

ROMFORD STROKE **PREVENTION PROGRAMME:** **EDUCATION RESOURCE PACK # 2**

PROGRAMME 2; SECONDARY PREVENTION OF STROKE

Contents

Introduction & Objectives of the programme	page 1
The work involved in the programme.	Page 2
Individual stroke risk	page 2
How the programme might work in your practice	page 3
Summary of the steps required	page 4
Has the programme been successful?	Page 5
Appendix 1; Example articles from the literature;	Page 6
Appendix 2; An example of audit results.	Page 9

Introduction and Objectives of Programme

This programme is designed as a secondary prevention programme for those GPs who are interested to set up a database of known patients with known cerebro-vascular disease. The secondary prevention activities would be based on developing an appropriate recall systems to review the practices' stroke patients on a regular basis to look at the reversible risk factors present, and to introduce interventions which would lower the risk of a subsequent stroke in these high risk individuals.

Patients in the Romford PCG area carry with them an above average risk of developing a stroke, and the PCG is very keen for practices to take action to reduce the morbidity and mortality associated with C.V.A. s. An extensive review of the literature has shown that there are a number of strategies that can be adopted to reduce strokes in a practice population.

One option would be to look at a practice population, and setting up a recall and opportunistic programme of health education to reduce risk factors for cardio-vascular disease before symptomatic disease becomes apparent. This latter option is primary prevention, but would involve looking at a large number of patients. Perhaps a more cost effective methods of achieving the aim of reducing stroke morbidity and mortality is to set up stroke prevention programmes targeted at patients with a specific high risk factor such as atrial fibrillation, (as in the Romford stroke atrial fibrillation programme) or for patients with known cerebro-vascular disease, as in the Romford stroke secondary prevention programme described here.

There has never been a PCG wide programme for the detection and appropriate treatment of stroke patients with significant cardiovascular risk factors, and this

programme should be helpful to those practices that have not yet set up systems for patient care in this area. Participation in the programme should answer questions such as who are my patients who have had either strokes or T.I.A. s, what is the risk profile of the individual patients in this group, how many of them have been seen specifically for risk assessment, and finally how many have had interventions introduced to prevent future strokes?

The Work Involved in the Programme

In the secondary prevention programme which is described here there are two stages; The first is a description of the identification of patients who are known to have a past history of cerebro-vascular disease. In practice this would involve a computer search of the diagnostic categories held on the computer system, using appropriate Read codes, for example for "CVA" and "TIA" and "cerebro-vascular disease. This would form the basis for the practice stroke register. Additional names can be added by discussing with the members of the primary care team, who may well be aware of stroke patients who are not on the list. This would particularly apply to the district nurses who may be treating patients at their homes in the community. The number of names on the disease register may be compared with the registers of other local practices to check that the register is accurate.

As a guide the prevalence of stroke patients would be in the range of 8 to 12 patients per 1000 patients at risk. In a single handed practice with an average list size of about 2,000 patients there would be expected to be perhaps 20 patients who have had a past history of a C.V.A. or T.I.A. This data is based on a limited audit and the PCG would be interested to hear from individual practices about their own estimates of disease register numbers.

The second stage is to arrange a recall system for these patients to examine whether any of the high risk factors related to cerebro-vascular disease such as smoking, diabetes, and hypertension etc. are present in each patient. These factors should be recorded, and it is assumed interventions would be arranged accordingly in primary care as part of normal clinical practice. It may be helpful to recall here what are the main risk factors in the general population for developing cerebro-vascular disease. In a selected group such as patients who have already had an event such as a stroke or TIA the presence of any one of these risk factors have an even greater importance in the prediction of the onset of a further event.

INDIVIDUAL STROKE RISK

Risks are at least additive. Although there is some controversy regarding interaction, the following table shows the various known risk factors for stroke and their relative causal associations.

STROKE RISK FACTORS

Risk factors for stroke	Strength of causal association
Increasing age	++++
Hypertension	++++
Male sex	+++
Existing vascular disease	+++
Cardiac dysfunction	+++
Diabetes	+++
Smoking	++
Alcohol intake	++
High lipids	++
High fibrinogen	+
High haemotocrit	+
Geography	+
Family history	+
Obesity	+

How The Programme Might Work in Your Practice

- 1). The participant should read through this programme, and also the attached educational material relating to the wider issue of stroke prevention in general.
- 2). The participant should then set up a practice meeting to be attended by those interested members of the practice team, to discuss the programme content and to consider the suggested methods of implementing the objectives which have been suggested. In practice this would mean looking at the accompanying Education Resource Pack no .6 which gives a review of the subject, and also the example practice audit at the end of this programme.
- 3). A lead person should be appointed within the practice to look at the work that is required, namely to find the patients who are on the stroke register and who amongst these have risk factors for cerebro-vascular disease. This might be the clinical governance lead within the practice, or an interested doctor or nurse, who agrees to keep an eye on the progress of the work. It is also helpful to set a target, such as looking at the number of patients found after say three months.
- 4). Meeting the challenge of finding the relevant stroke patients, and recording risk factors on these patients may be helped by the introduction of new methods to look for and record risk factors for individual patients. Each practice would have its own idea of which factors should be recorded, but the evidence suggests that risk factors and appropriate recording that might be the most useful to screen for would be those shown in the audit at the end of this programme.

Some practices may decide to set up a programme to record this data and aim to increase their pick-up rate over a period of time, while others will be more pro-active and arrange to recall the relevant patients to screen them.

5). A follow up meeting should be arranged, after a suitable period, so that the next step; of reviewing the patients added to the register, but who had not been seen for an assessment, may be arranged. At the follow up meeting the number of patients with the various risk factors recorded in the records should be examined.

6). It may be necessary at this stage to introduce specific measures to increase your numbers of identified patients. This would particularly apply if the numbers on the disease index fell well short of the “expected” prevalence of stroke patients within the population. This can be dealt with in a number of ways. Firstly by **opportunistic case finding**, patients seen in regular consultations should be screened for either being a cerebro-vascular patient who was not on the register, or a known cerebro-vascular patient whose risk profile was incomplete.

7). Secondly one could adopt a process of **targeting patients for review and data collection**. The practice computer system should be used to identify patients on the stroke register, but who do not have specific data entered on their records, such as a recent blood pressure, or a recent blood cholesterol, or whether they were on any anti-platelet or where relevant anti-coagulant therapy. The records of such patients may be tagged to remind the next clinician who sees the patient to record the missing data. Finally should the practice feel this to be appropriate patients with missing data could be recalled in order to be checked for relevant examination in the practice. Clearly such measures would be adopted where appropriate resources and support were available from the relevant authorities.

The practice may consider other pro-active methods of identifying high risk patients by recalling targeted patients as part of any existing health promotion programmes, such as the recall of patients over the age of 75 years, who had not been seen recently, as in the recent PCG “winter pressures “ programme.

8). The final part of the programme consists of arranging a final audit based on the number of patients who had been added to the disease index (stroke register), the number of these patients who had risk factors recorded, and where applicable, the number of patients who had their management changed as a result of the programme.

A SUMMARY OF STEPS REQUIRED

- Preliminary audit to estimate baseline number of patients on the stroke register.
- Programme of opportunistic case finding begins and stroke register is updated.
- Computer search of practice database to identify risk factors among stroke register patients.
- Records of individual patients on the disease register would be examined to look at stroke risk. Patients would be the recalled based on the level of data and the individual risk of the patient.

- Known cerebro-vascular patients seen in a dedicated clinic for assessment and to introduce life style changes as required.
- Final audit to demonstrate improvement in the recording of risk factors among the the stroke register population, and an improvement in the care given to these patients.

Has the Programme Been Successful?

Once you have recorded the data suggested here you can review whether the programme has proved successful at identifying an increased number of patients with cerebro-vascular disease, as well as the number of patients with cardiovascular risk factors, among this practice population as compared with the initial baseline audit. It is assumed that in arranging the data collection there will be an automatic opportunity of providing health promotion advice where it is necessary. Therefore a separate count should be made of patients who have been given health promotion advice where necessary, and had treatment changed as a result of the review.

Overall you may consider that a successful programme would be one which

- a). There is a greater understanding among the practice staff about the need to identify patients who have cerebro-vascular disease, and to monitor them at a regular basis.
- b). Identifies an increase in the number of patients who have been entered on the practice stroke register.
- c). Identifies an increase in the number of specific cardiovascular risk factors recorded among the patients on the stroke register.
- d). Demonstrates that an appropriate number of patients in this high risk group had been recalled and seen for a review consultation.
- e). Demonstrated that there had been a change in management in an appropriate percentage of patients on the stroke register.

APPENDIX 1

Romford Stroke Prevention Programme **Example Literature Resource**

There follows two articles from the literature regarding current views on the secondary prevention of strokes. This should be read when considering participation in the Romford stroke prevention programme

ARTICLE (1) SUMMARY OF RCP GUIDELINES 1999

Secondary prevention

Patients who have suffered a stroke remain at an increased risk of a further stroke (about 7% per annum), of other vascular events (about 7% per annum) and of epilepsy (about 5% in 2 years). The risk of further stroke is highest early after stroke. Therefore there should be a high priority given to secondary prevention.

Guidelines

These guidelines apply to **all patients**, even those not admitted to hospital. Therefore they refer to patients either **before discharge from hospital** or **before 4 weeks have passed from stroke onset**, whichever is the sooner.

- a. All patients should have their blood pressure checked, and hypertension persisting for over one month should be treated. The British Hypertension Society guidelines are: Optimal blood pressure treatment targets are systolic blood pressure <140 mmHg and diastolic blood pressure <85 mmHg; the minimum accepted level of control recommended is <150/ <90 mmHg (**A**)
- b. All patients, not on anticoagulation, should be taking aspirin (50–300 mg) daily (**A**), or a combination of low-dose aspirin and dipyridamole modified release (MR). Where patients are aspirin intolerant an alternative anti-platelet agent (clopidogrel 75mg daily or dipyridamole MR 200mg twice daily) should be used (**A**)
- c. Anticoagulation should be started in every patient in atrial fibrillation (valvular or non-valvular) unless contraindicated (**A**)
- d. Anticoagulation should be considered for all patients who have ischaemic stroke associated with mitral valve disease, prosthetic heart valves, or within 3 months of myocardial infarction (**C**)
- e. Anticoagulation should not be started until brain imaging has excluded haemorrhage, and 14 days have passed from the onset of an ischaemic stroke (**A**)
- f. Anticoagulation should not be used after transient ischaemic attacks or minor strokes unless cardiac embolism is suspected (**A**)
- g. Any patient with a carotid artery area stroke, and minor or absent residual disability should be considered for carotid endarterectomy (**A**)
- h. Carotid ultrasound should be performed on all patients who would be considered for carotid endarterectomy (**C**)
- i. Carotid endarterectomy should only be undertaken by a specialist surgeon with a proven low complication rate, and only if the stenosis is measured at greater than 70% (**A**)
- j. All patients should be assessed for other vascular risk factors and be treated or advised appropriately (**B**)
- k. All patients should be given appropriate advice on lifestyle factors (such as not smoking, regular exercise, diet, achieving a satisfactory weight, reducing the use of added salt) (**C**)
- l. Therapy with a statin should be considered for all patients with a past history of myocardial infarction and a cholesterol >5.0 mmol/l following stroke (**A**)

Evidence (*Tables 11.3, 11.4*)

Much of the evidence is derived from research into primary prevention, but there are now also studies investigating secondary prevention.

- a. [Post Stroke Antihypertensive Treatment Study collaborative group 1995](#); [Ramsay et al 1999](#) (British Hypertension Society guidelines) (**Ib**)
- b. [Anti-platelet Trialists Collaboration 1994](#) (**Ia**); [CAPRIE 1996](#); [Diener et al 1996](#) (**Ib**)
- c. [European Atrial Fibrillation Trial \(EAFT\) study group, 1993, 1995](#) (**Ia**)
- d. Consensus of working party (**IV**)
- e. [European Atrial Fibrillation Trial 1993, 1995](#), and consensus of working party (**Ib**)
- f. [Stroke Prevention in Reversible Ischaemia Trial 1997](#) (**Ib**)
- g. [European Carotid Surgery Trialists' Collaborative Group 1998](#); [North American Symptomatic Carotid Endarterectomy Trial Collaborators 1998](#) (**Ib**)
- h. Consensus of working party (**IV**)
- i. [Hebert et al 1997](#) (**IIa**)
- j. Consensus of working party; [Elliott et al 1996](#); [Midgley et al 1996](#); [Cutler et al 1997](#); [Whelton et al 1998](#) (**IV**)
- k. [Blauw et al 1997](#); [Hebert et al 1997](#); [Crouse et al 1997, 1998](#). The evidence for patients with previous myocardial infarction shows reduction in stroke incidence. The mean age of patients in the trials was <60 years, predominantly male, with low incidence of hypertension (**Ia**)

Local guidelines

These will be need to specify local policies for:

1. anti-platelet treatments, taking into consideration the cost implications of implementing routine use of agents other than aspirin;
2. referral to specialist vascular surgeons for carotid surgery;

3. controlling anticoagulation;
4. cholesterol lowering drugs;
5. dietary advice and follow-up.

ARTICLE (2)

Summary of extract from Preventing ischaemic Stroke in Patients With Prior Stroke and Transient ischaemic Attack A Statement for Healthcare Professionals From the Stroke Council of the American Heart Association 1999

Prevention

There are 3 treatment strategies to prevent recurrent stroke in patients with TIA or mild ischaemic stroke. For patients with atrial fibrillation, dose-adjusted warfarin sodium is administered (international normalized ratio [INR] in the 2 to 3 range; target 2.5) unless there is a specific contraindication for that medication.^{1 2} In the latter case, the patient should be treated with aspirin 50 to 325 mg/d.

In patients with TIA or mild stroke and symptoms referable to severe (70% to 99%) carotid artery stenosis (or to moderate [50% to 69%] stenosis in a patient with significant risk factors), the treatment of choice is carotid endarterectomy by a surgeon with a low complication rate (morbidity and mortality <6%).^{3 4} For patients with TIA or mild stroke who do not have atrial fibrillation or moderate-to-severe carotid stenosis, treatment with a daily dose of 50 to 325 mg of aspirin is of demonstrated benefit. Although previous studies used doses of aspirin up to 1300 mg/d, the lower dose range is currently recommended.⁵ Other anti-platelet agents, including clopidogrel, extended-release dipyridamole plus aspirin, and ticlopidine, may be used. Recent retrospective post-marketing surveillance⁶ suggests that the use of ticlopidine with aspirin after coronary angioplasty and stenting was complicated by thrombotic thrombocytopenic purpura approximately once in every 4184 patients and was fatal in >20% of cases. In light of these findings, the use of ticlopidine must be reassessed.

Likelihood and Consequences of Stroke Recurrence

Stroke recurrence is an important public health concern. The decline in stroke mortality and the increase in life expectancy of the US population will undoubtedly increase the number of persons at risk for recurrent stroke, stroke-related disability, and the cost of medical care. The long-term stroke recurrence rates range from 4% to 14% annually. In the Framingham Study,⁸ the 5-year cumulative recurrence rate for atherothrombotic brain infarction was 42% for men and 24% for women. In Rochester, Minn, the 5-year cumulative recurrence rate was 29%, with no sex difference.⁹ Recurrences were generally of the same type as the initial stroke. In the Northern Manhattan Stroke Study,¹⁰ the 5-year stroke recurrence rate was 25%. Overall, stroke recurrence is highest in the first 30 days after the initial event; 30% of recurrences occur within this time frame.¹¹ However, there may be differences in recurrence rates by stroke subtype. Lacunar infarction may have the lowest recurrence rate, atherothrombotic infarction the highest, and infarction of unknown cause and cardio-embolic stroke intermediate rates. Cardiovascular risk factors such as hypertension, glycemic control, cardiac disease, and heavy alcohol consumption may be potentially modifiable predictors of stroke recurrence.¹⁰

More than 50% of stroke survivors have significant residual physical disability and functional impairment.¹² Stroke recurrence not only may add to physical impairment and disability but may also increase mortality and length of hospital stay.⁷ In addition, stroke recurrence may lead to vascular dementia or may be an important trigger for dementia in the elderly.^{13 14 15} Because some first and recurrent strokes are

preventable, vascular-associated causes of cognitive impairment might be prevented by appropriate risk-prevention measures.

Prevention of Other Cardiovascular Outcomes in Cerebro-vascular Patients

Patients with stroke and TIA are also at risk for myocardial infarction and cardiovascular death. That is, they often have generalized atherosclerosis and are at risk for thrombosis in multiple vascular territories. The present report has emphasized the treatment of atherosclerotic risk factors for stroke prevention, e.g., cessation of smoking, reduction of high blood pressure, control of body weight and blood glucose, and use of anti-thrombotic drugs. These treatments are also effective in reducing the risk of coronary artery events.

The reduction of LDL cholesterol with 3-hydroxy-3-methylglutaryl coenzyme A (HMG-CoA) reductase inhibitors ("statins") prevents coronary events in patients with coronary artery disease (CAD), especially when LDL cholesterol is elevated. Consequently, stroke patients with known CAD and elevated LDL cholesterol are often prescribed a statin. The value of reducing high blood LDL cholesterol for stroke prevention has been less clear. However, recent trials in patients with CAD^{16 17 18} have shown treatment with statins prevents stroke as well. Because many stroke patients have clinical CAD, statin use is indicated. Statin use in stroke patients without prior CAD may also reduce the risk of stroke recurrence, as well as myocardial infarction and other vascular disease, but this has not been demonstrated. Additional studies of statins in stroke patients without clinical CAD are in progress.

Educational Aspects

The synthesis of epidemiological and clinical trial data is only the first step in preventing stroke recurrence. New data must be disseminated to healthcare providers and gaps identified between current and "best" practice.¹⁹ Therapeutic decisions based on the best available evidence need to be incorporated into routine clinical practice, and the impact of treatments on patient outcomes should be systematically monitored. These problems are not trivial, because dissemination of preventive guidelines lags behind clinical trial and consensus statement results. For example, 2 years after the results of 3 randomized trials became available indicating that endarterectomy was efficacious in selected symptomatic patients with high-grade carotid artery stenosis, the operation was reported as being always or often recommended by only about half of internists and non-internist primary care physicians in the United States for patients with newly symptomatic disease.²⁰ Less than 33% of the latter physicians indicated that they were considering or expecting to alter their practices.²¹ Although there are several possible explanations for this finding, targeted dissemination of clinical trial results might help address this apparent "knowledge gap" and be an important vehicle for change.

In contrast, the majority of physicians in the United States are knowledgeable regarding the use of anticoagulants in the prevention of cardiogenic embolism in patients with atrial fibrillation.²² Yet several recent studies^{22 23} show that anticoagulants are prescribed to only 50% of individuals in the United States with atrial fibrillation who are candidates for such therapy. In this case, there is a discrepancy between knowledge and practice that is unlikely to be addressed by reiterating the results of clinical trials. As illustrated by these examples, the optimal methods of translating evidence into effective clinical practice may differ depending on a variety of factors. Systematic study of these factors and the careful assessment of the impact of possible solutions on both the process of care and patient outcomes will be increasingly required in the future. Overall, healthcare organizations need to develop systems that ensure that patients at high risk for stroke are identified, screened, and treated appropriately.

APPENDIX 2

SECONDARY PREVENTION OF STROKE AUDIT

TOTAL PRACTICE POPULATION	13700
AT RISK POPULATION ; PATIENTS ON STROKE REGISTER	139
PERCENTAGE POPULATION AT RISK	1.01%

ALL DATA BASED ON COMPUTER SYSTEM ENTRIES, MANUAL RECORDS EXCLUDED

	BASELINE AUDIT	
<u>SIGNIFICANT RISK FACTORS EXAMINED</u>	NUMBER OF PATIENTS RECORDED	PERCENT AGE OF AT RISK GROUP
PATIENTS ON THE ISCHAEMIC HEART DISEASE REGISTER	58	41.7%
PATIENTS ON THE HYPERTENSION REGISTER	61	43.9%
PATIENTS ON THE STROKE REGISTER	139	100.0%
PATIENTS ON THE DIABETICS REGISTER	23	16.5%
BLOOD PRESSURE RECORDED ON SYSTEM	68	48.9%
FAMILY HISTORY OF CEREBROVASCULAR / CARDIOVASCULAR DISEASE RECORDED	22	15.8%
PATIENTS WHO HAVE A POSITIVE FAMILY HISTORY	25	18.0%
CHOLESTEROL RECORDED	33	23.7%
CHOLESTEROL RECORDED AND LESS THAN 5.0	4	2.9%
SMOKING HISTORY KNOWN	44	31.7%
BMI RECORDED	46	33.1%
PATIENTS ON THE HYPERTENSIVE REGISTER	23	16.5%
OBESITY BMI>30	33	23.7%
PATIENT KNOWN TO BE ON ANTI-COAGULANTS	19	13.7%
PATIENT KNOWN TO BE ON AN ANTI-PLATELET AGENT	33	23.7%
ALCOHOL CONSUMPTION RECORDED	38	27.3%

STROKE PREVENTION PROGRAMME

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