaison with other professionals, teaching staff, patients and relatives. • Setting and meeting appropriate physical goals. • Supporting patients and families. • Liaison with other Physiotherapists through networks and specific training in the physical management of stroke

Table 2 Occupational Therapy

Assessment	Intervention
• Using activity analysis in which the components of an activity are identified, along with the individual's limitations in carrying it out. • Assessment of skills, which impact on present activity (e.g. sensorimotor, cognitive, perceptual and psychosocial impairments). • Assessment of skills for performance of self-care, domestic, work and leisure occupations. • Assessment of physical environment. • Visuo-spatial awareness	• Help each patient achieve the highest level of independence possible. • Promote the use of purposeful, goal-orientated activity. • Teach compensatory techniques to aid independence. • Re-develop physical, sensory, cognitive, and perceptual skills through activity and practice. • Assess for and provide appropriate seating, splinting and to advise on positioning. • Assess and advise on appropriate equipment and adaptations to enhance independent function. • To assess, advise and facilitate, transport and mobility issues such as driving. • Educate the patient and carer in all relevant aspects of stroke care. • To facilitate the transfer of care, from acute stages through rehabilitation and discharge.

Table 3 Speech & Language Therapy

Assessment	Communication between Physiotherapists and other team members
• Provision of diagnostic service • Provision of information to clients, carers, and health care staff about impairments/disabilities, related abilities, and the facilitation of communication • Identification of an individualised speech and language therapy care programme, e.g. ➢ Support ➢ Regular therapy ➢ Intensive therapy	• Facilitating access to information regarding ➢ Methods of coping ➢ Therapies available ➢ Support groups • Assessment for and provision of augmentative and alternative forms of communication. • Facilitating referral to other professional support, particularly where this will enhance recovery of / compensatory strategies for communication function

Table 4 Clinical Nutrition

Assessment	**Communication between Physiotherapists and other team members**
• Carry out a full nutrition assessment of the person • Implement appropriate nutrition intervention • Advise the person and/or carer according to their nutritional needs • Devise a discharge nutrition care plan for home/community • Liaise with the community stroke Clinical Nutritionist regarding the person's nutritional care plan • Give detailed and accurate handover to the community stroke Clinical Nutritionist • Offer education, advice and support as required to the community stroke Clinical Nutritionist	• Community Clinical Nutrition Stroke Services • The Clinical Nutritionist as part of the community stroke team will have a role in primary and secondary prevention as well as ongoing management of nutritional issues post stroke. The Clinical Nutritionist, as part of the community stroke team, will plan care and services around the individual as follows: • Liaise with the hospital Clinical Nutritionist prior to discharge to devise a nutrition care plan to best suit the patients needs at home • Accept the care of the patient from the acute service • Provide appropriate nutritional intervention to the patient • Advise the person, carer and family on nutrition management at home • Advise regarding secondary stroke prevention as appropriate • Offer support and advice on home enteral nutrition • Review the person with stroke in timely and appropriate manner

Table 5 Clinical Psychology / Clinical Neuropsychology

Direct work with people after a stroke includes:	**Services to carers and professionals include**
• Detailed neuropsychological assessment of intellectual / cognitive impairment, behaviour, daily functioning, difficulties with interpersonal relationships and emotional problems • Providing information and specific cognitive strategies to address any attention behaviour, problem solving difficulties, the patient may have • Using appropriate techniques to manage difficult behaviour, which can result in reduced stress to the individual, their carers and health professionals • Using therapeutic interventions to alleviate psychological difficulties such as depression, anxiety in patients and their carers and these can also include behaviour management strategies for more challenging behaviours •	• Working within a multi-disciplinary team using the results of psychological assessments to develop specific care programmes • Working with families on adjusting and understanding the cognitive deficits experienced by their relatives • Training, supervising and/or consulting with other professionals as requested

Appendix 3 - Physical Environment of the Stroke Unit

- Therapy gym
- Interview rooms
- Therapy rooms to include large room for group treatment programmes
- Cognitive / perceptual room for Occupational Therapy
- Occupational Therapy kitchen for task based practice.
- Computer room for people to work independently on software packages to assist in learning language, cognitive, and perceptual skills
- Team meeting room / education room to include a one-way mirror facility for training and observation for certain clinical presentations.
- 1 multi-purpose group treatment room
- Multi-disciplinary team office space open and used by all to facilitate communication between team members
- A dedicated ward base
- Be accessible with sufficient bed space to facilitate a hoist, wheelchair and any other special equipment. SARI guidelines recommend a minimum of 3.7m² around each bed space to meet infection control criteria.
- Sufficient numbers of hoists and other lifting aids should be available at ward level as well as in treatment areas
- Switches and power sources should be within easy reach for both an ambulant person and wheelchair user
- Toilets and bathing facilities should be wheelchair accessible and include grab rails, level access showering facilities, alarm, and call bells within easy reach
- SARI guidelines recommend 50% of beds should be in single rooms with ensuites. We suggest that toilet and shower access for the remaining 50% should be at a ratio no greater than one shower and toilet for four people.
- Dining room
- Day room for communal use
- Quiet room for people to meet with visitors in private
- Family room for overnight stays when person is very ill or in a critical condition
- Independent living space in order that the person may experience a real 'home' setting pre discharge. This will highlight any issues that should be considered before returning home.
- Storage space
- Dedicated wheelchair / walking aid store room
- Decontamination room that is well-ventilated

Appendix 4 - RCSLT Staffing Requirements Data

RCSLT (2006) highlighted the inadequacy of population figures to estimate staffing levels in Speech & Language Therapy. They stressed the importance of examining the demographics of an area along with epidemiological data to estimate required staffing levels. They stated that staffing levels should "be negotiated locally, be based on an estimate of demand, reflect the need to provide safe, accessible, effective and equitable services, reflect the full range of speech and language therapy roles and responsibilities." More research on the staffing requirements to meet the needs of those with stroke in the community should be a priority. "Communication Connections" which is an SLT document from Mater, Beaumont, James Connolly Memorial Hospitals, LHO Dublin North, LHO Dublin North-West, and LHO Dublin North-Central made an estimate as to numbers of SLTs needed to serve those with stroke in the community. The estimation was based on Census 2002 figures as follows:

LHO 6 population of 128,813
LHO 7 population of 85,109
LHO 8 population of 150,697
Prevalence of 750 per 100,000 with stroke.
Suggested 33% of these would need access to SLT service in community
LHO 6 would have 332 needing SLT
LHO 7 would have 212.8 needing SLT
LHO 8 would have 376.7 needing SLT
This amounts to 6 WTE SLTs to serve population of 364,619.

Reference: Barrow, R., Cunningham, U., Hill, K., Morrissey, M., Murphy, N. & Ryan, L. (2006) *"Communication Connections"* A Collaborative Community / Acute Hospital Cross Pillar Proposal for the Development of Primary Care Speech & Language Therapy Services for Adults with a Physical & Sensory Disability (18-64) and Older Persons (65 years +) in PCCC LHE North West Dublin, LHO North Central Dublin and LHO North Dublin (unpublished).

Appendix 5 - Description of Rehabilitation Medicine/Geriatric Medicine Interdisciplinary Team: Individual Roles

Rehabilitation is a proactive, person-centred and goal-oriented process that begins the first day after stroke. Its aim is to improve function and/or prevent deterioration of function, and to bring about the highest possible level of independence - physically, psychologically, socially and financially. Rehabilitation is concerned not only with physical recovery but also with reintegration of the person into the community. Furthermore, rehabilitation is a process that aims to maximise self-determination and optimise choices for those with stroke.

The central aspect of rehabilitation is the provision of a coordinated program by a specialised, interdisciplinary team of health professionals. This rehabilitation team involves combined and coordinated use of medical, nursing and allied health skills, along with social, educational and vocational services, to provide individual assessment, treatment, regular review, discharge planning and follow-up.

While the interdisciplinary team recognises the specialist contribution of each discipline, generally no mention has been made of their specific roles throughout the document. It is the intention of the working group that this document highlights the team approach to rehabilitation and to focus on the interventions themselves rather than which member of the team should be involved. However, the following is provided as a summary of the main aspects of members of the team:

Doctors coordinate comprehensive medical care (including consulting other medical specialists as needed), assist stroke survivors and their families in making informed choices and re-adjustments, and prevent complications and recurrent stroke. The doctor is often responsible for making sure the best available resources and services are offered to those affected by stroke. An inpatient medical team (commonly a specialist [e.g. in neurology, rehabilitation or geriatrics], registrar and junior medical officers) often work in conjunction with a general practitioner to provide care in hospital and in the community.

Nurses perform comprehensive nursing assessments and help manage aspects of patient care including observations, swallowing, mobility, continence, skin integrity, pain control and prevention of complications. Nurses also provide patient centred care and assist coordination of care, discharge planning, support and education. Nurses can provide specialist stroke care in the acute, rehabilitation and community context as well as deliver palliative and terminal nursing care.

Physiotherapists address recovery of sensorimotor function in the upper and lower limb, and functional mobility ranging from bed transfers to community ambulation. They also assist in the treatment of musculoskeletal problems or complications (e.g., shoulder pain) and respiratory problems.

Occupational therapists work with clients to optimise participation and independence for all daily occupations (including self-care, leisure and productivity). This is achieved by either working directly to address recovery of function (including motor, cognitive or perceptual function), or by adapting the task or the environment.

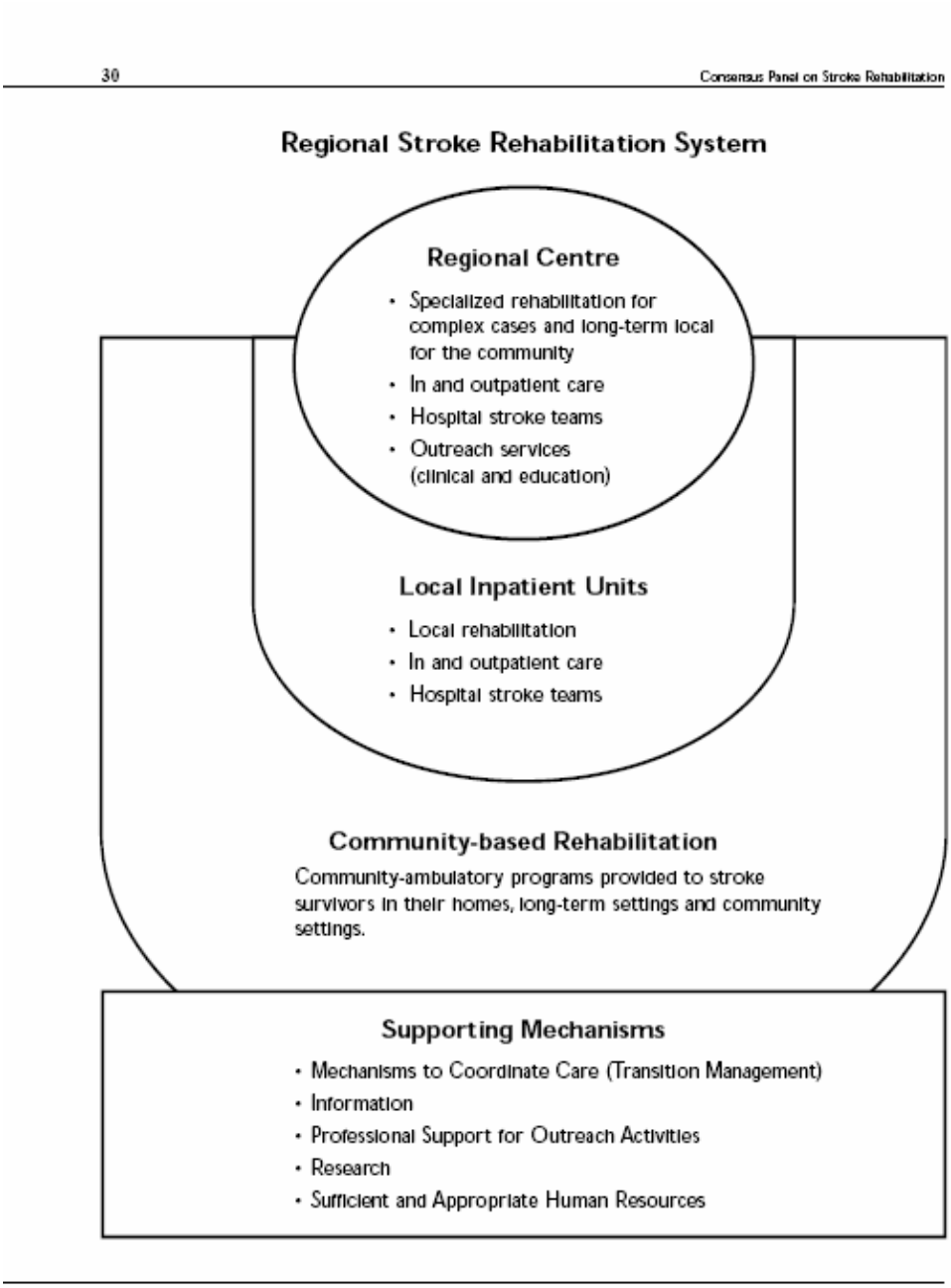
Speech & Language Therapists work with people who have difficulties with communication, cognition, and swallowing, and also provide training to carers and staff to facilitate activity and participation for those with communication difficulties.

Dieticians work with those who need modified diets or alternative feeding as well as those at risk of, or suffering from malnutrition. They also provide education and counselling for risk factor modification and management of co-morbidities.

Social workers provide support, counselling and information to those with stroke and their families regarding options to optimise physical, emotional, social and spiritual well-being. They also assist in organising community resources.

The team may be expanded to include Clinical Psychologists and/or Clinical Neuropsychologists, Psychiatrists, Pharmacists, Ophthalmologists, Orthoptists, Podiatrists, Orthotists, and Therapy Assistants as well as general ward staff. The person with stroke and their carer or other family members should also be acknowledged as an important team member. National Stroke Foundation Australia 2005

Appendix 6 - Diagrammatic Representation of Stroke Rehabilitation (Ontario)



Appendix 7 – Definition Early Supported Discharge (ESD)

Early supported discharge (ESD) is a model that links inpatient care with community services. Rehabilitation services are provided in the community at a time when the stroke survivor would normally still be an inpatient. ESD enables a stroke survivor to go home earlier than otherwise possible, with the support of rehabilitation and nursing services in the home. A key argument for ESD is that the home provides an optimum rehabilitation environment, since the goal of rehabilitation is to establish skills that are appropriate to the home setting. Stroke survivors have reported greater satisfaction following ESD than conventional care National Stroke Foundation Australia 2005