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Trinity College Dublin

National Audit of Stroke Care (NASC)
Irish Heart Foundation in Association with the Department of Health and Children

Community Audit:
National Survey of General Practitioners, 2006

Prepared on behalf of the Irish Heart Foundation National Stroke Review Group
by
The National Audit of Stroke Care Research Team
(Royal College of Surgeons in Ireland and Trinity College Dublin)

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Report prepared by the National Audit of Stroke Care Research Team

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We particularly thank all the general practitioners who participated in the pilot study and national study.

This report forms one component of a larger project to systematically and comprehensively determine the current state of, and need for, hospital and community based stroke care in Ireland. As such, it should be read in conjunction with findings from other projects to be completed in late 2006 and 2007.

Executive Summary

Background and methods

- The general practitioner (GP) survey of the National Audit of Stroke Care is the focus of this report. The development of Irish primary care services, so that they become the cornerstone of care and preventive services for communities, is consistent with best international practice. Of all health care providers, GPs typically have the most frequent contact with their patients. Therefore, they are well placed to have a key role in the prevention and management of stroke.
- The aim of this survey was to document the availability of evidence-based structures for supporting stroke care and prevention in general practice and to profile the views, experiences, and needs of Irish GPs in this context.
- This was a cross-sectional study of randomly selected GPs practising in the Republic of Ireland. Participation was invited by postal survey. A telephone reminder followed in two weeks. GPs could return the questionnaire or complete it by telephone interview. A final reminder questionnaire was sent to non-responders within the following two weeks. Of the target sample of 484 GPs, 36 were ineligible and 204 responded (response rate = 46%).

Results and discussion

- 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. 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, general practice showed little structured organisation for long-term follow-up of stroke patients.
- While GPs were well informed regarding a number of stroke prevention and management issues, a number of knowledge gaps were identified.
- More recently qualified GPs were over-represented in responders compared to non-responders. As these GPs may have more up-to-date knowledge in relation to chronic disease management, we caution that the results of this survey may reflect a more positive picture of stroke awareness and care in general practice than exists in reality.

Recommendations

[For further discussion with Review Group]

It is recommended that the deficits in the prevention and management of stroke in primary care identified in this study be addressed through the establishment of a system of structured care within general practice based on current best evidence. Examples of successful structured approaches are the Heartwatch scheme in Ireland and the Quality Outcomes Framework system in the UK. It is recommended they provide templates for the future development of stroke services in general practice. General practice is one component of a wider primary care system. As with any new system of care, primary care development regarding stroke needs to be adequately resourced in terms of both funding and multidisciplinary staff. This report will combine with others to develop a greater understanding of staff (allied health professional) and patient and family experiences of the primary care setting in the context of stroke.

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Chapter 1: Introduction

Stroke is the third leading cause of death worldwide and the third most common cause in developed countries (Sarti, Rastenyte, Cepaitis & Tuomilehto, 2000). It is also a leading cause of morbidity, with only half of survivors of an acute stroke making a complete recovery. Approximately 30% of survivors will make an incomplete recovery, although they will not necessarily require assistance with usual care activities. A further 20% will require assistance with at least one activity (Bonita, Solomon & Broad, 1997). It is estimated that in a western population of one million citizens, 2,400 new strokes occur every year, 700 of these patients will die within one year, and less than 50% will be independent one year after the occurrence of the stroke (Hankey & Warlow, 1999). Approximately 10,000 people experience a stroke each year in the Republic of Ireland (ESRI) and it is estimated that over 30,000 people in Ireland are survivors of stroke (Irish Heart Foundation Council on Stroke, 2001). It is the third most common cause of death and accounts for more deaths than breast cancer, lung cancer and bowel cancer combined.

Physical disability and morbidity resulting from stroke pose a significant burden both at an individual and a societal level. The onset of physical disability may have severe social and psychological consequences, causing a period of adjustment or disruption, and promoting feelings of worthlessness or hopelessness that may fuel depressive symptoms (Boerner, 2004; Bruce, 2001). Overall, the high morbidity associated with stroke contributes to the economic burden of this condition worldwide (Grieve et al., 2001) with hospital costs accounting for 71% of the total stroke care costs (Caro, Huybrechts & Duchesne, 2000). In this regard, a major economic concern is also the cost of long-term care. This encompasses a variety of care arrangements used by people who have lost physical or mental functioning (Feder, Komisar & Niefeld, 2000; Stone, 2000). Options may include community-based paid or unpaid care, institutional care, self-care using assistive devices, or a combination of these.

The significant medical, social, psychological, and economic ramifications of stroke, in conjunction with a projected rise in the number of stroke patients due to population ageing (Struijs et al., 2005; Irish Heart Foundation Council on Stroke, 2000), highlight the need to make stroke prevention and management a health priority. However, there is evidence that strategies for prevention and treatment of stroke are randomly organised, incomplete and under-funded (Irish Heart Foundation Council on Stroke, 2000). In addition, community services are under-resourced and ill-focused to the needs of Irish people with stroke (Noone et al., 2001; Swanton et al., 2004). This occurs in the absence of a national policy on stroke within the Irish health services, despite the enormous impact of the condition. The Council on Stroke of the Irish Heart Foundation (IHF) made four recommendations to the Irish government in 2000. The recommendations were concerned with prevention and health promotion, acute treatment and rehabilitation, community rehabilitation, and stroke registers. These have not been adopted to date. In order to tackle the recommendations as outlined by the Council on Stroke, gathering information on the current status of service provision and on the needs of professional groups concerned with stroke in Ireland is a research priority.

This priority needs to be addressed both in a community and a hospital context. This is the aim of the current project. The community-based component of the National

Audit of Stroke Care has four components: i) a survey of general practitioners (GPs), ii) a survey of allied health professionals, iii) a survey of patients and their carers, and iv) a survey of nursing homes. Each of these surveys seeks to document the views, experiences and needs of key groups with regard to stroke management and care. The GP survey, which is the focus of the present report, seeks to document the availability of evidence-based structures for supporting stroke care and prevention in general practice and to profile the views, experiences, and needs of Irish GPs in this context. The basic requirements for chronic disease management are registers, regular review and recall systems. The further development of chronic disease management in primary care involves implementation of complex interventions. For example, De Fine Olivarius, Beck-Nielsen, Andreasen, Horder and Pedersen (2001) found that even in a group of motivated, volunteering GPs that were already supplying acceptable basic care, a multifaceted disease management strategy that consisted of regular follow-up and individualised goal setting supported by prompting of doctors, clinical guidelines, feedback, and continuing medical education could provide extra benefit for patients with Type 2 diabetes for at least six years.

The development of primary care services, so that they become the cornerstone of care and preventive services for communities across the country, is consistent with best international practice. The UK's Royal College of Physicians (2004) recognises that much of the responsibility for delivering effective secondary prevention and managing longer-term problems associated with stroke lies with the primary care team. According to the Primary Care Strategy (Department of Health and Children, 2001), a shift in the balance from secondary specialist care to primary generalist care is required. Of all health care providers, GPs typically have the most frequent contact with their patients. For instance, over 90% of those aged 65 years and over in Ireland have seen their GP in the previous year (McGee et al., 2005). Thus, GPs have ready access to individuals most at risk of stroke disease. They are also well placed to implement secondary prevention programmes. For instance, Noone et al. (2001), in their study of 195 discharged stroke patients in Ireland, found that the majority of patients (87%) had seen their GP since hospital discharge, whereas just less than half (48%) had been reviewed in medical outpatients.

This project sought to document the capacity of general practice to address stroke prevention and management in contemporary Ireland. Specific themes to be considered were:

1) Practice organisation:

Information on aspects of the GPs' practice was sought in order to establish a profile of practice structure and operations. This is important as practice organisation has been shown to be related to quality of stroke services (de Koning et al., 2005) and, as such, could provide a premise from which to consider existing service variations. Specifically, suboptimal preventive care preceding the occurrence of stroke was less common among GPs with a higher level of noting high risk patients in patient records, delegating follow-up support visits to support staff, and compliance with a hypertension guideline.

2) Primary prevention of stroke:

There is a wealth of evidence on the importance of primary prevention in stroke. Observational studies have shown that lifestyle factors such as diet, exercise, and

alcohol intake can predict the risk of stroke (Ezekotwitz, Straus, & Majumdar, 2003; He et al., 2004; Kurth et al., 2006; Sauvaget, Nagano, Allen, & Kodama, 2003). Although no high-quality randomised trials have evaluated the effects of lifestyle modification on stroke risk, the strength of the observational data supports the adoption of lifestyle risk factor modification as a specific guideline in primary care. High blood pressure has also been identified as an important risk factor for stroke with studies showing that blood pressure modification in patients with hypertension can reduce stroke risk (MacMahon et al., 1990; Neal, MacMahon, Chapman, Blood Pressure Lowering Treatment Trialists' Collaboration, 2000). Additional stroke risk factors include atrial fibrillation (AF) (Wolf, Abbott & Kannel, 1991) and diabetes (Goldstein et al., 2001; de Freitas, Bezerra, Bogousslavsky & Bogousslavsky, 2005). Since 90 per cent of Irish stroke patients are community-dwelling before being admitted to hospital with a stroke (Fan, McDonnell, Johnson, O'Keeffe, & Crowe, 2000), endorsing effective strategies for community-based primary prevention is a national priority.

3) Acute management of stroke:

GPs also play a key role in the acute care of patients with stroke, frequently being the first health professional to manage an individual immediately after stroke and are thus key decision makers in terms of initial management and referral in the acute phase of stroke. Generally it is recommended that patients be managed in hospital unless they present late and have few or no residual symptoms (McGovern & Rudd, 2003). There may, however, be other factors upon which GPs base this decision and these need to be determined. For patients managed in hospital, both prior to and following discharge, appropriate liaison between health professionals and comprehensive information provision should be facilitated.

4) Secondary prevention of stroke:

There is strong research evidence to support the use of antiplatelet therapy in secondary prevention of stroke (Gubitz, Sandercock, & Counsell, 2000). Patients who have a stroke have a 30% chance of experiencing a recurrent stroke in the next five years, and are at increased risk of myocardial infarction and other vascular events (McGovern & Rudd, 2003). This highlights the importance of promoting effective secondary prevention strategies.

5) Stroke rehabilitation and long-term care:

The role of the GP in the longer-term support of stroke patients and their families has received scant attention in the contemporary stroke literature. Brotheridge, Young, Dowswell, Lawler and Forster (1998) questioned patients approximately a year after their stroke. There was a widely shared view from both patients and caregivers that there should be regular contact with the GP after discharge from hospital. It was clear that the role of the GP in post-acute stroke care was important.

At least one third of stroke survivors experience depression both in the short- and long-term after stroke. The results of studies on the frequency of post-stroke depression (PSD), however, have been remarkably varied. Estimates of the incidence of PSD range widely from 18 to 61%, as a function of methodological differences, such as what instruments and criteria are used in assessment. It has been stressed that although the treatment of PSD is often effective, very few patients are treated for this condition and there is a dearth of research focused on its treatment (Gainotti & Marra,

2002). GPs are seen as gatekeepers who have a specific responsibility for the assessment and initiation of treatment for psychological disorders such as depression (Andersson, Troein, & Lindberg, 2005). Therefore, they can play an important role in the identification and subsequent management of PSD.

6) Information and education:

The art of clinical practice concerns the overall management of a patient's wellbeing. This role includes the task of information management (Westberg & Miller, 1999). The scope of general practice makes knowledge management in this context very challenging. It is important, therefore, to establish ease of access for GPs to valid and reliable information relating to best practice in the context of stroke.

Aim of community audit - GP survey

The aim of the community audit of GPs was thus to describe the following issues relating to stroke: a profile of GP practices across Ireland caring for patients with stroke, primary prevention of stroke, the acute management of stroke, secondary stroke prevention, stroke rehabilitation and long-term care, and information and education issues.

Chapter 2: Methods

2.1 Design

This study was cross-sectional and investigated the experiences of a randomly selected group of GPs practising in the Republic of Ireland.

2.2 Sample

The study aimed to recruit GPs from a total population of c. 2300 GPs in the Republic of Ireland profiled in the Irish Medical Directory (IMD). A sample size of 242 provides for 90% probability that prevalences will be within 5% of their true value. Based on an expected 50% response rate, 484 participants were targeted. Eligible participants were randomly selected from GPs listed in the publicly available IMD (2006-2007 edition). Randomisation was conducted using the random selection function in Microsoft Excel. The IMD strives only to include full-time, active and permanent GPs and not retired, locum, trainee, mobile, or part-time GPs. It was decided to use the IMD rather than the Irish College of General Practitioners' (ICGP) database of GPs because ICGP regulations preclude more than one contact being made with GPs. The inability to provide a prompt/study reminder in the ICGP system was of concern for the research team in relation to the response rate.

2.3 Procedure

2.3.1 Ethical approval

The survey was given ethical approval by the Royal College of Surgeons in Ireland's Research Ethics Committee.

2.3.2 Data collection

Participation was invited by postal survey. Selected GPs were sent a letter incorporating an invitation and explanation of the value of the audit from the IHF, a letter of introduction from the research team, the survey instrument, and a stamped addressed envelope. GPs were given a two-week timeframe within which to respond. A telephone reminder followed after two weeks if GPs had not returned the questionnaire. GPs were reminded to complete and return the questionnaire, or were given the option to complete the questionnaire by telephone at a time convenient to them. Nobody took up the offer to complete the questionnaire by telephone. A final reminder questionnaire was sent to non-responders within two weeks of the telephone approach. GPs were given the option of completing the entire questionnaire, or a sub-set of highlighted "priority" questions (see Appendix). One hundred and twenty-four GPs returned questionnaires before the second questionnaire was sent out. A further 14 GPs declined to participate when contacted by telephone. Telephone contact also revealed that 21 GPs were not available/ineligible to participate in the survey. Consequently, a second questionnaire was sent to 325 GPs. Eighty questionnaires were returned after the second mailing. A combination of postal and telephone contact indicated that a further 15 GPs were not available/ineligible to participate in the survey. The reasons for non-availability/ineligibility are provided in Figure 2.1. Of the 448 GPs, who were eligible/available to participate in the survey, 204 did so by the final cut-off date. All questionnaires were suitable for analysis thus yielding an overall response rate of 46%.

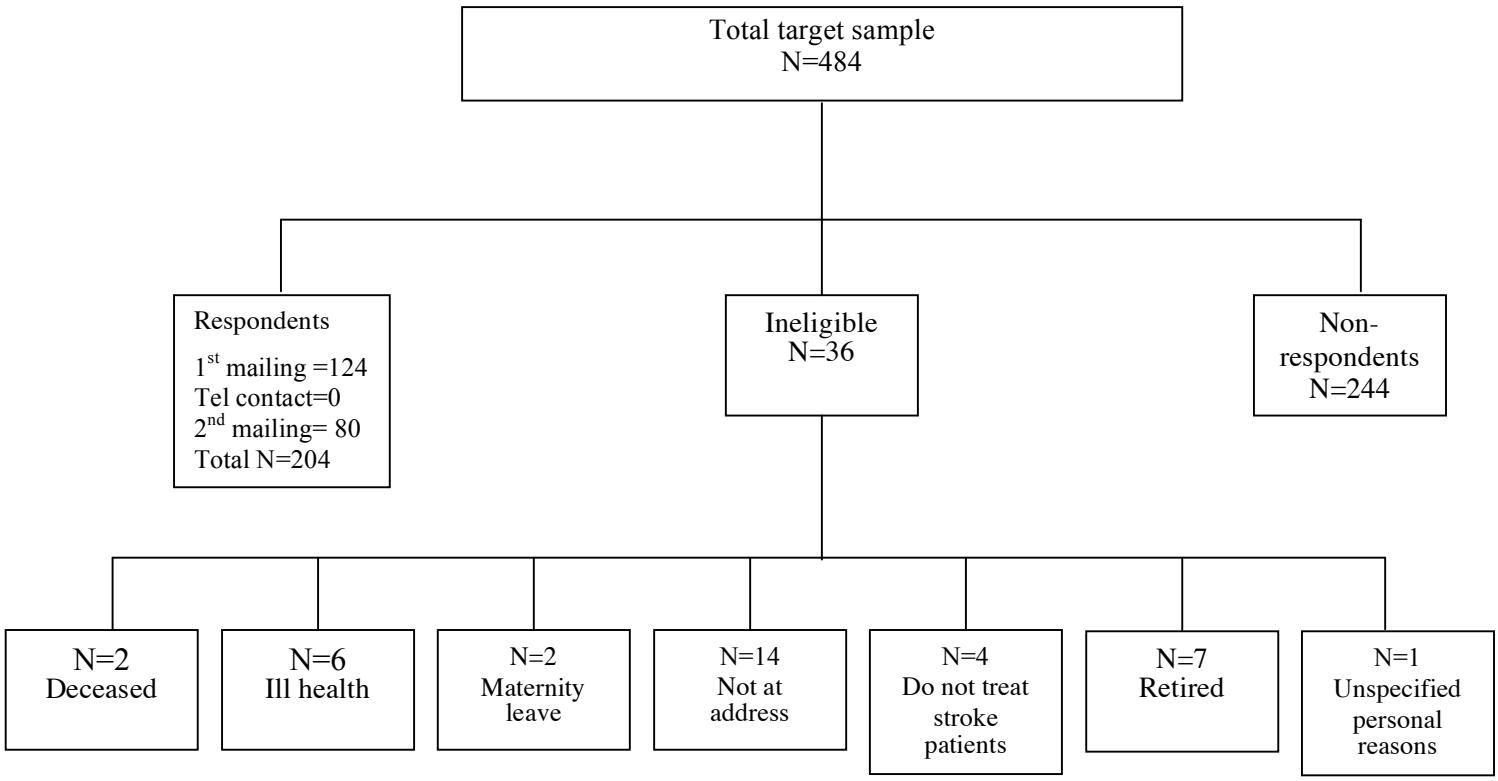

Figure 2.1: Recruitment profile of sample

2.4 Survey instrument

The survey instrument was developed by the research team in consultation with a UK team with extensive clinical and research experience in stroke care (see Appendix). This team had conducted a recent UK general practice survey (Thomas, Chappel, Thomson, & Rogers, personal correspondence) in the context of the National Service Framework for Older People (UK Department of Health, 2001), which sets targets for primary care in relation to primary and secondary prevention of stroke. The content validity and conceptual clarity of the questionnaire was established for the Irish setting through panel discussion and piloting with ten GPs practising in five general practices in Dublin.

Chapter 3: Results

3.1 Participant demographic profile

Of the 204 GPs who participated in the study, 132 (65%) were men. The mean age was 49 years (SD = 9.6). Nearly three quarters of the sample (73%) were aged between 40 and 59. Almost three quarters (73%) of GPs qualified in the 1970s or 1980s. The relationships between participation and non-participation in the survey and factors evident from the IMD (i.e., year of qualification, practice location, and gender) were tested. There was no relationship between gender or practice location (i.e., in Dublin versus outside Dublin) and participation. However, there was a relationship between year of qualification and participation. Responders were more likely to have qualified from 1980 onwards than non-responders ($\chi^2 = 8.4$, df = 1, $p < .005$). Over half (54%) of responders qualified in 1980 or later, whereas a similar proportion (55%) of non-responders qualified prior to this time period.

3.2 Practice details

Just over three quarters of GPs (76%) worked in a group practice (i.e., with more than one full-time or part-time doctor). One quarter of GPs reported that their practices were training practices.

Table 3.1 presents GPs' ratings of their practice's access, either on-site or via referral, to other healthcare professionals. The sample sizes for this and subsequent tables vary due to missing data. Practice nurses were rated as the most accessible group of professionals. Nearly two thirds of GPs reported that their practice had excellent access to a practice nurse. Nonetheless, just over one fifth of practices did not have any access to a practice nurse. Similarly, approximately a fifth of practices did not have any access to an occupational therapist, a speech and language therapist, a dietitian, a psychologist, counsellor, social worker, or vascular surgeon. A further two fifths of GPs, approximately, reported that they had only very limited access to an occupational therapist, speech and language therapist, or psychologist.

Table 3.1 GPs' ratings of practice access to health professionals

	Excellent %	Good %	Quite limited %	Very limited %	No access %
Practice nurse N=198	66	9	3	2	21
Public health nurse N=200	24	47	23	6	2
Physiotherapist N=201	21	35	23	18	4
Community psychiatric nurse N=200	17	41	30	11	3
Vascular surgeon N=201	10	32	19	10	30
Dietician N=201	10	22	22	21	24
Counsellor N=201	6	16	21	30	27
Psychologist N=201	5	10	18	41	26
Speech and language therapist N=201	4	9	17	47	23
Occupational therapist N=201	3	10	23	40	24
Social worker N=198	2	22	29	30	17

The relationships between ratings of access to practice nurse and stroke service related variables were examined, as it was expected that there might be a quality of service differential along this dimension. The access ratings were categorised into two groups, namely no access, very limited or quite limited access (i.e., "poor access") versus good or excellent access (i.e., "good access"). Relationships were found and in most cases results were better for GPs who rated their access to a practice nurse as good or excellent. Results are presented in Table 3.2.

Table 3.2 Relationships between GP ratings of access to practice nurse and stroke service related variables

	N	% Good access	% Poor access	χ^2	df	p
Has a register of patients with hypertension	197	35	16	5.4	1	<.05
Screens routinely for AF	196	55	74	4.4	1	<.05
Has register of patients with AF	196	21	6	4.7	1	<.05
Has initiation of warfarin anticoagulation guidelines	194	33	12	6.9	1	<.01
Runs a warfarin clinic	195	45	17	11.1	1	=.001
Has register of patients with diabetes	195	61	24	19.8	1	<.001
Runs a diabetes clinic	196	30	10	7.4	1	<.01
Stroke register is computerised	39	80	22	7.9	1	<.01
Hospital medical team routinely liaise prior to hospital discharge	193	6	21	7	1	<.01

Note: The continuity correction value is reported, as this compensates for any overestimate of the chi-square value when used with a 2 x 2 table.

Nearly half of GPs (47%) reported that their practices were located in an urban area, whereas nearly two fifths (37%) reported that their practices were located in a rural area. The remainder of GPs responded that their practices were located in the inner city (3%) or in an urban/rural area (12%). According to just over half of GPs (56%), their practices were within five miles of the nearest hospital. Nearly a third of GPs (31%) reported that their practice was 6 to 20 miles from the nearest hospital. The remainder (13%) reported that their practices were more than 20 miles from the nearest hospital.

In terms of practice size, nearly half of GPs (48%) reported that there were currently 1001 to 3000 patients in their practice (see Table 3.3). Nearly a third of GPs (31%) reported that there were over 4000 patients in their practice. Nearly three quarters of GPs (73%) reported that between 11% and 50% of their practice population were GMS patients. Thirteen percent reported that less than 11% were GMS patients and 14% reported that more than 50% were GMS patients. The median number of patients with stroke for whom GPs were providing care was 10 (minimum = 0, maximum = 350).

Table 3.3 Practice size (N=194)

Number of patients in practice	**%**
≤ 1000	8
1001-2000	27
2001-3000	21
3001-4000	13
≥ 4001	31

Over four fifths of GPs (84%) reported that their practices were computerised. As can be seen in Table 3.4, the most important purposes for which computers were generally used were secretarial/administration, prescribing, and consultations.

Table 3.4 Purposes of computer use

	%
Secretarial/administration (N=171)	98
Prescribing (N=167)	95
Consultations (N=165)	81
Maintain disease register (N=159)	43
Audit (N=154)	34

Just over a third of GPs (35%) indicated that their practice was part of the Heartwatch scheme. The relationships between participation in Heartwatch and stroke service related variables were examined, as it was expected that there might be a quality of service differential along this dimension. The significant relationships are presented in Table 3.5. The results were generally better for GPs who reported that their practices were part of Heartwatch (See Table 3.5). In addition, the relationship between membership of Heartwatch and ratings of access to a practice nurse (good/excellent vs. no access/very limited/quite limited) was tested. This was highly significant (χ^2=19.0, df=1, p< .001). The majority of GPs (94%) who worked in practices that were part of Heartwatch reported that their practice had good access to a practice nurse, compared to two thirds (64%) of GPs from practices that were not part of Heartwatch.

Table 3.5 Relationships between being part of Heartwatch and stroke service related variables

	N	Heartwatch %	Non Heartwatch %	χ^2	df	p
Has a register of patients with hypertension	187	46	22	10.6	1	=.001
Has conducted an audit of patients with hypertension within the last 2 years	186	17	2	12.5	1	<.001
Screens routinely for AF	186	44	66	7.5	1	<.01
Has register of patients with AF	186	30	10	10.9	1	=.001
Has referral for warfarin anticoagulation guidelines	183	23	43	6.5	1	<.05
Runs a warfarin clinic	184	47	31	4.3	1	<.05
Has register of patients with diabetes	185	73	41	15.7	1	<.001
Runs a diabetes clinic	186	38	18	7.6	1	<.01
Has conducted an audit of patients with diabetes in the last 2 years	186	30	17	3.9	1	<.05
Runs general healthy lifestyle clinics	188	20	7	5.2	1	<.05
Runs smoking cessation clinics	187	14	4	4.3	1	<.05
Has a stroke register	184	23	8	6.5	1	<.05
Stroke register is computerised	37	88	48	4.7	1	<.05

Note: The Continuity Correction value is reported, as this compensates for any overestimate of the chi-square value when used with a 2 by 2 table.

3.3 Primary prevention of stroke

A summary of GP activity in relation to the prevention of stroke by targeting hypertension, atrial fibrillation (AF), warfarin anticoagulation and diabetes is presented in Tables 3.6 and 3.7. Overall, diabetes prevention strategies and availability of guidelines for diabetes were the most highly organised. The results were generally very poor for running of regular clinics for each of these conditions and conducting audits of patients with these conditions within the last two years.

Table 3.6 Primary prevention of stroke – level of organisation of specific services

	Hypertension		Atrial fibrillation		Warfarin		Diabetes	
	N	%	N	%	N	%	N	%
Lead Person	203	29	201	15	~	~	200	44
Screen Routinely	203	99	201	59	~	~	201	91
Register	203	29	202	17	~	~	201	51
Clinic	202	7	202	1	200	37.5	202	24
Audit	202	6	202	5	~	~	202	20

Table 3.7 Primary prevention of stroke – Guidelines

	Hypertension		Atrial fibrillation		Warfarin anticoagulation		Diabetes	
	N	%	N	%	N	%	N	%
Screening	198	46	197	17	~	~	199	58
Diagnosis	198	63	199	37	~	~	199	69
Management	197	60	200	37	~	~	199	62
Initiation	~	~	~	~	200	28	~	~
Monitoring	~	~	~	~	201	61	~	~
Referral	198	44	201	37	199	38	199	59
Comprehensive guidelines covering all of the above	191	24	194	12*	194	12*	192	29

*Refers to a comprehensive guideline/protocol covering all of the areas relevant to AF and warfarin anticoagulation

Table 3.8 summarises guideline availability and clinic provision in relation to lifestyle modification. Between two fifths and half of GPs reported that their practices had guidelines/protocols for smoking cessation, exercise, diet, or alcohol use. With the exception of diet/weight reduction, very few GPs reported that their practice ran specific clinics for these factors.

Table 3.8 Health behaviours: Guidelines and clinic provision

	Smoking cessation		Exercise		Diet		Alcohol		General healthy lifestyle		Elderly (general)	
	N	%	N	%	N	%	N	%	N	%	N	%
Guidelines	202	44	201	40	202	49	202	40	~	~	~	~
Clinic	203	8	204	7	204	28	204	6	204	11	202	7

Most GPs (86%) reported that there were barriers to implementing primary prevention strategies for stroke in their practices. GPs were then asked to indicate if they believed that the factors listed in Table 3.9 were barriers to implementing primary prevention strategies. Staffing, time, and funding were most frequently identified as barriers. The lack of screening protocols and risk factor protocols were also seen as barriers by over half of these GPs.

Table 3.9 Barriers to preventative measures (N=166)

	%
Time	89
Staff	86
Funding	86
Lack of screening protocols	67
Lack of risk factor protocols	58

GPs were also asked to report any additional barriers to primary prevention. Of the 15% of GPs who did report additional barriers, the three most common themes were lack of space and GP support/co-operation, and patients own commitment and attitude. They were mentioned by 26%, 16%, and 13% of these GPs respectively. Just over half of GPs (52%) indicated solutions to the barriers to implementing primary prevention strategies. Almost half of these GPs (46%) stated that additional nurses, in particular practice nurses, would act as a solution to these barriers and 15% stated that dedicated clinics would act as solution.

Some aspects of knowledge about stroke prevention were queried. The majority of GPs (≥92%) were aware that reduction of blood pressure, reduction of cholesterol, use of aspirin with transient ischaemic attacks (TIA) and anticoagulation in patients with AF, as well as carotid endarterectomy in patients with carotid artery stenosis (>70%) were effective in the prevention of stroke. Furthermore, nearly four fifths of GPs (79%) correctly identified that use of vitamin E was ineffective in the prevention of stroke. However, almost two thirds (65%) of GPs incorrectly believed that

anticoagulation in patients with a history of TIA was effective in the prevention of stroke.

3.4 Management of stroke

A minority of GPs (14%) reported that they had a stroke register. Two thirds of GPs in this group (67%) reported that this register was computerised. Issues relating to GPs' management of stroke (see Tables 3.10 and 3.11) indicate extremely low levels of organization of practices in relation to stroke and a lack of guidelines in a majority of cases in relation to key aspects of stroke management. When compared to the figures in Tables 3.6 and 3.7, it can be seen that they are lower in each case than those for the primary prevention of stoke.

Table 3.10 Management of stroke – level of organisation of specific services

	N	%
Lead Person	195	11
Clinic	197	1
Audit	197	3

Table 3.11 Management of stroke – guidelines

	N	%
Diagnosis	191	20
Management	192	21
Referral	194	34

In terms of the acute management of ischaemic stroke, a large majority of GPs (94%) knew that specialised stroke rehabilitation and aspirin are effective in acute management of patients with ischaemic stroke. A majority, also, correctly did not consider piracetam (76%) and nifedipine (64%) to be effective in the management of stroke. Just over half of GPs (54%) correctly identified thrombolysis as effective in the acute management of stroke. However, two fifths of GPs (40%) incorrectly did not consider thrombolysis to be effective. Finally, approximately half of GPs (48%) incorrectly considered immediate systemic anticoagulation to be effective in the acute management of stroke.

On average, GPs initially managed only a small percentage of their stroke patients at home in the acute phase post-stroke (mean = 7.3, SD = 12.7, median = 0, minimum = 0%, maximum = 80%). However, there was much variation in the percentages recorded. Almost half of GPs (47%) reported that some of their stroke patients were initially managed using home management. Furthermore, almost a fifth (17%) of GPs reported that they initially managed a fifth or more of their stroke patients using home management. Over three quarters of GPs (≥ 78%) who managed at least some of their

patients at home reported that severity of stroke, time since stroke, age of patient, family support, previous history of stroke, and comorbid disease influenced their decision to opt for stroke management at home. Only approximately a quarter (24%) of these GPs reported that distance from hospital influenced this decision. The majority of GPs (93%) who managed at least some of their patients at home had direct access to ECG. Approximately a quarter had direct access to MRI and CT scanning facilities (22% and 26%, respectively). A majority of GPs (94%) reported using aspirin in the home management of acute ischaemic stroke. Nearly two thirds of GPs (60%) responded that they used acute blood pressure reduction in home management and 7% stated they used thrombolysis or corticosteroids.

Most GPs (90%) reported that the hospital medical team did not routinely liaise with them during patients' hospital stay. Similarly, a majority of GPs (86%) reported that they were not sent information on stroke patients immediately prior to hospital discharge. However, a majority of GPs reported that, typically, they were provided with information concerning medications and diagnostic test results following the patient's discharge from hospital with stroke (see Table 3.12). Furthermore, just over two thirds and a half of GPs reported that they were typically provided with details of stroke type and severity, respectively. Smaller percentages of GPs reported being provided with other types of information.

Table 3.12 Information typically provided to GPs when a patient was discharged from hospital following a stroke

	N	%
Medications	194	98
Diagnostic test results	187	88
Details of stroke type	193	67
Details of stroke severity	194	52
Functional ability	190	29
Rehabilitation services	192	28
Home help	191	15
Meals on wheels	188	11
Home care attendant	189	7
Personal assistant	189	5

Nearly four fifths of GPs (79%) reported that the hospital medical team did not routinely liaise with them in the period following hospital discharge of a stroke patient. Nearly two thirds of GPs (64%) reported that they received notification from the hospital indicating the point at which the patient was fully discharged from hospital, namely the patient has no further out-patient visits.

3.5 Secondary prevention of stroke

As can be seen from Tables 3.13 and 3.14, the figures in relation to secondary prevention of stroke were similar to those for the management of stroke (Tables 3.10 & 3.11), namely the organisation of services in general practice in relation to secondary prevention of stroke and the availability of guidelines in relation to key secondary prevention issues are typically poor.

Table 3.13 Secondary prevention of stroke – level of organisation of specific services

	N	%
Lead person	196	12
Secondary prevention clinic	197	4
TIA clinic	198	1
Audit of stroke services	200	3
Audit of TIA patients	200	2

Table 3.14 Secondary prevention of stroke - guidelines

	N	%
Antiplatelet therapy for ischaemic heart disease	197	19
Antiplatelet therapy for stroke disease	196	16
Assessment of vascular risk	198	17
Follow up guidelines	197	17
Secondary prevention of stroke in general	195	20

GPs most frequently provided information on smoking cessation and adherence to medication to stroke patients (see Table 3.15). Approximately three quarters of GPs reported that they always provided information on these lifestyle modifications. Considerably fewer GPs reported always giving information on physical activity, alcohol consumption, weight management, diet/healthy eating, and reducing salt intake.

Table 3.15 Frequency of GP provision of information on lifestyle modifications to stroke patients

	N	Always %	Frequently %	Sometimes %	Occasionally %	Never %
Smoking cessation	195	78	16	3	2	2
Adherence to medication	195	71	19	6	2	2
Physical activity	195	41	41	14	3	1
Alcohol consumption	194	37	37	17	6	2
Reducing salt intake	193	38	40	19	5	2
Diet/healthy nutrition	194	34	43	16	5	2
Weight management	193	32	42	23	3	1

Three quarters of GPs believed there were barriers to implementing secondary prevention strategies in their practice. Nearly two thirds (64%) of GPs identified these barriers. Of these GPs, just over 60% reported time as a barrier. Similarly, 57% of reported that staffing issues were barriers to secondary prevention of stroke and almost a third (33%) of barriers reported related to funding issues. Other barriers listed included lack of protocols/guidelines (17%) and lack of space (almost 10%). The main barriers listed for secondary prevention, therefore, were very similar to those recorded for primary prevention.

3.6 Stroke rehabilitation and long-term care

Less than a tenth of GPs (7%) reported that their practices had a person with an identified lead role in stroke rehabilitation and/or long-term care for stroke patients. Similarly, only 7% and 9% of GPs reported that their practices had guidelines/ protocols for stroke patient rehabilitation and for information to be given to patients and/or carers, respectively. Nearly two thirds of GPs (62%) responded that they did not receive communication regarding rehabilitation services that had been organised for the stroke patient following discharge from hospital. Most GPs (87%) believed that the availability of existing rehabilitation services was inadequate for their stroke patient population. Almost two thirds (61%) of GPs listed barriers to providing adequate rehabilitation services for the stroke patient population. Almost all of these GPs (98%) reported staff shortages as a barrier to rehabilitation. In particular, occupational therapists, physiotherapists, speech and language therapists, and home help were reported as being difficult to access or not available at all.

Just over two-thirds (68%) of GPs had stroke patients who were residing in nursing homes. On average, GPs reported that one-quarter of their stroke patients resided in nursing homes (median = 25%, minimum = 0%, maximum = 100%). On average, GPs continued to provide medical care for all of these patients (median = 100%, minimum = 0%, maximum = 100%). Finally, in relation to post-stroke depression, GPs estimated that half (median = 50%, minimum = 0, maximum = 100%) of their stroke patients were clinically depressed.

3.7 Information and education

In terms of accessing information and education in relation to stroke, medical journals and newspapers, the Continuing Medical Education (CME) network, and the ICGP were the most important sources of educational information on stroke for GPs (see Table 3.16).

Table 3.16 *Use of various sources of educational information on stroke*

	N	%
Medical journals	195	91
CME network	194	87
Medical newspapers	195	80
ICGP	195	78
Internet	195	57
Irish Heart Foundation	195	51
Heartwatch	194	47

GPs then rated the usefulness of the sources of information on stroke that they used. Over three quarters of GPs reported that the CME network, the ICGP and medical journals were very or quite useful. Between half and two thirds of GPs reported that the other sources of information were very or quite useful (See Table 3.17).

Table 3.17 GPs' ratings of usefulness of various sources of educational information on stroke

	N	Very useful %	Quite useful %	Slightly useful %	Not useful at all %
CME network	163	55	32	10	4
ICGP	151	35	43	19	3
Medical journals	172	29	52	17	2
Internet	111	25	35	18	22
Heartwatch	91	17	37	18	29
Irish Heart Foundation	100	16	38	38	18
Medical newspapers	150	12	43	40	5

Chapter 4: Discussion

This study shows that there is at present little or no organisation of the prevention and mangement of stroke within primary care in Ireland. However, there are encouraging signs, since GPs in practices involved in Heartwatch and those with good or excellent access to practice nurses were more likely to engage in activities that adequately manage stroke. This study focussed on four main aspects of the management of stroke in general practice, namely primary prevention, management, secondary prevention, and rehabilitation and long-term care. There are numerous evidence-based measures that can reduce the incidence of stroke including hypertension and AF screening and management, management of TIAs and of risk factors in patients with vascular disease. This study explored these primary prevention measures with GPs. This study provides little evidence of primary prevention of stroke being carried out systematically in general practices. This is even more the case in relation to systematic secondary prevention of stroke. Given the high probability of repeat stroke within five years, this lack of secondary prevention in general practice is cause for concern. As regards the acute management of stroke, it is of some concern that nearly a fifth of GPs initially manage at least a fifth of their patients at home. Finally, the majority of GPs viewed the availability of existing rehabilitation services for their stroke population as inadequate and general practice showed little structured organisation for long-term follow-up of stroke patients.

Primary prevention

The structures and processes necessary in a general practice to provide primary prevention include screening to identify at risk individuals from the population, registers of risk factors/diseases, guidelines to ensure evidence-based management, recall systems for defaulters, a review process to ensure adequate management, and regular audit to establish that standards are being met. Three conditions, namely hypertension, diabetes and AF, were chosen as markers to examine whether these structures and processes existed in general practices.

Registers are essential to any structured system of disease or risk factor management. Whereas 51% of respondents claimed to have a diabetes register, only 17% and 29% claimed to have a register of patients with AF and hypertension, respectively. This may account for the low rates of audit of these conditions, with only 5-6% of respondents claiming to have carried out an audit of AF or hypertension in the previous two years. This figure improved for diabetes audit to 20%. Without audit, it is impossible for GPs to establish whether they are managing these conditions adequately.

These disappointing results are perhaps unsurprising when one considers that over 80% of GPs reported that there were barriers to implementing primary prevention strategies for stroke in their practices. Staffing, time, and funding were the most important of these barriers. Of note, more positive findings were recorded for GPs who reported that their practices were involved in Heartwatch or had good/excellent access to a practice nurse. These GPs were more likely to report that they engaged in many of the activities essential to the primary prevention of stroke. These findings emphasise the need for appropriate structures, resources, and staffing in order to enable general practices deliver good preventive care. This is further substantiated by

previous research in the management of chronic diseases, some of which was reviewed in chapter 1. The establishment of a parallel system of management for stroke – a "Strokewatch" system – is likely to result in similar improvements in community based stroke service provision.

It is suggested that the lack of universal registration of patients in Ireland does not provide the population base for a general practice that is essential to the implementation of successful screening programmes. In this regard, it was proposed in the Primary Care strategy (DOHC, 2001) that all individuals would be encouraged to enrol with one primary care team and with a particular GP within the team.

Stroke management

GPs keep records of patients who utilise their services. However, it is recognised in the Primary Care Health Strategy (Department of Health and Children, 2001) that these systems may be inadequate for key functions such as comprehensive call and recall as required for screening. In this regard, practice disease registers are an essential component of high quality primary care. However, the vast majority of GPs (87%) in this study did not maintain a stroke register.

According to the Royal College of Physicians (2004) primary care concise guidelines for stroke, all GPs should conduct a regular audit of secondary prevention and management of chronic disability in stroke. However, only 3% of practices had conducted an audit of their stroke patients within the past two years. Furthermore, only between approximately a fifth and a third of practices had guidelines in relation to the diagnosis, management and referral for stroke. These figures suggest that any secondary prevention in patients with stroke disease is likely to be opportunistic at best and seriously deficient at worst.

Almost a fifth of GPs initially managed at least a fifth of their stroke patients at home. Up-to-date guidance suggests that stroke patients should be admitted to hospital as soon as possible. It is recognised that co-morbidity and family requests would sometimes mitigate against this advice in the community. However, this study suggests that other factors influence GPs' decisions not to admit stroke patients to hospital, thereby reducing the chance of early treatment and intervention for a group of stroke patients. It is recommended that GPs be better informed of the benefits of hospital admission for stroke patients.

Secondary prevention

According to the Royal College of Physicians (2004) primary care concise guidelines for stroke, all patients should receive regular review and treatment of risk factors for vascular disease for the rest of their lives after a stroke. However, the figures in relation to the secondary prevention of stroke from this study are similar to the low levels of active management of stroke. Very few practices (1-3%) had conducted an audit of their patients with stroke or TIA within the past two years. No more than a fifth of practices had guidelines in relation to antiplatelet therapy for ischaemic heart disease, antiplatelet therapy for stroke disease, assessment of vascular risk, follow-up of stroke patients at high risk of further stroke, or the secondary prevention of stroke in general. Consequently, it is not surprising that nearly three quarters of GPs believed there were barriers to implementing secondary prevention strategies in their practice. According to one of the guidelines of the Royal College of Physicians (2004), all

patients who have suffered a stroke should be given appropriate advice on lifestyle factors. Approximately three quarters of GPs in this study reported that they always provided information on smoking cessation and adherence to medication to stroke patients. By contrast, about two fifths of GPs reported that they always gave information on physical activity and alcohol consumption, and approximately a third of GPs reported they always gave information on weight management, diet/healthy eating, and reducing salt intake.

Rehabilitation and long-term care

Few GPs reported that their practices had any guidelines or protocols for stroke patient rehabilitation. Furthermore, the majority of GPs believed that the availability of existing rehabilitation services for stroke patients was inadequate. Almost all GPs who listed barriers to providing adequate rehabilitation services reported staff shortages as a barrier. In particular, occupational therapists, physiotherapists, speech and language therapists, and home help were reported as being difficult to access or not being available at all. The weak capacity for rehabilitation was already highlighted as an inadequacy of the primary care system in the Primary Care Strategy (DOHC, 2001). On average, GPs reported a high prevalence of depression in their stroke patients. This suggests that depression may be an important issue to consider when providing care to patients with stroke.

Information and education

While GPs were well informed regarding a number of stroke prevention and management issues, there were a number of issues of concern regarding GP knowledge. Almost two thirds of GPs incorrectly believed that anticoagulation in patients with a history of TIA was effective in the prevention of stroke. Approximately half incorrectly considered immediate systemic antiocoagulation to be effective in the acute management of stroke. Approximately half reported that their stroke patients were sometimes initially managed at home. Furthermore, almost a fifth of GPs reported that they initially managed at least a fifth of their patients at home. However, it is generally recommended that patients be immediately transferred to hospital. Nearly two thirds of GPs claimed to use acute blood pressure reduction in home management of acute ischaemic stroke, despite the fact that this may be damaging. These findings indicate a need for further education in the prevention and management of stroke.

Interdisciplinary team approach

Nearly two thirds of GPs reported that their practice had excellent access to a practice nurse. Furthermore, ratings of access to a practice nurse were related to a number of aspects of stroke prevention and management. In most case, results were more positive for GPs who rated their access to a practice nurse as good as opposed to poor. However, the results in relation to access to other health professionals were less positive. Approximately a fifth of GPs reported that their practices did not have any access to an occupational therapist, a speech and language therapist, a dietitian, a psychologist, counsellor, social worker, or vascular surgeon. About a further two fifths of GPs reported that their practice had only very limited access to an occupational therapist, speech and language therapist, or psychologist. These findings are consistent with the acknowledgment in the Primary Care Strategy (DOHC, 2001) that GPs and other primary care staff often worked in isolation and communication between the different primary care service providers was not optimal.

Communication between primary and secondary healthcare sectors

The majority of GPs reported that prior to hospital discharge of their patients, the hospital team did not liaise with them routinely. Similarly, the majority of GPs reported that they were not sent information on patients who have had a stroke immediately prior to discharge. This means that GPs do not have available to them relevant clinical information at the time that patients with stroke are being discharged to their care in the community. Types of information were identified that were not typically provided to GPs when a patient was discharged from hospital with a stroke, namely the patient's functional ability, and information relating to provision of rehabilitation services, home help, a home care attendant, meals on wheels, or a personal assistant. Furthermore, nearly four-fifths of GPs reported that the medical team did not routinely liaise with them in the period following hospital discharge of a stroke patient. Liaison between primary and secondary care services was also identified as an inadequacy in the Primary Care Strategy (DOHC, 2001). As outlined here and in previous sections of this chapter, it appears that many of the shortcomings identified in the Primary Care Strategy (2001) still exist. Thus, the proposals made in this strategy still need to be addressed.

Study limitations

- The response rate for this study was 46%. It is possible that the questionnaire length may have contributed to this less than optimal response rate. Response rate can affect the representativeness of data. Indeed, a relationship was found between year of qualification in medicine and whether GPs were responders or non-responders. Responders were more likely to have qualified from 1980 onwards than non-responders. Therefore, it is possible that responders had more up-to-date education in relation to stroke care and prevention. If this were the case, the results of the study in relation to knowledge might have been poorer only for this response bias.
- The power of the study was somewhat lower than anticipated. The study aimed to recruit 242 GPs as this sample size provides for 90% probability that prevalences will be within 5% of their true value. The smaller sample size of 204 provided power of 83%. While the figures in relation to the response rate and power are less than optimal, the study does provide the first national profile from over 200 GPs of stroke management in general practice in Ireland.
- This survey was concerned with identifying structures for stroke prevention and care in primary care. However, data were not collected about whether or how these structures were used in practice. For example, availability of guidelines does not mean that they are used routinely in practice. In addition, information was not gathered on the quality of the guidelines available. These may have ranged from protocols developed by the individual practice to national evidence-based guidelines. Similarly, the presence of a disease register does not mean that this was routinely used to recall patients or monitor their treatment.

Recommendations
[For further discussion with Review Group]

- **A structured national programme in general practice for stroke**

It is recommended that the deficits in the prevention and management of stroke in general practice identified in this study be addressed within a structured and evaluated system. Examples of such a structured approach are Ireland's Heartwatch scheme and the UK's Quality Outcomes Framework system (QOF). Both of these programmes have been shown to be successful and it is recommended that they provide templates for the future development of stroke care in general practice in Ireland. These programmes will be discussed next.

Heartwatch sets out to provide infrastructure and a framework for the development of services for patients with heart disease within primary care. The programme involves 20% of general practices and implements internationally recognised cardiovascular prevention guidelines. Patients are seen on a quarterly basis and care is implemented according to defined clinical protocols. Data on patients and quarterly continuing care visits are sent from Heartwatch practices to the Independent National Data Centre that was established in 2003 specifically for the programme. Heartwatch has now established the largest database on cardiovascular disease within Primary Care in Ireland, with over 13,000 patients registered and data collected on over 80,000 GP/patient consultations. GPs/practice users can access Heartwatch demographic and clinical data for their own patients as well as regional and national information automatically. Heartwatch has been shown to be effective in the secondary prevention of cardiovascular disease. Patients involved in the programme showed significant improvements in the control of systolic blood pressure, diastolic blood pressure, and smoking. There were also improvements in the monitoring of and screening for diabetes (Heartwatch National Programme Centre & Independent National Data Centre, 2006). These risk factors are common to stroke. It was not surprising therefore that GPs who were part of Heartwatch performed better in relation to stroke prevention and management on a number of performance indicators.

Similarly, the QOF system was associated with improvements in the primary and secondary prevention of stroke in general practices in the UK (Hippisley-Cox et al., 2005). It aims to provide incentives to achieve higher quality care. It sets a range of clinical and organisational indicators. Achievement on these indicators earns practices QOF points that are associated with financial rewards. One of the disease areas covered in the QOF is stroke/TIA. Hippisley-Cox et al. (2005) used the QOF indicators presented in Tables 4.1 and 4.2 to measure the quality of primary and secondary prevention of stroke, respectively. The maximum threshold varies for each indicator. Once the maximum threshold is reached, exceeding this will not result in additional remuneration. The minimum threshold for all indicators was 25% at the time of this study.

Table 4.1 QOF indicators used for primary prevention of stroke

	Indicator
1	% of patients over 45 years with smoking recorded at least once
2	% of patients over 45 years with a recorded BP in the last five years

Note: Indicators used measure the quality of primary prevention of stroke were not associated with thresholds or points.

Encouraging results were reported for the primary prevention of stroke in general practice. Smoking status had been recorded at least once in 83% of patients aged 45 years and over in April 2004, when the QOF was introduced. By April 2005, smoking status was recorded for 87% of patients aged 45 years and older. In April 2004, 77% of all patients aged 45 years and over had a recorded BP. This rose to 81% by April 2005. Results for the secondary prevention of stroke and TIA were also positive for the most part.

Table 4.2 QOF indicators for secondary prevention of stroke and TIA

Indicator		**Maximum threshold**	**Points**
1	The practice can produce a register of patients with stroke and TIA		4
2	% of new patients with presumptive stroke (presenting after 01/04/03) who have been referred for confirmation of the diagnosis by MRI or CT	80%	2
3	% of patients with previous stroke or TIA with smoking recorded in the last 15 months except never smokers where it only needs to be recorded once	90%	3
4	% of patients with previous stroke/TIA who smoke with a record of smoking cessation advice within the last 15 months	70%	2
5	% of stroke/TIA patients with a recorded BP in the last 15 months	80%	2
6	% of patients with stroke/TIA in whom BP (measured in the last 15 months) is 150/90 or less	70%	5
7	% of patients with stroke/TIA who have a total cholesterol recorded in the last 15 months	90%	2
8	% of patients with stroke/TIA whose last measured serum cholesterol (measure on the last 15 months) is 5 mmol/l or less	60%	5
9	% of patients with a stroke known to be non-haemorrhagic or history of TIA, who have a record that aspirin (or alternative anti-platelet therapy) or anticoagulant if being taken	90%	4
10	% of patients with TIA or stroke who have had an immunisation in the preceding September 1st to 31st March	85%	2

For all indicators except indicator 2, there was an improvement in recorded performance between April 2004 and April 2005. By April 2004, maximum payment

thresholds were reached at national level for two of the nine indicators with thresholds, namely indicators 4 and 5. By April 2005, maximum payment thresholds were reached for a further three of these nine indicators, namely 3, 6, and 10. The results of this study suggest that many activities aimed at the primary and secondary prevention of stroke can be conducted in general practice. Furthermore, the use of evidence-based targets that are linked to financial incentives seems to be an effective way to improve practice in these areas.

- **Interdisciplinary team-based approach in primary care**

It is recommended that an interdisciplinary team-based approach be promoted in the prevention and management of stroke in primary care. Similarly, the Primary Care Strategy (Department of Children and Health, 2001) proposed the introduction of this approach in primary care. Findings from this study suggest that teamwork among health professionals providing primary care was suboptimal. These findings are consistent with one of the conclusions of the Primary Care Strategy (Department of Health and Children, 2001). It was concluded that GPs could be isolated from many other community services and that communication and work-sharing with other primary care professionals was not always readily facilitated or supported. Various studies have shown that the introduction of interdisciplinary primary care teams is associated with the ability to keep patients at home in times of crisis, reduced emergency admissions, shorter lengths of stay for patients admitted and increased patient and carer satisfaction (Department of Health and Children, 2001). Furthermore, it was proposed in the Primary Care Strategy (Department of Health and Children, 2001) that the wide skill mix within an interdisciplinary team would allow a more appropriate distribution of workload between members of the team. This would allow each team member to work to his or her maximum professional capacity. It would also allow team members to spend more time on areas such as preventive work and continuing professional development. Therefore, the team approach might have positive consequences for preventive work and addressing the knowledge deficits identified in this study in relation to stroke.

Conclusion

In summary, general practice in Ireland is well placed to provide primary and secondary prevention of stroke and long-term management of stroke patients but it is not fulfilling this potential. It is proposed that an adequately funded and resourced system of stroke care, similar to Heartwatch, is needed in order to address this deficiency.

References

Andersson SJ, Troein M & Lindberg G. (2005) General practitioners' conceptions about treatment of depression and factors that may influence their practice in this area. A postal survey. *BMC Family Practice* 6(1): 21.

Bonita R**,** Solomon N & Broad JB**.** (1997) Prevalence of stroke and stroke-related disability. Estimates from the Auckland stroke studies. *Stroke* 29(4): 866-7.

Boerner K. (2004) Adaptation to disability among middle-aged and older adults: the role of assimilative and accommodative coping. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences* 59: 35-42

Brotheridge S, Young J, Dowswell G, Lawler J & Forster A (1998) A preliminary investigation of patient and carer expectations of their general practitioner in longer-term stroke care. *Journal of Evaluation of Clinical Practice* 4(3): 237-241.

Bruce ML. (2001) Depression and disability in late life: directions for future research. *American Journal of Geriatric Psychiatry* 9(2): 102-12.

Caro JJ, Huybrechts KF & Duchesne I. (2000) Management patterns and costs of acute ischemic stroke: an international study. For the Stroke Economic Analysis Group. *Stroke* 31: 582–590.

de Fine Olivarius N, Beck-Nielsen H, Andreasen AH, Horder M & Pedersen PA. (2001) Randomised controlled trial of structured personal care of type 2 diabetes mellitus. *British Medical Journal* 323: 1-9.

De Freitas GR, Bezerra DC, Bogousslavsky M & Bogousslavsky J. (2005) Stroke: background, epidemiology, etiology, and avoiding recurrence. In MP Barnes, BH Dobkin & J Bogousslavsky (Eds.), *Recovery After Stroke* (pp. 1-46) Cambridge: University Press

de Koning JS, Klazinga N, Koudstaal PJ, Prins AD, Borsboom GJ & Mackenbach JP. (2005) Quality of stroke prevention in general practice: relationship with practice organization. *International Journal for Quality in Health Care* 17 (1): 59-65.

Department of Health (2001) *National Service Framework for Older People.* London: Department of Health.

Department of Health and Children. (2001) *Primary Care: A New Direction.* Dublin: The Stationery Office.

Ezekowitz JA, Straus SE, Majumdar SR & McAlister FA. (2003) Stroke: Strategies for Primary Prevention. *American Family Physician* 68(12): 2379-2386.

Fan CW, McDonnell R, Johnson Z, O'Keeffe S & Crowe MJ. (2000) Hospital-based stroke care in Ireland: results from one regional register. *Irish Journal of Medical Science* 169(1): 30-3.

Feder J, Komisar HL & Niefeld M. (2000) Long-term care in the United States: an overview. *Health Affairs* 19(3): 40-56.

Gainotti G & Marra C. (2002) Determinants and consequences of post-stroke depression. *Current Opinion in Neurology* 15(1): 85-9.

Goldstein LB, Adams R, Becker K, Furberg CD, Gorelick PB, Hademenos G et al. (2001) Primary Prevention of Ischemic Stroke. A Statement for Healthcare Professionals from the Stroke Council of the American Heart Association. *Circulation* 103(1): 163-182.

Grieve R, Hutton J, Bhalla A, Rastenyte D, Ryglewicz D, Sarti C, et al. (2001) A comparison of the costs and survival of hospital-admitted stroke patients across Europe. *Stroke* 32:1684–1691.

Gubitz G, Sandercock P & Counsell C. (2000) Antiplatelet therapy for acute ischaemic stroke. *Cochrane Database of Systematic Reviews* 2:CD000029.

Hankey GJ & Warlow CP. (1999) Treatment and secondary prevention of stroke: evidence, costs, and effects on individuals and populations. *Lancet* 354(9188): 1457-63.

He K, Merchant A, Rimm EB, Rosner BA, Stampfer MJ, Willett WC, et al. (2004) Folate, vitamin B6, and B12 intakes in relation to risk of stroke among men. *Stroke* 35(1): 169-74.

Heartwatch National Programme Centre & Independent National Data Centre (2006) *Heartwatch Clinical Report.* Dublin: Heartwatch National Steering Committee.

Hippisley-Cox J, Pringle M, Cater R, Coupland C & Meal A. (2005) Coronary heart disease prevention and age inequalities: the first year of the National Service Framework for CHD. *British Journal of General Practice* 55(514): 369-75.

Irish Heart Foundation Council on Stroke (2000) *Stroke care: Towards excellence in stroke care in Ireland.* Dublin: Eireann Publishing & Education.

Irish Heart Foundation Council on Stroke (2001) *Towards Excellence in Stroke Care.* Dublin.

Kurth T, Moore SC, Gaziano M, Kase CS, Stampfer MJ, Berger K, et al. (2006) Healthy lifestyle and the Risk of Stroke in Women. *Archives of Internal Medicine 166*: 11403-1409.

MacMahon S, Peto R, Cutler J, Collins R, Sorlie, P, Neaton J, et al. (1990) Blood pressure, stroke, and coronary heart disease. *Part I*: Prolonged differences in blood pressure: prospective observational studies corrected for the regression dilution bias. *Lancet* 335:765-774.

McGee H, O' Hanlon A, Barker M, Hickey A, Garavan R, Conroy R, et al. (2005) *One island - two systems: a comparison of health status and health and social service use by community-dwelling older people in the Republic of Ireland and Northern Ireland.* Dublin: Institute of Public Health in Ireland.

McGovern R & Rudd A. (2003) Management of stoke. *Postgraduate Medical Journal* 79:87-92.

Neal B, MacMahon S, Chapman N, & Blood Pressure Lowering Treament Trialists' Collaboration (2000) Effects of ACE inhibitors, calcium antagonists, and other blood-pressure-lowering drugs: results of prospectively designed overviews of randomised trials. Blood Pressure Lowering Treament Trialists' Collaboration. *Lancet* 356 (9246): 1955-1964.

Noone I, Fan CW, Tarrant H, O'Keeffe S, McDonnell R & Crowe M. (2001) What happens to stroke patients after hospital discharge? *Irish Medical Journal* 94(5): 151-2.

Royal College of Physicians (2004) *Primary Care Concise Guidelines for Stroke.*

Sarti C**,** Rastenyte D**,** Cepaitis Z & Tuomilehto J**.** (2000) International trends in mortality from stroke, 1968 to 1994. *Stroke* 31(7): 1588-601.

Sauvaget C, Nagano J, Allen N & Kodama K. (2003) Vegetable and Fruit Intake and Stroke Mortality in the Hiroshima/Nagasaki Life Span Study. *Stroke* 34:2355.

Stone RI. (2000) *Long-term care for the elderly with disabilites. Current policy, emerging trends, and implications for the twenty-first century.* New York: The Milbank Memorial Fund.

Struijs JN, van Genugten ML , Evers SM, Ament AJ, Baan CA & van den Bos GA. (2005) Modeling the future burden of stroke in The Netherlands: impact of aging, smoking, and hypertension. *Stroke* 36(8): 1648-55.

Swanton T, et al. (2004) Description of current community stroke services – a pilot study conducted on behalf of the Council on Stroke. Presented at the Irish Heart Foundation Annual Stroke Conference 2004 (Abstract).

Wolf PA, Abbott RD & Kannel WB. (1991) Atrial fibrillation as an independent risk factor for stroke: the Framingham Study *Stroke* 22(8): 983-8.

Westberg EE & Miller RA. (1999) The basis for using the internet to support the information needs of primary care. *Journal of the American Medical Informatics Association* 6 (1): 6-25.

Appendix: GP Survey Instrument

Royal College of Surgeons
in Ireland

Trinity College Dublin

Irish Heart Foundation

National Audit of Stroke Services

In association with the
Department of Health and Children

Management of Stroke by General Practitioners: Current Provision and Needs

Thank you for taking time out to assist us by completing this questionnaire

Demographic information

Male ☐ **Female** ☐

Please state your age ☐

Year of qualification in Medicine MB ☐

Section 1: Practice details

Firstly, we would like to ask a few questions about you and your practice

1.1 How many doctors, including yourself, currently work in your practice?

(a) Full time ☐ (b) Part time ☐

1.2 Is your practice a training pra ctice? *(please circle)* Yes No

1.3 Please rate your practice's access either on site or via referral to the following health care professionals.

	1 *No access*	*2* *Very limited*	*3* *Quite limited*	*4* *Good*	*5* *Excellent*
Practice nurse	1	2	3	4	5
Public health nurse	1	2	3	4	5
Occupational therapist	1	2	3	4	5
Speech and language therapist	1	2	3	4	5
Physiotherapist	1	2	3	4	5
Dietician	1	2	3	4	5
Psychologist	1	2	3	4	5
Counsellor	1	2	3	4	5
Social worker	1	2	3	4	5
Vascular surgeon (in your local acute hospital)	1	2	3	4	5
Community psychiatric nurse	1	2	3	4	5
Other *(please specify)*	1	2	3	4	5

_____

1.4 Practice category *(please tick the appropriate option below)*

i. Inner city ☐

ii. Urban ☐

iii. Rural ☐

1.5 What is the approximate distance from your practice to the nearest acute hospital in miles? ☐

1.6a How many patients are currently in your practice? ☐

1.6b What number of GMS patients do you currently have in your practice? ☐

1.6c What percentage of your practice population are GMS patients? ☐

1.6d How many patients with stroke do you currently provide care for? ☐

1.7a Is your practice computerised? *(please circle)* Yes No
(If no, please proceed to Section 2: Stroke Population)

1.7b If computerised**,** for what purpose is the computer generally used?
(please circle)

Secretarial/Administration	Yes	No
Consultations	Yes	No
Prescribing	Yes	No
Maintain disease register	Yes	No
Audit	Yes	No
Other *(please state)*	_____	

1.8 Are you part of the ICGP Heartwatch scheme? Yes No

Section 2: Primary prevention of stroke

In this section, we would like to ask some questions about your practice's approach to the prevention of strokes

2.1 Hypertension

2.1a	Does your practice have a person with an identified lead role in hypertension?	Yes	No
2.1b	Do you screen routinely for hypertension?	Yes	No
2.1c	Does your practice have a register of patients with hypertension?	Yes	No

2.1d Does your practice have guidelines for any of the following?
(please circle one response option on each line)

Screening for hypertension	Yes	No
Diagnosis of hypertension	Yes	No
Management of hypertension	Yes	No
Referral for hypertension	Yes	No
A comprehensive guideline/protocol covering all of the above	Yes	No

2.1e	Does your practice run a regular hypertension clinic?	Yes	No
2.1f	Has your practice conducted an audit of patients with hypertension within the last two years?	Yes	No

2.2 Atrial fibrillation

2.2a	Does your practice have a person with an identified lead role in atrial fibrillation?	Yes	No
2.2b	Do you screen routinely for atrial fibrillation?	Yes	No
2.2c	Does your practice have a register of patients with atrial fibrillation?	Yes	No
2.2d	Does your practice have guidelines for any of the following? *(please circle one response option on each line)*		
	Screening for atrial fibrillation	Yes	No
	Diagnosis of atrial fibrillation	Yes	No
	Management of atrial fibrillation	Yes	No
	Referral for atrial fibrillation	Yes	No
	Initiation of warfarin anticoagulation	Yes	No
	Monitoring of warfarin anticoagulation	Yes	No
	Referral for warfarin anticoagulation	Yes	No
	A comprehensive guideline/protocol covering all of the above	Yes	No
2.2e	Does your practice run an atrial fibrillation clinic?	Yes	No
2.2f	Does your practice run a warfarin clinic?	Yes	No
2.2g	Has your practice conducted an audit of patients with atrial fibrillation within the last two years?	Yes	No

2.3 Diabetes

2.3a	Does your practice have a person with an identified lead role in diabetes?	Yes	No
2.3b	Do you screen routinely for diabetes?	Yes	No
2.3c	Does your practice have a register of patients with diabetes?	Yes	No

2.3d Does your practice have guidelines for any of the following? *(please circle one response option on each line)*

Screening for diabetes	Yes	No
Diagnosis of diabetes	Yes	No
Management of diabetes	Yes	No
Referral for diabetes	Yes	No
A comprehensive guideline/protocol covering all of the above	Yes	No

2.3e	Does your practice run a diabetes clinic?	Yes	No
2.3f	Has your practice conducted an audit of patients with diabetes within the last two years?	Yes	No

2.4 Lifestyle

2.4a Does your practice have guidelines/protocols for any of the following?:
(please circle one response option on each line)

Smoking cessation	Yes	No
Exercise	Yes	No
Diet	Yes	No
Alcohol	Yes	No

2.4b Does your practice run dedicated clinics for any of the following?:
(please circle one response option on each line)

General healthy lifestyle	Yes	No
Elderly (general)	Yes	No
Smoking cessation	Yes	No
Exercise	Yes	No
Diet / weight reduction	Yes	No
Alcohol	Yes	No
Other clinics relevant to stroke *(If yes, please specify)*	Yes	No

2.5 Preventative Measures

2.5a In your view, are there barriers to implementing primary prevention strategies for stroke in your practice? Yes No

If yes, can you

(i) indicate what these barriers are by ticking the relevant boxes below and indicating additional barriers in the "other" section.

(ii) Indicate solutions to these barriers

Barriers	Solutions
Staffing ☐	Staffing solutions
Time ☐	Time Solutions
Funding ☐	Funding solutions
Lack of formal protocols for screening ☐	Protocol Screening solutions
Lack of formal protocols for follow up of risk factors ☐	Protocol risk factor solutions
Other (please indicate any other barriers)	Solutions to other barriers
_____	

2.5b Which of the following would you consider to be effective in the prevention of stroke?

Anticoagulation in patients with history of transient ischemic attacks (TIA)	Yes	No
Reduction of blood pressure	Yes	No
Use of vitamin E	Yes	No
Reduction of cholesterol	Yes	No
Use of aspirin in patients with transient ischaemic attacks (TIA)	Yes	No
Anticoagulation in patients with atrial fibrillation (AF)	Yes	No
Carotid endarterectomy in patients with carotid artery stenosis (> 70%)	Yes	No

3. Management of stroke

In this section we would like to ask some questions about your practice's management of stroke patients

3.1a	Do you have a stroke register? *(please circle)*	Yes	No
	(If your answer is 'No' please proceed to Question 3.2)		
3.1b	If yes, is your existing stroke register computerised?	Yes	No
3.2	Does your practice have a person with an identified lead role in stroke?	Yes	No
3.3	Does your practice run a stroke clinic?	Yes	No
3.4	Has your practice conducted an audit of patients with stroke within the last two years?	Yes	No
3.5	Does your practice have guidelines for any of the following? *(please circle one response option on each line)*		
	Diagnosis of acute management of stroke	Yes	No
	Management of acute stroke	Yes	No
	Referral for acute stroke	Yes	No

3.6	Which of the following would you consider to be effective in the acute management of patients with ischaemic stroke?		
	Specialised stroke rehabilitation	Yes	No
	Aspirin	Yes	No
	Immediate systemic anticoagulation	Yes	No
	Nifedipine	Yes	No
	Piracetam	Yes	No
	Thrombolysis	Yes	No

3.7 In the acute management of stroke, can you estimate the percentage of **your** patients that are initially managed using the following methods:

Home management ☐ % Immediate transfer to hospital ☐ %

*If **any** of your patients are managed at home, please proceed with question 3.8. If none of your patients are managed at home, please proceed to question **3.12** Hospital discharge*

3.8 What factors influence your decision to opt for stroke management at home?

Severity of stroke	Yes	No
Time since stroke	Yes	No
Age of patient	Yes	No
Distance from hospital	Yes	No
Family support	Yes	No
Previous history of stroke	Yes	No
Co morbid disease	Yes	No
Other (please specify)	Yes	No

_____

3.9 Do you currently have direct access to any of the following diagnostic facilities?

ECG	Yes	No
MRI	Yes	No
CT Scan	Yes	No

Other *(please state)*

_____

3.10 What therapies do you use in the home management of acute ischaemic stroke? *(please circle)*

Aspirin	Yes	No
Thrombolysis	Yes	No
Acute blood pressure reduction	Yes	No
Corticosteroids	Yes	No

Other (please specify)

_____

3.11 This question contains three components:
Which of the following health care professionals do your patients managed at home typically:

(i) Need
(ii) Have access to
(iii) Pay for

Please circle an answer for **each** of the three components for **each** profession.

	(i) Need		(ii) Have access to		(iii) Pay for	
Practice nurse	Yes	No	Yes	No	Yes	No
Public health nurse	Yes	No	Yes	No	Yes	No
Physiotherapist	Yes	No	Yes	No	Yes	No
Occupational therapist	Yes	No	Yes	No	Yes	No
Speech and language therapist	Yes	No	Yes	No	Yes	No
Dietician	Yes	No	Yes	No	Yes	No
Psychologist	Yes	No	Yes	No	Yes	No
Counsellor	Yes	No	Yes	No	Yes	No
Social Worker	Yes	No	Yes	No	Yes	No
Other	Yes	No	Yes	No	Yes	No

(please specify)

_____

3.12 Hospital discharge

3.12a	PRIOR to the hospital discharge of your patients with stroke, does the hospital medical team routinely liaise with you?	Yes	No
3.12b	Are you sent information on patients who have had a stroke immediately prior to discharge?	Yes	No

3.12c When a patient is discharged from hospital with a stroke, which of the following types of information are typically provided to you? *(please circle one response option on each line)*

Details of stroke type	Yes	No
Details of stroke severity	Yes	No
Functional ability	Yes	No
Rehabilitation services	Yes	No
Medications	Yes	No
Diagnostic test results	Yes	No
Home help *	Yes	No
Home care attendant*	Yes	No
Meals on wheels	Yes	No
Personal assistant*	Yes	No
Other *(please specify)*	Yes	No

_____

**** Definitions for Q3.12 c and Q5.6***

Home helps: may be employed either by the HSE or by voluntary organisations. They assist with normal household tasks and are assigned to people who are unable to carry out such tasks themselves. Availability varies greatly from place to place and there may be a small charge.

Home care attendant: They provide assistance and support to people with physical disabilities in their own homes. The time the attendant spends in each person's home and the tasks carried out vary from family to family.

Personal assistants: They enable people to live independently in the community. The Personal Assistant may provide assistance with bathing, dressing, cooking or other personal or household tasks. They may also assist the person in going to and from work, may aid him/her in working or studying or participating in social life. A Personal Assistant can assist a person with a vision impairment with, for example, reading mail, getting from A to B or shopping independently. The person with a disability agrees the range of tasks with the Personal Assistant.

3.12d	In the period FOLLOWING hospital discharge of a stroke patient, does the medical team routinely liaise with you?	Yes	No
3.12e	Do you receive notification from the hospital indicating the point at which a patient is FINALLY DISCHARGED from the hospital, i.e. has no further medical out patient appointments?	Yes	No

Section 4: Secondary prevention of stroke

In this section we would like to ask you about secondary prevention of stroke in your practice

4.1	Do you have a person with an identified lead role in secondary prevention of stroke?	Yes	No
4.2	Does your practice have written guidelines/protocols for any of the following *(please circle one response option on each line)*		
	Antiplatelet therapy (e.g. aspirin, dipyridamole) for ischaemic heart disease	Yes	No
	Antiplatelet therapy (e.g. aspirin, dipyridamole) for stroke disease	Yes	No
	Assessment of vascular risk	Yes	No
	Follow up of stroke patients at high risk of a further stroke	Yes	No
	Secondary prevention of stroke in general	Yes	No
4.3	Does your practice run a secondary prevention clinic?	Yes	No
4.4	Does your practice run a TIA clinic?	Yes	No
4.5	Has your practice conducted any of the following stroke-related activities? *(please circle*)		
	(i) An audit within the last 2 years of stroke patients	Yes	No
	(ii) An audit within the last 2 years of TIA patients	Yes	No

4.6 Please rate how often you provide information on the following lifestyle modifications to stroke patients using the scale: *(please circle one response option on each line)*

1 Always *2 Frequently* *3 Sometimes* *4 Occasionally* *5 Never*					
Weight management	1	2	3	4	5
Diet/healthy nutrition	1	2	3	4	5
Reducing salt intake	1	2	3	4	5
Participation in regular physical activity	1	2	3	4	5
Avoidance of excessive alcohol consumption	1	2	3	4	5
Smoking cessation	1	2	3	4	5
Adherence to medication	1	2	3	4	5

4.7 In your view, are there barriers to implementing secondary prevention strategies for stroke in your practice? Yes No

If yes, can you
(i) indicate what these barriers are below

(ii) indicate solutions to these barriers

Barriers	Solutions

Section 5: Stroke rehabilitation and long term care

In this section, we would like to ask some questions about your practice's approach to stroke rehabilitation and long term care

5.1	Does your practice have a person with an identified lead role in stroke rehabilitation and/or long term care for stroke patients?	Yes	No
5.2	Does your practice have guidelines or protocols for stroke patient rehabilitation?	Yes	No
5.3	Does your practice have guidelines on information to be given to patients and/or carers?	Yes	No
5.4	Do you receive communication regarding rehabilitation services that have been organized for the stroke patient following discharge from hospital?	Yes	No

5.5 When a patient is receiving ongoing rehabilitation following discharge from hospital, where is the rehabilitation generally carried out?

(a) Hospital	Yes	No
(b) Community	Yes	No
(c) Other	_____	

5.6 This question consists of three components:

Which of the following health care professionals do your patients, post-discharge from hospital typically:
(i) Need
(ii) Have access to
(iii) Pay for
(please answer yes or no for EACH profession)

	(i) Need	**(ii) Have access to**	**(iii) Pay for**
Personal assistant service	Yes No	Yes No	Yes No
Home care attendant	Yes No	Yes No	Yes No
Home help	Yes No	Yes No	Yes No
Physiotherapist	Yes No	Yes No	Yes No

	(i) Need	(ii) Have access to	(iii) Pay for
Occupational therapist	Yes No	Yes No	Yes No
Speech & language therapist	Yes No	Yes No	Yes No
Psychologist	Yes No	Yes No	Yes No
Counsellor	Yes No	Yes No	Yes No
Social Worker	Yes No	Yes No	Yes No
Other *(please specify)* _____	Yes No	Yes No	Yes No

5.7a Can you please estimate the proportion of your stroke patients who are clinically depressed? _____%

5.7b Of those depressed, what proportion do you estimate were/are depressed:

- before the stroke ____%

- as a consequence of the stroke ____%

5.7c What proportion are currently treated specifically for depression:

- antidepressant or other medication _____%
- counseling/psychological therapy - funded by practice or HSE ____%
- counseling/psychological therapy - funded by patient ____%

5.7d What proportion of your stroke patients, who need treatment, are not currently treated for depression?____%

5.7e What are the main barriers/solutions to treatment?

Barriers	Solutions

5.8a Is the availability of existing rehabilitation services, adequate for your stroke patient population? Yes No

5.87b If no, can you indicate
(i) what are the priority areas that need to be addressed?
(ii) possible solutions to these priority areas?

Barriers	Solutions

5.9a Do you have any stroke patients who reside in a nursing home? Yes No
(If you answered No, please proceed to section 6)

5.9b Please indicate the percentage of your stroke patients that reside in nursing homes.
___

5.9c For what percentage of these patients do you continue to provide medical care?____

5.9d For patients with stroke residing in nursing homes, how is the relationship with community rehabilitation services managed?

5.9e Do you encounter any challenges that are specific to nursing home residence i.e., that are not experienced when patients reside elsewhere? If yes, please explain.

Section 6: Information and education

In this section, we would like to ask you about your current information use and needs

6.1 Where do you currently access educational information on stroke?

	Please tick appropriate box	Please rate usefulness (1-4) 1 Very useful 2 Quite useful 3 Slightly useful 4 Not useful at all
CME Network		
ICGP		
Irish Heart Foundation		
Heartwatch		
Medical journals		
Medical newspapers		
Internet		
Others *(please state)*		

6.2 Can you please indicate any stroke-related information needs you have that are currently not being addressed?

THANK YOU FOR COMPLETING THIS QUESTIONNAIRE