

ROMFORD STROKE PREVENTION

PROGRAMME: EDUCATION RESOURCE

PACK # 1

PROGRAMME 1 PRIMARY PREVENTION OF STROKE

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Introduction and Objectives of Programme

This is designed as a primary prevention programme for those GPs who are interested to look at the important risk factors for cerebro-vascular disease amongst their practice population. The programme would be designed to support the practice targeting the high risk population and building up a “stroke high risk register” of these patients. Subsequent work would be required to set up appropriate recall systems so that interventions can be introduced to lower the risk of first 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 CVA'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 of the most cost effective methods of achieving this aim is to set up stroke prevention programmes targeted at either patients with known cerebro-vascular disease, (as in the Romford stroke secondary prevention programme), or patients with a specific high risk factor such as atrial fibrillation, (as in the Romford stroke atrial fibrillation programme). However another method is to look at a larger 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, and is described in this programme.

Participation in such a stroke prevention programme has the advantage of also targeting patients who are at risk of coronary disease, and therefore prevention strategies are likely to prevent deaths from ischaemic heart disease as well as strokes.

There has never been a PCG wide programme for the detection and appropriate treatment of 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 are at high risk of cerebro-vascular disease, how many of them have been seen specifically for risk assessment, and finally how many have had interventions introduced to prevent future strokes?

In the primary prevention programme which is suggested here there are two stages; The first is a description of the identification of patients who are known to have any of the high risk factors related to cerebro-vascular disease such as smoking, diabetes, and hypertension etc. These factors should be recorded, and it is assumed interventions would be arranged accordingly in primary care as part of normal clinical practice.

The second stage, which might not be adopted by all practices initially would be to use the collected practice wide data to identify individual high risk patients. This can be done by attempting to calculate a risk prediction for individual patients, or use an alternative method, of say registering all patients

known to have two or more risk factors. This is so that these patients can be targeted for specific screening and intervention such as patient education. Examples of risk prediction tools are given for those practices who wish to pilot this. First it might be helpful to have another look at what factors are the most important in increasing the risk of having a first stroke. The information on the following page should help you what factors to priorities in your practices data collection.

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.

<u>STROKE RISK FACTORS</u>	
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 haematocrit	+
Geography	+
Family history	+
Obesity	+

Important General Risk Factors

Age:	Risk roughly doubles with each decade of life.
Hypertension: Risk doubles with every 7.5 mm Hg rise in diastolic BP from 70 to 110 mm Hg. A similar	risk increase applies for systolic pressure in those with raised systolic pressure.
Smoking:	Increases stroke risk 3-5 times. Risk is directly related to numbers of cigarettes smoked.
	Effects of smoking on risk are reversed in 3-5 years.

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 in the appendix found at the end of this programme.
- 3). The tasks required to find the patients who are at high risk for cerebro-vascular disease within the practice, and who should do the work, should be allocated within the practice. It is helpful to appoint a "lead person" within the practice to oversee the work done; 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.

Meeting the challenge of finding the high risk patients is dependent on identifying those patients who have a significant combination of risk factors. Therefore in practice the essential part of this programme is to introduce methods to look for and record these 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 that might be the most useful to screen for would be;

- BLOOD PRESSURE BEEN MEASURED WITHIN THE LAST 5 YEARS
- POSITIVE FAMILY HISTORY OF CARDIOVASCULAR DISEASE
- CHOLESTEROL RECORDED
- DIABETES
- SMOKING HISTORY
- BMI RECORDED
- ALCOHOL CONSUMPTION RECORDED

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. However other practices may take a further step and may use some of the available tools to use the collected data to set up a cardio-vascular risk register based on the various prediction scoring tools available.

4). The methods of building up the at-risk register will vary from practice to practice. A widely used risk prediction chart is given as an example at the end of this programme (Appendix 3). This is used for risk calculation relating to IHD, but the risk factors relate to cerebro-vascular disease as well. The Joint British Societies' Cardiac Risk Assessor computer programme and copies of the Joint British Societies' coronary heart disease risk assessment chart can be downloaded from the British Hypertension Society website; www.hyp.ac.uk/bhs .

Reviewing this website, you will also find a very useful on line stroke risk calculator, which can be easily used by the clinician in the presence of the patient. This uses the familiar risk factors of age, gender, BP, cholesterol, smoking habits and presence of diabetes to calculate the stroke risk for the patient over the subsequent ten years. You can choose your own cut off point, but clearly any patient with a ten year risk exceeding 10% or so should be considered high risk and their name entered on the at risk register.

Whichever method you use the result will be the same; the production of a list of names of "active" patients (i.e. registered) patients who were known to be at high risk of cerebro-vascular disease. In some practices there may already either be a list of known patients or the possibility of read code entries relating to individual risk factor being entered in the practice computer system. In those practices which use the electronic records in a very limited way this source of information is likely to be less useful. Nevertheless where possible the practice (electronic) records should be searched for the diagnosis, and the resulting patients names would provide the basis of the cerebro-vascular high risk disease index.

The names should be kept as a group on the system, and for the purposes of this programme a print out obtained and kept in this folder. The 'prevalence' data of high risk patients is difficult to assess as there is little published data on the expected numbers of patients, and there is variability in the definition of high risk. Also the true practice prevalence is very much related to the demography of the practice.

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 may be arranged. At the follow up meeting the number of patients with the various risk factors recorded in the records should be examined. You can consider yourself what an acceptable figure might be, based on the data given in the example audit in Appendix 2 at the end of the pack. Alternatively the following arbitrary standards may be used as a guide;

- 50% OF PATIENTS HAD A RECORDING OF THE PRESENCE OF A FAMILY HISTORY OF CARDIOVASCULAR DISEASE
- 50% OF PATIENTS HAD A RECORDING OF CHOLESTEROL RECORDED
- PRACTICE HAS AN UP TO DATE VALIDATED DIABETES DISEASE REGISTER
- 70% OF PATIENTS HAD THEIR BP MEASURED WITHIN THE LAST 5 YEARS
- 70% OF PATIENTS HAD A RECORDING OF SMOKING HISTORY
- 70% OF PATIENTS HAD A RECORDING OF BMI RECORDED
- 70% OF PATIENTS HAD A RECORDING OF ALCOHOL CONSUMPTION RECORDED

6). It may be necessary at this stage to introduce specific measures to increase your numbers of identified patients. This can be done in a number of ways. Firstly by **opportunistic case finding**, patients seen in regular consultations should be screened for being in a high risk for cerebro-vascular

disease. The data that you look for will depend on what has been recorded up to that time. For example in the audit that has been given as an example, in the baseline audit it had been found that there had been only about 1% of the at risk patients with a record of a blood cholesterol. This had been a priority for the practice to record this, so there was an increase in the percentage of patients with a cholesterol recorded in the second audit.

Secondly one could adopt a process of **targeting patients for data collection**. The practice computer system should be used to identify patients who do not have specific data entered on their records, such as a recent blood pressure, or as in the above example, a recent blood cholesterol. 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 such 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.

7). Once a satisfactory high risk register had been constructed, the review stage can take place. Here the patients who are at risk may be recalled to check how each patient is being managed with respect to all known CVA risk factors.

An example of how this might work may be helpful; A patient who had say, been added to the at risk register by virtue of being both obese and having poorly controlled hypertension would be recalled and checked by either the practice nurse or GP. Specific risk factors would be discussed and lifestyle changes particularly relating to smoking habit, or exercise may be discussed. The presence of hypercholesterolaemia would trigger appropriate medication for this.

8). The final part of the programme consists of arranging a final audit based on the number of patients with risk factors recorded, and where applicable, the number of patients entered on the ‘at risk’ register.

A SUMMARY OF STEPS REQUIRED

- Preliminary audit to estimate baseline number of patients with risk factors.
- Programme of opportunistic case finding begins and risk factors recorded.
- Computer search of practice database to identify further risk factors.
- Records of individual patients would be examined to look at stroke risk; Using any of the risk assessment tools discussed here, proceed with the construction of an “at risk” register based on the data collected.
- Recall and review of sample of patients on high risk register to introduce life style changes etc.
- Final audit to demonstrate improvement in the recording of risk factors among the practice population and if risk prediction programme begun, the number of patients identified at high risk of cerebro-vascular disease

Has the Programme Been Successful?

Once you have entered the figures you can review whether the programme has proved successful at identifying an increased number of patients with cardiovascular risk factors, 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.

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

- a). Identifies an increase in the number of patients with specific cardiovascular risk factors during the course of the programme.
- b). Understands the use of this data to use a cerebro-vascular risk prediction tool and begins this process.
- c). Demonstrates that a start has been made in screening this high risk group to enable health promotion advice to be given and specific management relating to their risk factors.

Romford Stroke Prevention Programme Literature Resource

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

PRIMARY PREVENTION OF STROKE

ACP Journal Club, September/October 1999.

Gorelick PB, Sacco RL, Smith DB, et al. Prevention of a first stroke. A review of guidelines and a multidisciplinary consensus statement from the National Stroke Association. JAMA. 1999 Mar 24/31;281:1112-20.

Question

What evidence supports clinical recommendations for prevention of a first stroke in primary care patients?

Data sources

English-language studies were identified with MEDLINE (1990 to November 1998) by using the terms guideline; consensus; cerebro-vascular disorders; and risk factors plus primary prevention for cerebro-vascular disorders, hypercholesterolaemia, and hyperlipidemia. Guidelines and consensus documents from 6 journals (*Stroke, Hypertension, Circulation, Diabetes Care, Diabetes, and Neurology*) were reviewed. Bibliographies from studies, systematic review articles, guidelines, textbooks, and reference guides were reviewed; other non-journal publications and Internet sites were scanned.

Study selection

Randomized controlled trials (RCTs) and meta-analyses were assessed. **6 risk factors for a first stroke were evaluated: hypertension; coronary artery disease, including blood lipid levels; atrial fibrillation (AF); diabetes mellitus; asymptomatic carotid artery stenosis; and lifestyle variables (cigarette smoking, alcohol consumption, physical activity, and diet).**

Data extraction

Clinical experts in neurology, cardiology, family practice, nursing, physician assistant practices, and health services research extracted data on quality of evidence, patient sample, and first stroke. Evidence and guideline recommendations were assessed, and recommendations were maintained or updated on the basis of new evidence. Members of the expert panel reached a consensus.

Main results

Hypertension. 14 RCTs were identified and analyzed; systematic review by using data from these trials showed that a 5- to 6-mm Hg decrease in diastolic blood pressure reduced the risk for stroke by 42%. 1 RCT showed that decreasing isolated systolic hypertension in elderly persons reduced the risk for stroke by 36%. Systematic review of data from these trials showed that therapy with diuretics (odds ratio [OR] 0.61, 95% CI 0.51 to 0.72) or -blockers (OR 0.75, CI 0.57 to 0.98) reduced risk for stroke in older persons with hypertension. Recommendations included offering treatment to persons who are most likely to develop stroke (e.g., African-American and elderly persons), checking blood pressure at all clinic visits, and monitoring blood pressure at home for persons with hypertension.

Myocardial infarction. The rate of ischaemic stroke after myocardial infarction (MI) is 1% to 2% per year; the greatest risk is in the first month after MI (31%). Several meta-analyses have shown that aspirin therapy after MI reduces risk for nonfatal stroke, although these analyses vary. A meta-analysis of 3 RCTs has shown that warfarin given after MI to achieve an international normalized ratio of 2.0 to 3.0 reduced risk for stroke. Meta-analysis showed that anti-platelet agents in patients with previous MI reduce nonfatal stroke by 39%, nonfatal MI by 31%, and vascular death by 15%. The combined end point of MI, stroke, and vascular death was reduced with a risk difference of 3.2%. 3 RCTs have shown that statins reduce the risk for stroke in patients with previously high lipid levels. Recommendations for patients who have had MI are warfarin for those who also have AF, left ventricular thrombus, or severe left ventricular dysfunction; aspirin for those with no complications; and statins for those with normal to high lipid levels.

Non-valvular AF. AF increases risk for stroke by a factor of 6. Meta-analysis has shown that patients with AF have a 68% (CI 50% to 79%) reduction in the rate of stroke with warfarin use and a 21% reduction with aspirin use. These reductions must be balanced with an increased risk for serious

bleeding (1.3%/y for warfarin and 1.0%/y for aspirin). Recommendations for patients with AF include the use of warfarin for those who are older than 75 years of age and those who are 65 to 75 years of age with specific risk factors for stroke. Patients younger than 65 years of age without risk factors should be treated with aspirin.

Diabetes mellitus. Patients with diabetes have an increased risk for stroke. 2 RCTs have shown that tight glucose control in patients with type 1 diabetes and intensive drug use in patients with type 2 diabetes reduce microvascular complications but not macrovascular complications, such as stroke. Tight control of hypertension and type 2 diabetes reduced the risk for fatal and nonfatal stroke by 44%. Recommendations emphasize tight blood glucose control for prevention of microvascular complications in patients with diabetes; more research is needed on prevention of first stroke.

Asymptomatic carotid artery disease. Risk for stroke increases with increasing carotid stenosis. 1 RCT showed that patients who had stenosis of 60% to 99% had a decreased risk for stroke or death after carotid endarterectomy of 5.9% over 5 years. Existing guidelines do not uniformly support endarterectomy for asymptomatic stenosis. Carotid endarterectomy should be considered if the asymptomatic stenosis is 60%, but only if the site-specific combined surgical morbidity and mortality rate is < 3%.

Lifestyle factors. A meta-analysis of 32 studies showed that cigarette smoking is associated with an increased risk for stroke (relative risk 1.5, CI 1.4 to 1.6). Risk is proportional to the number of cigarettes smoked. Light or moderate alcohol consumption may protect against ischaemic stroke, but heavy alcohol use increases the risk for hemorrhagic stroke. Regular exercise reduces the risk for premature death and cardio-vascular disease. The protective effect of exercise may be mediated by other risk factors. Some dietary factors may be associated with stroke; for example, increased sodium intake, elevated homocysteine levels, and vitamin deficiency may increase risk, and fruit and vegetable consumption may decrease risk. Recommendations include promotion of smoking cessation, regular exercise, moderate alcohol use, and a healthy diet.

Conclusions

Several interventions reduce the incidence of a first stroke by modifying risk factors. ***These are the treatment of hypertension, use of aspirin after uncomplicated myocardial infarction, use of warfarin for patients with atrial fibrillation after myocardial infarction, use of statins to control lipid levels after any myocardial infarction, use of warfarin or aspirin for patients with atrial fibrillation (depending on other risk factors), and possible carotid endarterectomy for patients with asymptomatic stenosis 60%. Observational studies support modification of lifestyle-related risk factors (smoking, exercise, alcohol consumption, and diet).***

Commentary

Clinical practice guidelines and consensus statements should summarize the best available evidence and provide busy clinicians with practical, readily available, unbiased recommendations about patient care. This is not an easy task because consensus often involves compromise and simplification of complex issues; biases may exist throughout the process. Fortunately, an evidence-based approach to assessing clinical practice guidelines (1) has been developed to determine guideline validity, sensibility, and usefulness in patient care.

Stroke is a major public health issue; therefore, the development of this primary prevention consensus statement by the National Stroke Association (NSA) is timely and relevant. The methods section is complete, and the consensus process is well described. Unfortunately, no explicit information (except financial disclosures) was provided about the experts who evaluated the evidence and their levels of training. This may have introduced bias in the use of the data. In addition, no mention was made of an author with expertise in statistics.

An exhaustive, clear search strategy for relevant evidence is important to the success of a review. The description of the NSA strategy is ambiguous and limited and could have led to incomplete results. For example, keyword could mean either "MeSH (Medical Subject Heading) heading" or "textword", and consensus is not a MeSH term. Bias may have been introduced by restricting the search to English-only guidelines listed in MEDLINE. It may also have been appropriate to search the Cochrane Library. It is difficult to identify and include all available evidence or relevant ongoing research. 2 examples of material not included in this review are the Medical Research Council and British Heart Foundation Heart Protection Study (an ongoing RCT of cholesterol reduction with simvastatin, antioxidant vitamin therapy, or both in 20 000 participants at high risk for coronary artery disease [2]) and a recent systematic review of 5 RCTs of endarterectomy for asymptomatic stenosis that included 2440 patients (3) (1659 patients were included in the Asymptomatic Carotid Atherosclerosis Study done in North America [4]). Review of the 5 RCTs showed that carotid surgery reduced the risk for ipsilateral stroke or

death by 38%; 50 operations were needed to prevent 1 additional ipsilateral stroke or death over 3 years. Although the risk for peri-operative stroke or death from carotid surgery seems to be lower for persons with asymptomatic stenosis (2.3%) than for persons with symptomatic stenosis, the risk for stroke without surgery is low, and for most persons, the balance of risk and benefit from surgery is unclear.

The decision to base this consensus statement on guidelines derived from RCTs and systematic reviews is sound. However, no criteria for quality assessment of the guidelines, the underlying RCTs, or systematic reviews were given, and we are not told how the data were combined in the final document. A systematic approach to synthesis of the evidence is important and should be explicit. It is also difficult to critically compare the various guidelines because insufficient data are presented. The meta-analysis by the Anti-platelet Trialists Collaboration (5), which suggested a significant benefit from aspirin use, was based on 8 RCTs (16 747 patients and 211 outcomes). The less favorable overview by the Matchar and colleagues (6) evaluated 3 RCTs (9600 patients and 111 outcomes). It seems reasonable that aspirin, although not as effective as warfarin in the prevention of stroke after MI, is still worth considering in some patients.

Despite these methodologic shortcomings, the paper assesses 6 clinically important, potentially modifiable risk factors and, for the most part, considers clinically reasonable treatments and alternatives. Even without strong evidence from RCTs, few would argue with such sensible recommendations as smoking cessation, moderation of alcohol intake, regular exercise, and ensuring a healthy diet.

PRIMARY PREVENTION OF STROKE

AUDIT

TOTAL PRACTICE POPULATION	13700
AT RISK POPULATION AGED 25 TO 64	7401
PERCENTAGE POPULATION AT RISK	54.0%

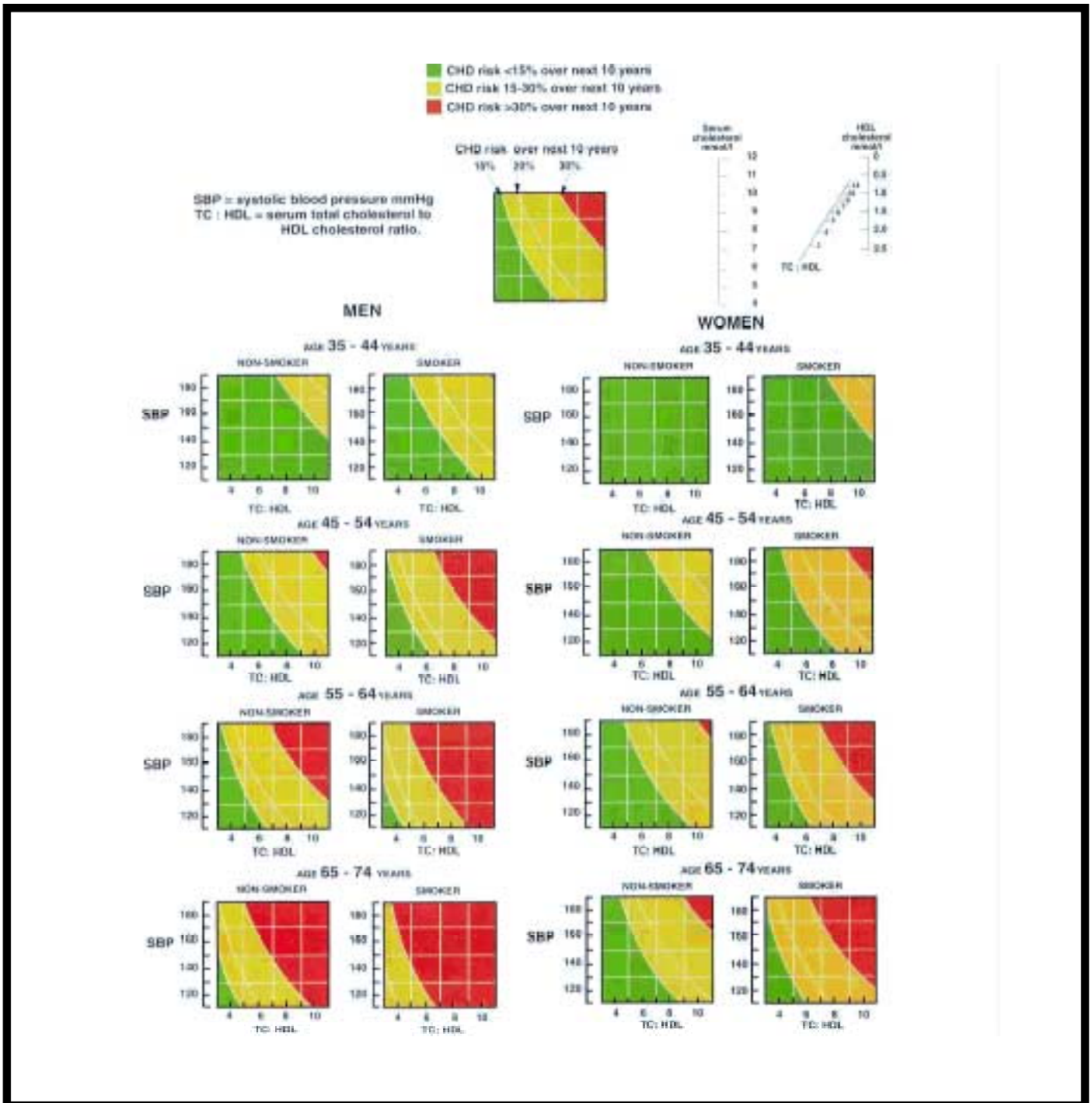
NOTE ALL DATA RELATES TO AT RISK AGE GROUP ONLY

ALL DATA BASED ON COMPUTER SYSTEM ENTRIES, MANUAL RECORDS EXCLUDED

DATE OF AUDITS	1.6.1988		10.1.2001	
	BASELINE AUDIT		FOLLOW UP AUDIT	
<u>SIGNIFICANT RISK FACTORS EXAMINED</u>	NUMBER OF PATIENTS RECORDED ON FIRST AUDIT	PERCENTAGE OF AT RISK GROUP	NUMBER OF PATIENTS RECORDED ON SUBSEQUENT AUDIT	PERCENTAGE OF AT RISK GROUP
BLOOD PRESSURE BEEN MEASURED WITHIN THE LAST 5 YEARS	5368	72.5%	6315	85.3%
FAMILY HISTORY OF CEREBROVASCULAR / CARDIOVASCULAR DISEASE RECORDED	3255	44.0%	3583	48.4%
PATIENTS WHO HAVE A POSITIVE FAMILY HISTORY	1009	13.6%	1223	16.5%
CHOLESTEROL RECORDED	79	1.1%	389	5.3%
PATIENTS ON THE ISCHAEMIC HEART DISEASE REGISTER	61	0.8%	63	0.9%
PATIENTS ON THE STROKE REGISTER	0	0.0%	29	0.4%
DIABETIC	98	1.3%	117	1.6%
SMOKING HISTORY KNOWN	5738	77.5%	6782	91.6%
BMI RECORDED	5420	73.2%	6429	86.9%
KNOWN TO BE HYPERTENSIVE	519	7.0%	682	9.2%
OBESITY BMI>30	2213	29.9%	2591	35.0%
ALCOHOL CONSUMPTION RECORDED	5008	67.7%	6080	82.2%

Joint British Societies Coronary Risk Prediction Chart

NO DIABETES



Coronary Risk Prediction Chart reproduced (and modified) with permission from Heart 1998;S1-S29. © The University of Manchester

<http://www.hyp.ac.uk/bhs/index.htm>[http://www.hyp.ac.uk/bhs/index.htmmailto:bhsis@sghms.ac.uk](mailto:bhsis@sghms.ac.uk)

STROKE RISK CALCULATOR OVER TEN YEARS

REFERENCE

This risk calculator, together with the the Joint British Societies' Cardiac Risk Assessor computer programme and copies of the Joint British Societies' coronary heart disease risk assessment chart can be downloaded from the British Hypertension Society website; www.hyp.ac.uk/bhs .

The on line calculator can be used while on line, or downloaded as an “excell” file and used off line to obtain the stroke risk value.

CARDIAC RISK ASSESSOR				
Risk Factors		CHD risk %	Stroke risk %	
Move through RISK FACTOR boxes to enter & amend data. Use cursor keys to move through boxes.		over 10 years	over 10 years	
Female?(yes= 1,no= 0)	<input type="text" value="0"/>	SBP	<input type="text" value="10.9"/>	<input type="text" value="17.0"/>
Age(years)	<input type="text" value="66"/>			
SBP (mm Hg)	<input type="text" value="178"/>	DBP	<input type="text" value="9.0"/>	<input type="text" value="10.9"/>
DBP (mm Hg)	<input type="text" value="96"/>			
Smokes?(yes= 1,no= 0)	<input type="text" value="1"/>			
Total-C (mmol/l)	<input type="text" value="7.4"/>			
HDL-C (mmol/l)	<input type="text" value="5"/>			
Diabetes(yes= 1,no= 0)	<input type="text" value="0"/>			
			<input type="button" value="Print"/>	

STROKE PREVENTION PROGRAMME

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