

CORONARY HEART DISEASE/ STROKE TASK FORCE REPORT

CORONARY HEART DISEASE/
STROKE TASK FORCE
REPORT

CONTENTS

Foreword	iv
Chairman's Prologue	v
Section 1 Background	1
Section 2 Current Position	5
Section 3 Equity of Access	11
Section 4 Managed Clinical Networks for Cardiac Services	21
Section 5 Primary Prevention	31
Section 6 Primary Care	39
Section 7 Pre-Hospital Treatment: Thrombolysis and Defibrillators	45
Section 8 Heart Failure	53
Section 9 Revascularisation	59
Section 10 Responsiveness of Services to Patients' Needs: Waiting Times, Access, Staff and Facilities	65
Section 11 Cardiac Rehabilitation	83
Section 12 National Database	89
Section 13 Standards	97
Section 14 Stroke Services	101
Section 15 Conclusions and Recommendations	109
Appendix I Membership of Working Groups	117
Appendix II AMI Deaths in Scotland	123
Appendix III CABG, PTCA by Deprivation	125
Appendix IV CABG, PTCA by Health Board of Residence	127
Appendix V Calculation of Need	129
Appendix VI Rapid Access Chest Pain Clinic Questionnaire	137
Appendix VII Prioritisation Criteria	139
Appendix VIII Standard Referral Letter	141
Appendix IX Proposed Minimum Dataset	145

FOREWORD

Coronary heart disease (CHD) and stroke are major causes of death and ill health in Scotland. It could also be argued that these illnesses are not the underlying problem. In fact, the leading causes of death are actually smoking, unhealthy diets, excess alcohol and too little exercise.

There is some encouraging news. Standardised death rates from CHD are falling in both men and women: down by 40% over the last decade. Despite this, the death rate remains too high. The prevalence of heart disease is increasing as people with heart disease now live longer. Until recently, atherosclerosis, the disease process causing CHD, was regarded as irreversible and inevitable. We now know that it is treatable, and that risk factor management offers significant benefits in prevention. Treatment of CHD risk factors should be rigorous and vigorous.

Interventions such as coronary artery bypass grafts and angioplasty are valuable in the treatment of the individual patient. They can relieve the physical symptoms of CHD, such as angina, and may improve survival in some patients with severe disease. But these interventions are only a part of the solution to the burden of CHD. There is a clear mandate to promote primary prevention and risk factor control.

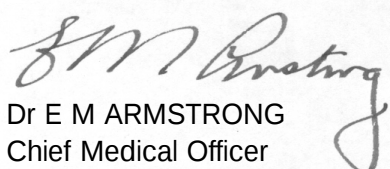
For stroke, the report emphasises the need for accurate diagnosis, rapid assessment and the need for improved rehabilitation.

I should like to acknowledge the work of the CHD Task Force and of all those who participated in its various working groups.

This report is being published to help NHSScotland plan as effectively as possible to meet the needs of people with CHD or at risk of developing it. The report already embodies the results of a great deal of consultation with patients and health professionals. There is now, however, the opportunity for all those with an interest in tackling the disease to comment on the Task Force's recommendations. Comments should be sent to:

Ms Mel Miller
Health Planning and Quality Division
Scottish Executive Health Department
Area 2W(S)
St Andrew's House
Edinburgh EH1 3DG.

The closing date for comments is 31 December 2001. These will then be taken into account in the production of a CHD and Stroke Strategy for Scotland in the spring of next year.



Dr E M ARMSTRONG
Chief Medical Officer

CHAIRMAN'S PROLOGUE

CHD and stroke together form a national priority. A national target of reducing the death rate from heart disease in people under 75 by 50% between 1995 and 2010 has already been set in the White Paper *Towards a Healthier Scotland*.

Atheroma is a process of fatty deposition in arteries. The process starts early in life and increases with age. All arteries of the body can be involved. Blood supply to vital organs is impaired. Thus, CHD and cerebrovascular disease have a common basis and measures aimed at reducing heart attacks will also have beneficial effects on the number of strokes. Atheroma does cause disease elsewhere, but this report concentrates on the management of CHD and stroke. Prevention and treatment are linked to equity of access and quality of care.

Public health measures will reduce the overall population burden of disease, with a logical progression to identification and management of those at risk, rapid assessment and management of the cardiac patient, intervention when appropriate and rehabilitation when necessary.

We need an integrated, fast and effective sequence of care, from the community to general practice to district general hospital and to cardiac centres if need be.

Our strategy must be to provide equitable access to care and to match clinical resources to clinical need. As an immediate response, clinical practice should be directed towards reducing inequalities of care related to geography and to social deprivation by ensuring equitable delivery and uptake of services. Those areas of the country which have unmet need will require additional resources. These resources should be real and not merely a redistribution of what is, overall, inadequate. We all need to be powerful supporters of best practice based on best evidence.

In the long term, improvement in socio-economic life circumstances will be required to reduce the burden of CHD in Scotland. In the medium term, primary and, especially, secondary prevention strategies will have most effect on CHD mortality and morbidity.

A handwritten signature in black ink, appearing to read 'A R Lorimer', written in a cursive style.

PROFESSOR A R LORIMER

1

BACKGROUND

1.1 The report of the Acute Services Review (June 1998 “the Review”) encouraged the Management Executive (as it then was) to build on its current CHD/Stroke Priority Action Team to create a CHD Task Force to develop the clinical network of cardiac services in Scotland (paragraph 86). The Review concluded that the magnitude of the problem posed by CHD merited a special national initiative to drive forward work in this area.

1.2 The Task Force’s programme of work was set out in paragraph 86, as follows:

“The Group’s remit would include maintaining a national database to monitor referral and outcomes, addressing waiting list issues (risk stratification, selection criteria for revascularisation, prioritisation and national waiting list co-ordination), implementation of SIGN (and other appropriate) guidelines, audit, quality assurance and evaluation of resource distribution including provision for interventional cardiology. It would assess the case for increasing the capacity for revascularisation and would determine the need for, feasibility, cost-benefits and location of, any new cardiac surgical facility. The work of the Cardiac Sub-Group is viewed as a useful platform for these deliberations.”

Remit

1.3 The Task Force's formal remit can be summarised as follows:

- to investigate and quantify the scope for increased intervention rates within the four current cardiac centres in Scotland, and to address known inequity of access. Waiting list issues will be addressed;
- to build on existing work to develop a national database, in conjunction with ISD;
- to provide advice on the strategic direction for organisation of adult cardiology services, with particular emphasis on CHD;
- to ensure implementation and audit of relevant SIGN guidelines;
- to examine existing, new and developing cardiological procedures;
- to advise on the future direction of stroke services in Scotland.

Membership

1.4 The Task Force's composition is as follows:

Chairman:

Professor A R Lorimer	Consultant Cardiologist and Physician, Glasgow Royal Infirmary
-----------------------	--

Members:

Dr C D Baker	General Practitioner, Canonbie
Dr J Chalmers	Consultant in Public Health Medicine, ISD
Mr I Dey	Patient and member of the public - from March 2001
Dr A Keel	Deputy Chief Medical Officer, Scottish Executive Health Department
Mr A Redpath	Principal Statistician, ISD
Mr W S Scott	Scottish Executive Health Department
Dr K Smith	Clinical Research Fellow in Cardiac Nursing, Dundee
Mr A Todd	Patient and member of the public - until February 2001
Mr A Weir	Patient and member of the public - from March 2001
Ms M Miller	Scottish Executive Health Department (Secretary)

The Task Force acknowledges economic advice from Mr A Munro, Head of Economics and Statistics Division, Scottish Executive Health Department, and additional help from Dr M Barlow, Associate Specialist in Cardiology, Western Infirmary, Glasgow.

Method of Working

- 1.5 The Task Force has enjoyed productive working relationships with a wide range of health professionals in Scotland and beyond. It has in the main worked through a series of Sub-Groups, details of the remit and membership of each of which are given in Appendix I. Information about current services in Scotland has been obtained either through visits to each of the cardiological centres or through correspondence and questionnaires. The Task Force is grateful to all those who have so patiently answered its many inquiries. The Task Force has also kept abreast of the literature on CHD.
- 1.6 An important element in the Task Force's method of working was the Open Meeting which it held in Dunblane on 21 September 2000. The object of the meeting was to share with a wide range of interested parties the work which the Task Force had already undertaken, and to obtain validation and endorsement of the direction in which its recommendations were developing. The meeting was well attended and the Task Force found the discussions which took place extremely constructive and supportive.

2

CURRENT POSITION

Burden of CHD in Scotland

- 2.1 In Scotland, an estimated half a million people have CHD, of whom 180,000 require treatment for symptomatic disease. Since 1986 the proportion of deaths in Scotland caused by CHD has fallen from 29% to 23%. Tables 1a and 1b on page 7 illustrate the sustained decline in CHD mortality which continued in both sexes and across all age groups in Scotland during the 1990s. However, although age-adjusted mortality has declined by approximately 30-40% from its peak in the early 1970s, Scotland's death rate remains the second highest in Western Europe. Approximately 12,500 Scots die each year from CHD, many prematurely.
- 2.2 The public health White Paper *Towards a Healthier Scotland* sets a target of a reduction in premature CHD mortality, i.e. deaths amongst people under 75, of 60% between 1995 and 2010.

Table 1a: Acute Myocardial Infarction Deaths in Scotland

Number by age and sex for years 1990-1999

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Male										
15-44	103	105	97	89	65	62	56	56	66	62
45-64	1659	1591	1589	1489	1256	1159	1059	1041	1018	933
65-74	2342	2324	2251	2210	2046	1892	1818	1527	1553	1455
75+	2692	2662	2569	2550	2265	2254	2232	2105	2056	2115
Female										
15-44	31	18	27	22	13	15	21	19	19	17
45-64	663	666	560	518	465	458	366	354	347	328
65-74	1505	1475	1457	1400	1227	1191	1035	966	919	834
75+	3715	3813	3665	3773	3245	3284	3024	2916	2831	2832

Source: General Registrar's Office for Scotland

Table 1b: Acute Myocardial Infarction Deaths in Scotland

Crude rate per 100,000 by age and sex for years 1990-1999

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	% decline 1990-99
Male											
15-44	9.0	9.2	8.6	7.9	5.8	5.5	5.0	5.0	6.0	5.6	37.6
45-64	308.6	295.2	289.2	267.2	223.0	204.1	185.5	181.5	175.8	159.5	48.3
65-74	1238.6	1210.9	1159.1	1121.7	1023.1	954.7	922.2	777.5	790.3	741.3	40.1
75+	2531.4	2485.2	2401.4	2418.9	2176.6	2074.5	1997.9	1833.1	1757.0	1774.9	29.9
Female											
15-44	2.8	1.6	2.4	2.0	1.2	1.4	1.9	1.7	1.7	1.6	43.3
45-64	114.5	115.1	95.3	87.2	77.7	76.2	60.6	58.4	56.8	53.2	53.5
65-74	606.6	592.0	580.7	552.2	479.4	473.3	416.1	391.4	374.6	342.2	43.6
75+	1689.1	1727.9	1669.5	1742.1	1519.0	1499.3	1363.0	1301.3	1256.6	1255.3	25.7

Source: General Registrar's Office for Scotland

2.3 The reasons for the decline in mortality from CHD have not been defined absolutely, but are becoming clearer. When compared with 1975 figures, in 1999 over 7,000 fewer Scots died from CHD. It has been suggested that 40% of this reduction is due to improved treatment, including resuscitation, thrombolysis, coronary care, and secondary prevention, with 40-50% of the reduction being attributed to lifestyle changes such as reduced smoking, control of blood pressure and lowering of raised cholesterol levels. It should however be noted that the mortality from acute myocardial infarction (AMI) in men aged less than 65 is still between 2-3 times higher in the most deprived, compared to the least deprived, areas.

- 2.4** Although mortality from CHD and the number of admissions following AMI have both fallen, the impact of the disease in the population continues to increase, as demonstrated by the number of patients treated for angina. Between 1990 and 1999 the number of hospital discharges for patients with a principal diagnosis of angina rose from 6,989 to 14,595. Outpatient workloads in cardiology and cardiothoracic surgery also rose by 164% and 77% respectively between 1990 and 1999. There are therefore no grounds for complacency; and indeed there are other reasons to be cautious about predicting further reductions in mortality from CHD. These include:
- the epidemiology of CHD which shows an exponential rise in mortality from CHD with age;
 - population projections which show a large increase in the over-75 age group by the year 2010.
- 2.5** Population projections, based on 1998 figures for the 65+ and 75+ age groups in Scotland over the next decade reveal that the 65+ group is set to increase by over 46,000 and the 75+ group by over 32,000 in that time frame.
- 2.6** As age is the most important risk factor for CHD, the prevalence of the disease is expected to continue to increase. The risk of dying from CHD almost doubles with each decade increase in age. The decrease in case fatality means that more patients presenting with AMI are surviving but with potential problems such as heart failure which will increase in terms of mortality and morbidity in later life. The prevalence of heart failure is therefore increasing, and it is likely that the number of deaths from this cause will also continue to rise.

Table 2: Cardiac Failure Mortality in Scotland - Ages over 75

Crude rate by sex for years 1990-1999

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999(1)
Males	259.5	238.1	261.7	242.8	238.3	233.8	282.9	263.9	279.4	233.3
Females	261.4	260.6	263.3	304.7	271.9	297.2	329.5	316.8	325.8	260.2

Source: General Registrar's Office for Scotland

Note (1): Fall in numbers may be related to change in coding instructions

Resources and Facilities

- 2.7 Scotland now has approximately 70 cardiologists; one for every 73,000 people. Ten years ago, Scotland had only six catheterisation laboratories. It now has 11, and coronary angiography facilities in Lothian are currently being enhanced, for the benefit of patients in Lothian itself and the surrounding Health Boards, particularly Fife and Forth Valley. A new cardiac catheterisation laboratory has been built in Lanarkshire. These improved facilities will help to improve access for investigation. Ten years ago the waiting time was more than a year. It currently stands at about three months. The coronary artery bypass graft (CABG) waiting time is also falling.
- 2.8 Scotland is unique in the UK in having databases which cover coronary angiography, coronary angioplasty and cardiac surgery (see Section 12). Scotland is also well advanced in guideline production in the area of CHD. SIGN (the Scottish Intercollegiate Guidelines Network) has produced a number of Guidelines covering primary prevention of CHD, secondary prevention of CHD following AMI, coronary revascularisation in the management of stable angina pectoris, diagnosis and treatment of heart failure due to left ventricular systolic dysfunction, hypertension in older people and management of patients with stable angina. A guideline covering cardiac rehabilitation is imminent.
- 2.9 The Clinical Standards Board for Scotland (CSBS), established in April 1999, has made CHD one of its first priorities for Standard development, and Standards for Secondary Prevention following AMI have been rolled out across Scotland (see Section 13).
- 2.10 In addition to the above achievements, there is a strong commitment within the Scottish Executive to primary prevention as illustrated by the allocation of £6m over three years to fund the 'Have a Heart Paisley' demonstration project. This is discussed in detail in Section 5.

3

EQUITY OF ACCESS

Effect of Deprivation

3.1 There is a wealth of research evidence derived from studies such as the British Regional Heart Study, the MONICA study and the Scottish Health Survey, which clearly demonstrates the relationship between socio-economic deprivation and high levels of CHD. Although overall mortality from CHD is falling, the death rate in men aged under 65 in the most deprived communities is still more than double that in the least deprived. Much of this difference is explained by differences in risk factor prevalence, particularly the high rates of cigarette smoking in higher deprivation categories as measured by the Carstairs and Morris index of deprivation. This results in a deprivation score which is divided into seven separate categories ranging from high (DEPCAT 7) to low (DEPCAT 1) deprivation. Any strategy for reducing inequalities in CHD outcome must by definition involve measures aimed at achieving long-term improvement in lifestyle factors. The Health Demonstration Project 'Have a Heart Paisley' (see Section 5), focusing as it does on the prevention of heart disease, will provide invaluable information as to how this aim can best be achieved across the whole of Scotland.

3.2 Trends in AMI mortality (Appendix II and Figures 1 a-d) have been similar in both more and less deprived areas. However, the differentials in AMI mortality which existed in the early 1990s remain. Although there is a narrowing in the absolute difference between less and more deprived areas, the odds ratios - the rate

for DEPCAT 5-7 divided by the rate for DEPCAT 1-2 – have actually increased. This is because the decline in rates of AMI mortality has been proportionately greater in less deprived areas.

Figure 1a: AMI Directly Standardised Rates per 100,000 by DEPCAT Group, Males 15-64 Scotland 1990-1999

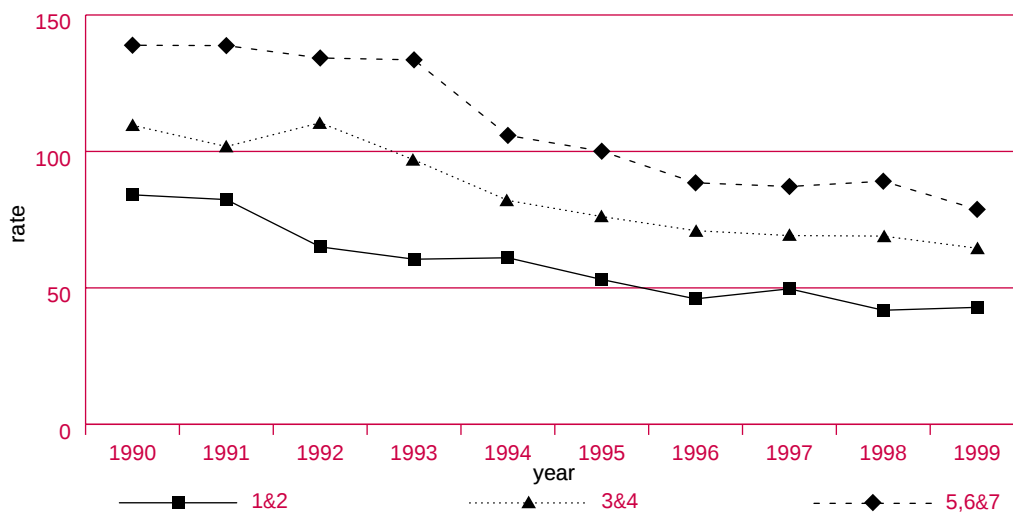


Figure 1b: AMI Directly Standardised Rates per 100,000 by DEPCAT Group, Females 15-64 Scotland 1990-1999

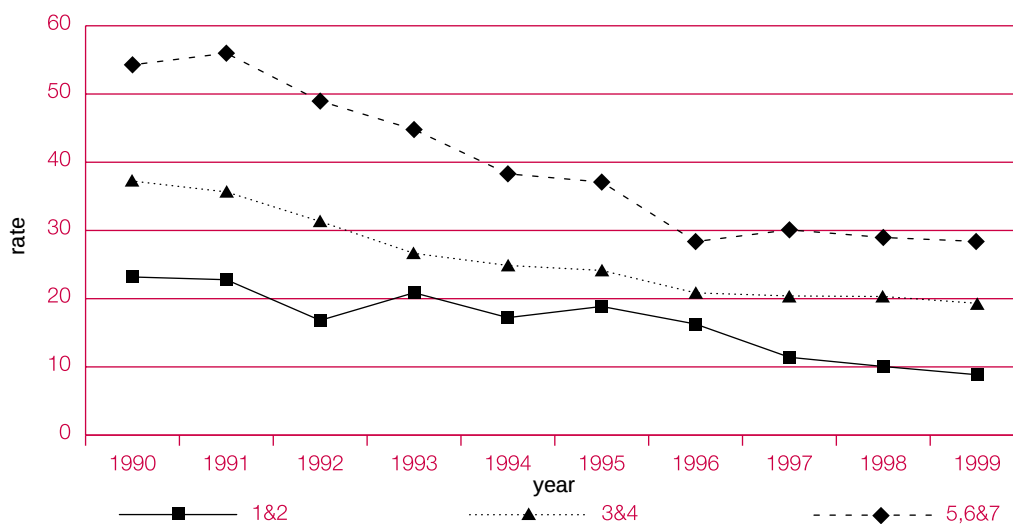


Figure 1c: AMI Directly Standardised Rates per 100,000 by DEPCAT Group, Males 65+ Scotland 1990-1999

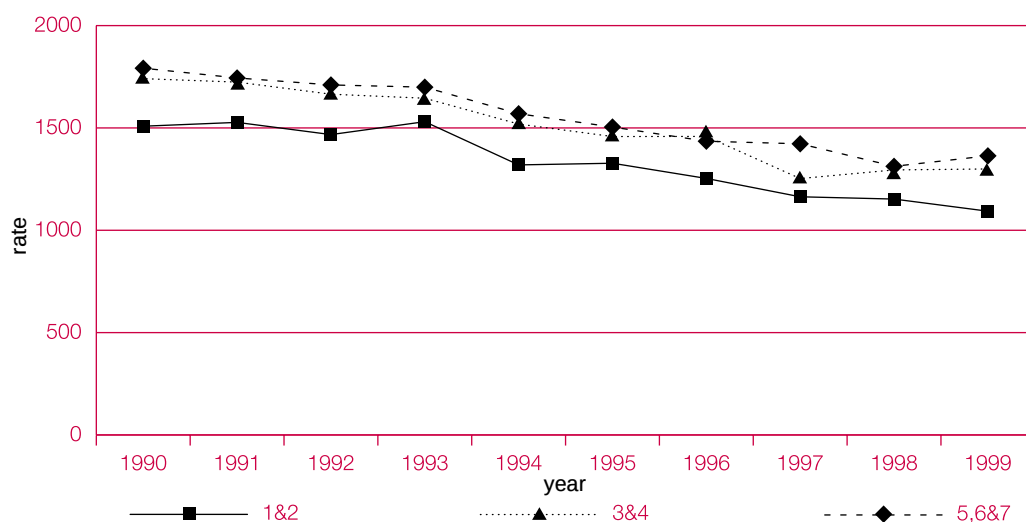
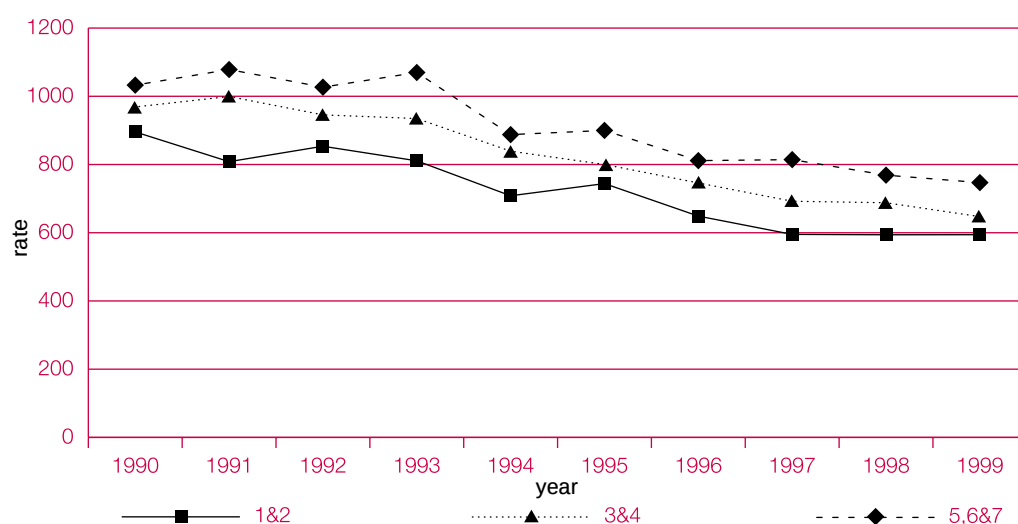


Figure 1d: AMI Directly Standardised Rates per 100,000 by DEPCAT Group, Females 65+ Scotland 1990-1999



3.3 Socio-economic deprivation has a profound effect on the risk of having a first AMI and the chances of surviving it. The Task Force has a major concern that if greater efforts are not made to raise awareness of the symptoms of, and risk factors for, heart disease, the gap between DEPCATS 5-7 and 1 and 2 will continue to widen.

3.4 In more deprived areas, generally low expectations may mean that patients are less likely to seek help from their GP early on in the disease process and to push for investigation. In addition to raising awareness, aspirations will also have to be raised in this section of the community, to overcome these problems. Local

Health Care Co-operatives (LHCCs) are well placed, through their increasing involvement in Social Inclusion Partnerships (SIPs) to take this agenda forward. One example, given in 'Connecting Communities with the NHS', is of an LHCC which has developed lifestyle clinics offering MOTs for health. The clinic is picking up substantial unidentified risk of morbidity in the local population.

3.5 The CHD Task Force has examined coronary angiography waiting times and rates in men and women aged 45-64, and compared these rates by deprivation category. For example, the prevalence of CHD in DEPCATS 1 and 2 is estimated to be 5.3%. The coronary angiography rate per 100,000 in these groups is 235. At the other end of the scale in DEPCAT 7 the prevalence is estimated to be 13.6%. This would give a predicted coronary angiography rate of 603 per 100,000. In fact the actual coronary angiography rate is 224 per 100,000 in this group. Economic deprivation is associated with both increased prevalence and mortality from CHD. Despite being at greater risk of developing CHD and dying from it, patients in more deprived groups are less likely to be investigated once the disease develops and may also be less likely to be referred for cardiac surgery thereafter.

3.6 The relationship between operation rates and deprivation in any age/sex group does not reflect the strong relationship between AMI mortality and deprivation. Figures 2a-c on page 16 show the ratio between the actual number of interventions performed and the number expected. These have been adjusted for the age and sex composition of the population, and the level of disease, by deprivation category. The level of disease is assumed to be proportional to the crude mortality rate from AMI in each age/sex group. The expected number of operations has been calculated by multiplying the Scottish age and sex adjusted intervention rates by the appropriate population levels for the area. This method is similar to that used to calculate the standardised mortality rates. The score for Scotland as a whole is 100 and areas with higher numbers of procedures score over 100, and those with lower numbers score under 100. The figures show fewer interventions performed than expected for the more deprived areas. Since there is no evidence that less deprived patients are having inappropriate interventions, the findings indicate inequity of access to, uptake of, or supply of, interventions to more deprived populations.

Figure 2a: Angiography Procedures, Ratio of Actual to Expected by DEPCAT 1998-99

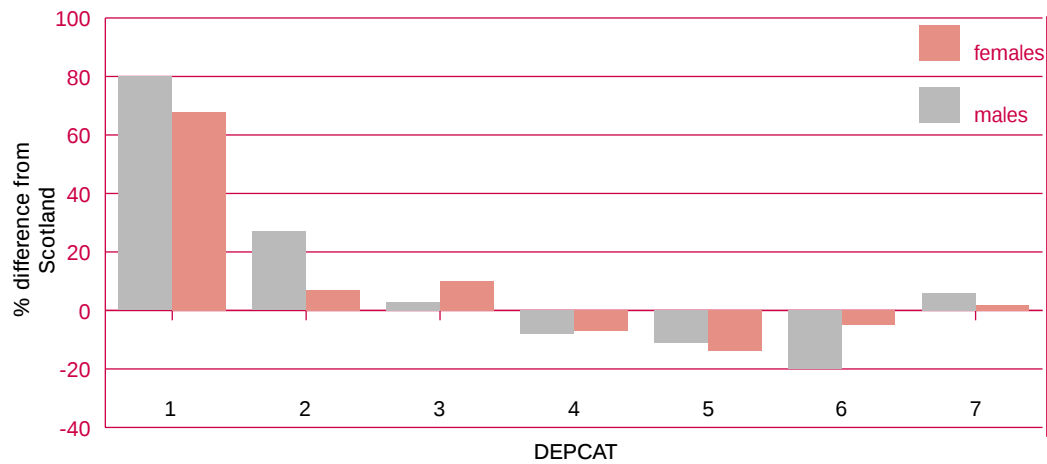


Figure 2b: PTCA Procedures, Ratio of Actual to Expected by DEPCAT 1998-99.

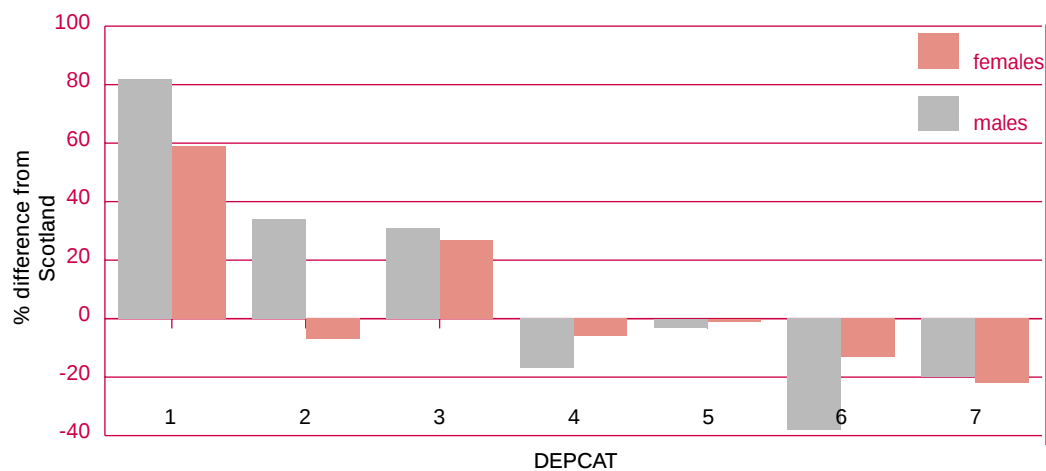
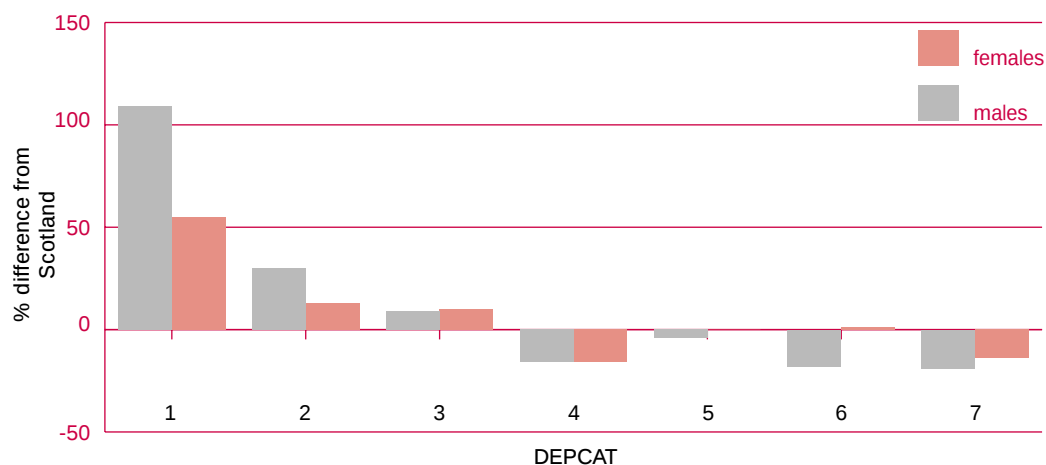


Figure 2c: CABG Procedures, Ratio of Actual to Expected by DEPCAT 1998-99



Source: ISD Scotland

- 3.7 The relatively lower procedure rates for the more deprived areas are associated with longer waiting times for angiography and CABG (Table 3, see below). The relationship is absent for percutaneous transluminal coronary angioplasty (PTCA), perhaps reflecting the higher number of emergency and urgent cases (who may not appear on the waiting list) undergoing this procedure in more deprived areas.

Table 3: Mean Waiting Times (Days) by Procedure and DEPCAT 1998-1999

	1	2	3	4	5	6	7	All Categories
Angiography	42.3	40.4	42.7	44.9	51.5	64.9	56.8	48.1
PTCA	53.7	40.2	39.7	44.5	48.7	48.6	42	44.3
CABG	147.2	148.4	181.9	175.6	166.7	179.6	208.9	173.2

Source: ISD Scotland SMR01

Effect of Age

- 3.8 As indicated in Section 2, the demographic shift currently under way in Scotland poses a major challenge to NHSScotland. There is a perception, often reflected in the medical literature, which suggests that ageism exists in relation to access to diagnostic and therapeutic cardiac interventions. Older people appear less likely to receive a number of interventions, from primary prevention through to medical and surgical treatment. This is in spite of the fact that older people are more likely to suffer from more severe disease which has the potential for substantial improvement (with appropriate patient selection) using modern day cardiological intervention. It should be noted that the experience of the CSBS (see Section 13) does not support allegations of ageist bias, at least in the area of secondary prevention of AMI.
- 3.9 Part of the explanation for the alleged ageist bias may be the lack of a robust evidence base for use of cardiological interventions in older people. Clinical trials traditionally use age limits when recruiting patients in order to simplify analysis of results. Selecting younger patients excludes, for example, significant levels of comorbidity which are an obvious confounding factor. This may have resulted in an understandable caution amongst doctors regarding the treatment of older people. However, failure even to consider older people for cardiological interventions cannot be justified. Decisions to investigate and/or treat must be based on clinical need, and therefore the biological age, ie the physical state of the patient rather than the chronological age.
- 3.10 As far as interventional procedures are concerned, the relationship between death rates and procedure rates varies by age group and gender. Although 84% of deaths from CHD were in the over 65s, 54% of CABGs were performed on patients under 65 (1999-2000 figures). Patients in older age groups may be less likely to benefit from surgery due to co-morbidities and an increased rate of post-operative complications. The expected number of interventions has therefore been calculated separately for each age and gender group. (See Appendix III.)

- 3.11 The Task Force is aware that discussion of cardiac services for older people has taken place in the CMO's Expert Group on Health Care of Older People, the establishment of which was announced in *Our National Health: a plan for action, a plan for change*. The Task Force is firmly of the view that the emphasis must be on improving services for all age groups, and that older people will benefit from this 'mainstreaming' approach rather than being considered as a separate group.

Effect of Gender

- 3.12 At any age the absolute risk of a coronary event in women is about a fifth of that of men. Events in women occur, on average, from 10-15 years later in life. For women in Western countries the risk of dying from CHD by age 60 is of the order of 1.5 per 100, but the lifetime risk approaches 30 per 100. Numerous studies, including the Scottish Heart Health Survey, the Scottish Health Survey, and the Scottish (North Glasgow) arm of the MONICA study, support these observations.
- 3.13 Relatively few studies of CHD have concentrated specifically on women. It has nonetheless been suggested that gender bias operates in that women are under-investigated, a contention that is hard to assess. The clinical course of the disease appears not to be the same in men as in women. Proportionately more women present with chest pain and their clinical course may be more benign until myocardial infarction occurs. Exercise tests are more difficult to interpret in women, with a higher incidence of false positive tests. The same probably applies to nuclear medicine studies of myocardial perfusion. The MONICA study identified that women take longer to reach hospital during myocardial infarction, but the difference was small and explained in Glasgow by the fact that women tend to consult their GP, whom they know, rather than going direct to hospital.
- 3.14 Interesting findings have emerged from studies that have examined equity of access to investigation and treatment in the context of gender. A Glasgow study published in 1999 reported that the death rate from CHD in Greater Glasgow Health Board was 3 times higher in men aged 35-64 than in women of similar age. This equates to a rate of 12.4 per 1,000 for men and 4.0 per 1,000 for women. The corresponding rates for coronary angiography were about twice as high (8.9 per 1,000 for men compared to 4.7 per 1,000 for women). Thus, if the need for coronary angiography was based on mortality, women would appear to be over-investigated. Alternatively men could be under-investigated. However, if based on angina prevalence data, it appears that women are under-investigated, although chest pain in women may be less often cardiac in origin than in men.
- 3.15 Work undertaken by the CHD Task Force using the Scottish Health Survey estimates of prevalence of CHD, shows that the ratio of coronary angiography corresponds to the prevalence rate in men and women. This would suggest no significant gender bias in terms of investigation of chest pain. Similarly there is no evidence of gender bias in terms of waiting times for angiography overall in Scotland, although women do wait a few days longer (50 days v. 42.9 days for men - 1999 figures).

Effect of Geography

- 3.16 The Task Force has looked at diagnostic and interventional procedure rates by Health Board across Scotland. The 'expected' number of procedures for each Health Board area has been calculated in exactly the same way as for different DEPCAT categories (paragraph 3.6). 1998/99 data are shown in Appendix IV. Broadly speaking, the level of provision of coronary angiography is highest in the areas with cardiac surgery centres (with the exception of Borders). The non-island Boards with the lowest coronary angiography rates are Ayrshire and Arran, Dumfries and Galloway, Fife and Tayside. With regard to PTCA, the highest rates, relative to need, are in those Health Board areas whose patients are referred to Lothian (Lothian Health Board itself has a PTCA:CABG ratio of 2:1). The lowest PTCA rates are in those areas where patients are referred to Greater Glasgow. Lanarkshire, which has its own cardiac catheterisation laboratory, has a relatively high PTCA rate.
- 3.17 The opposite picture holds true for CABG. Boards referring to Lothian have low rates (although Lothian is only slightly below the Scottish CABG average). Greater Glasgow and Grampian have higher than average CABG rates, although other Health Boards referring to Greater Glasgow have lower than expected rates. Tayside has relatively low rates for both PTCA and CABG.
- 3.18 In summary, coronary angiography rates are lower in Boards without a cardiac surgery centre. Lothian and its referring Boards have lower levels of CABG, which are compensated for by high levels of PTCA. Health Board areas which have neither a cardiac catheterisation laboratory, nor a cardiac surgical centre, and which are not served by Lothian, have lower than expected levels of both PTCA and CABG. The enhanced coronary angiography facilities in Lothian and Lanarkshire referred to in Section 2, will help to ensure more equitable access to both angiography and PTCA, in these and surrounding Boards.

Recommendations

- 3.19 The Task Force firmly believes that selection for diagnostic and interventional procedures must be made for the individual patient on the basis of clinical need regardless of age, gender, degree of deprivation or geographical location. However, it recognises the variation in access to such services around the country. **It therefore recommends that:**
- Health Boards should give particular attention to the needs of more deprived and more geographically remote communities when planning services for CHD;
 - Local Health Care Co-operatives (LHCCs) should, through their involvement in SIPs, develop innovative ways of encouraging patients who have symptoms suggestive of heart disease to consult their GP earlier rather than later.

3.20 Further recommendations for improving equity of access are given in Section 10 (paragraph 10.26).

4

MANAGED CLINICAL NETWORKS FOR CARDIAC SERVICES

- 4.1 Cardiology services have traditionally been delivered by referral from primary care to secondary care and from secondary care to tertiary care. Referral patterns are often based on relationships between individual cardiologists and cardiac surgeons.
- 4.2 The term “hub and spoke” has been applied to such a model of service delivery, the ‘hub’ representing a tertiary centre and the ‘spoke’ primary and secondary care. This fails to recognise the increasing expertise and resources of the primary and secondary care sectors. The concept of a Managed Clinical Network (MCN) recognises the dynamic interchange that needs to occur between all tiers of service delivery. It reflects the multi-directional flow that takes place as patients, expertise and resources move between tiers.
- 4.3 Dynamic relationships between different levels of service represent vertical integration. Secondary or tertiary care hospitals operating collaboratively represent a horizontal integration of services. Both horizontal and vertical integration will be necessary if a Network is to operate effectively. The emphasis in clinical networking is on partnership, best use of resources and maximising benefits for all patients.

- 4.4 A MCN should be facilitated, developed and supported by a multi-disciplinary advisory group. This group should have a major role in developing clinical services, research and educational and training components of cardiology. Workforce planning for doctors, nurses and technicians in terms of both roles played and numbers should be within the remit of the advisory group. Active management will be needed by a lead clinician.
- 4.5 The MCN should be supported by Information Technology. Developments in this area offer a huge potential to transmit data for specialist opinion without the need for patient transfer.

Core Principles of a Managed Clinical Network

- the Network must be actively managed;
- the purpose of the Network is to improve patient care in terms of quality, access and co-ordination;
- work must be evidence-based;
- outcomes need to be measured. Audit is integral;
- a quality assurance programme acceptable to CSBS is required;
- the Network must produce an Annual Report;
- the Network must be multi-disciplinary;
- patients must be involved in shaping the Network.

Managed Clinical Networks and Cardiac Services

- 4.6 Every patient should have access to services appropriate to their needs. However, not all hospitals treating cardiology patients can justify being equipped to the same level. The movement of patients, resources and expertise will be needed to ensure delivery of a quality service.
- 4.7 Services that can be provided locally should continue to be available. The valuable role of the general practitioner and general physician in the management of cardiovascular disease is acknowledged. However, when a comprehensive range of cardiological investigations is required these should be located within a cardiac unit.

The Need for a Network

- 4.8 While the provision of cardiac services in Scotland is generally of excellent quality, there are areas of possible improvement. These were highlighted in the Acute Services Review and include secondary coronary prevention, cardiac rehabilitation and coronary thrombolysis. There are many highly skilled and motivated health

professionals working in these areas but their efforts are not always co-ordinated to best effect. There is sometimes a lack of clarity of roles in these areas, and advice and treatment may not be getting to the right patients. There is some uncertainty about the best use of resources and there may be incomplete knowledge about the benefits of some treatments. A MCN would address these problems leading to a more targeted and effective use of professional skills in NHSScotland.

4.9 There has been an increase in spending on cardiac services and cardiac surgery in the recent past. However, traditional patterns of referral and ways of working do not always support optimal use of resources from a national perspective. A MCN in cardiac services would provide a straightforward means of dealing with this.

4.10 A MCN for Cardiac Services would offer patients:

- better access to services;
- more effective services;
- improved co-operation of services;
- consistent advice;
- better care and prevention.

4.11 The complexity and extent of CHD mean that a single MCN is likely to be impractical. It seems more pragmatic to think in terms of a single high level intervention Network that covers the whole of Scotland, backed by a series of local Networks concentrated on prevention, investigation, diagnosis and medical treatment. The concept is of a Network of Networks.

High-Level Intervention Network

4.12 An embryonic MCN is already in existence. Cardiologists and cardiac surgeons already contribute to national databases. The population of Scotland is small enough to make the concept of a single cardiac intervention Network feasible and sensible.

4.13 The Network would comprise all clinicians in Scotland who undertake revascularisation interventions, ie, both cardiologists and cardiac surgeons. There are close links between those who undertake angioplasty and stenting procedures and cardiac surgeons. A MCN would draw together the four existing cardiac surgical units with the interventional cardiologists based in Glasgow, Edinburgh and Lanarkshire. This high level intervention Network would be supported by local investigative and treatment Networks, again following common agreed protocols. (See figures 3 and 4 below.)

- 4.14 Looking at the development of cardiac interventions on a national scale within a co-operative structure will allow geographic and social inequity to be addressed where practical. It should also encourage managers and clinicians to look to other NHS units for assistance when under pressure, rather than have immediate recourse to the private sector. The development of a national waiting list for interventions would re-inforce this and ensure that resources (and any extra investments) remain firmly committed to NHS centres.

FIGURE 3 (the national linkages)

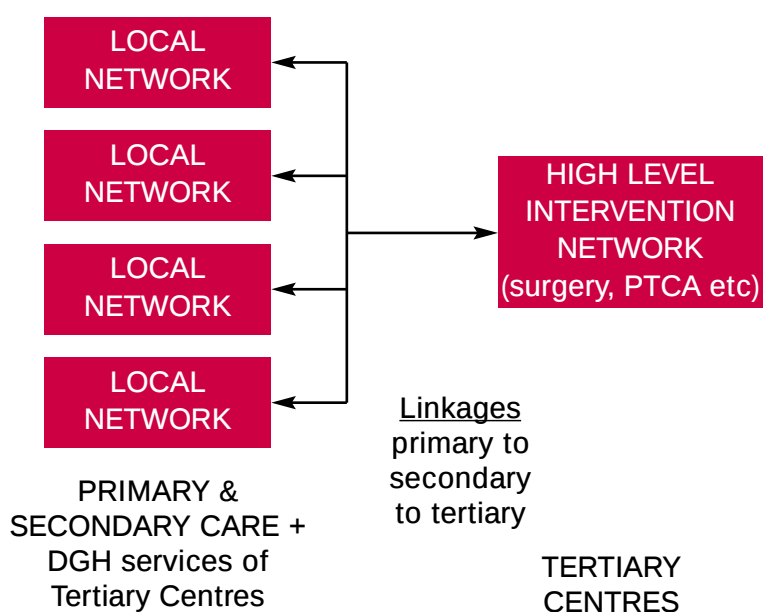
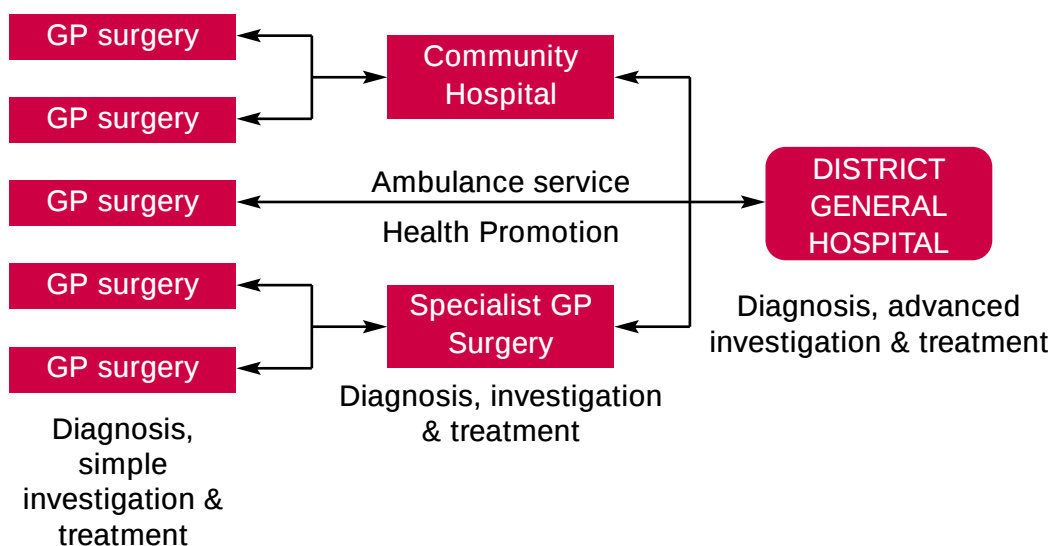


FIGURE 4 (the local linkages)



- 4.15 The high level intervention Network would have responsibility for organising and providing all the cardiac interventions in Scotland, with an important subsidiary role in training and research. This should allow maximal use to be made of resources - human and material - on a national scale through care pathways and a unified planning process. All parts of the MCN in Cardiac Services will be involved in needs assessment. Common protocols for referral, treatment and prioritisation have been developed and introduced and the ultimate aim would be the creation of a common waiting list for interventions.
- 4.16 The Commissioning Framework, which is being developed as part of the work outlined in *Rebuilding our National Health Service*, will include regional agreement on funding of treatments provided at only a small number of locations and cardiac interventions would appear likely to be one of the prime beneficiaries of this approach.
- 4.17 In all the Networks, the appointment (or election) of the lead clinician will be essential but in the high level intervention Network the selection of the right individual will be crucial, to achieve the required clinical control, co-ordination, monitoring and direction. The Lead Clinician should be identified at Scottish Executive level. However, it will be for the high level intervention Network itself to determine its detailed structure and method of working.

Local diagnostic and treatment networks

- 4.18 In addition to the high level intervention Network there will need to be a series of local diagnostic and treatment Networks based on Health Board areas that support and connect to it. Basing the local Networks on Health Board areas will avoid the problems of agreeing resource transfer and allocation across Board boundaries. In the larger Health Board areas this suggestion would also promote balanced growth in the Network which might not occur if there were a number of Networks in an area.
- 4.19 The local Networks would comprise the District General Hospitals (DGHs) (including the DGH element at tertiary centres), the local General Practices/LHCCs, Community Hospitals, local health promotion services and the Scottish Ambulance Service. All the elements will need clear linkages to each other with the linkage to the high level intervention Network being via the DGH element. These local Networks would cover most of the work of the cardiac services in Scotland, from initial diagnosis and investigation through to chronic disease management.
- 4.20 To be effective, the Networks will need to ensure multi-disciplinary input to planning, development and delivery of services. For example, the role of the nurse practitioner is expanding in primary, secondary and tertiary care and the advent of Networks could shape and guide this expansion. There is a role for nurse practitioners in all the problem areas highlighted above - secondary

prevention, thrombolysis, rehabilitation and treatment of heart failure. They should also have an important role in primary prevention.

- 4.21 Each of the local Networks will be different, each suited to the particular circumstances of local geography, demography and expertise. There may be a need in some areas for “intermediate specialists” or joint clinics shared between primary and secondary or secondary and tertiary care clinicians. In the more rural parts of Scotland, peripatetic services and the benefits of telemedicine and teleradiology will need to be considered.
- 4.22 The Task Force is aware that many LHCCs are developing work in relation to CHD, particularly in the area of secondary prevention. However, there are variations in the management models being implemented, and in the stages of implementation. The Task Force strongly believes that this work should be integrated into local MCNs as they develop. In this context, the Dumfries and Galloway pilot (see below) is already yielding valuable lessons on how this can be done, and this should avoid duplication of effort in other parts of the country.

Managed Clinical Network pilot for CHD in Dumfries and Galloway

- 4.23 The Chief Medical Officer and the Acute Services Group approved an application to pilot the first local MCN for coronary heart disease in Dumfries and Galloway. The pilot process commenced in July 2000 and was launched officially in July 2001. The pilot project has 3 main objectives:
- to implement a local MCN for CHD in Dumfries and Galloway;
 - to answer a number of questions about the working of local MCNs that have generic value - these include clinical governance arrangements, finance and administrative support, public involvement and reporting arrangements;
 - to evaluate the impact of a local MCN on health outcomes.
- 4.24 The project is being taken forward by five working groups which draw their membership from a range of local people from all backgrounds - professional and lay. The Scottish School of Primary Care is leading the evaluation process in partnership with the appropriate MCN working group, the Crichton University Campus and a health economist from Aberdeen University.
- 4.25 The generic issues that local Networks face have been considered in the pilot and an Interim Report has been presented to the Acute Services Group. In addition to a progress report on Network development, the Report includes a draft Quality Assurance Programme for CHD which has been produced in partnership with the CSBS. The Report also contains a Clinical Governance Protocol which addresses the thorny issue of managing clinical quality across organisations.

- 4.26 Work in the Dumfries pilot project is producing care pathways and protocols for CHD which will be of interest and value to the whole service. Active and meaningful public involvement is taking place with training for lay people using ideas and material which will also be of wider interest. Further information on the work of the pilot can be found by accessing its website: www.show.scot.nhs.uk/mcn

Development and Cultural Considerations

- 4.27 The move from competition to co-operation between units is happening already but the long-term aim is for all the professions and all parts of NHSScotland to work freely together across existing boundaries. Well-established attitudes and practices will need to change fundamentally to achieve this aim. Clinical leadership is required at all levels.
- 4.28 For those developing services and policy, the concept of MCNs gives a new way forward for health services. MCNs offer the opportunity to look at the way services are currently delivered, and what service re-design might have to offer. The collaborative improvement methodology adopted by the CHD Collaborative Programme in England needs to be explored in this context for Scotland.

Telemedicine

- 4.29 Telemedicine - a term which, it should be noted, also encompasses the use of basic technology such as the telephone - has the potential to greatly facilitate communication within MCNs. A national standing committee, the Scottish Telemedicine Action Forum (STAF), has been established to guide policy on telemedicine. Its role will be to examine the ways in which new technologies can help solve some of the problems facing the NHS such as:
- changes in the reconfiguration of clinical services;
 - developments in Primary Care;
 - integration of local services.
- 4.30 The Royal Alexandra Cardiovascular Health Electronic Links (RACHEL) Project, which is now being funded by STAF, started towards the end of 2000. RACHEL aims to use modern communications to significantly improve clinical information sharing among health professionals and organisations. The Project will provide seamless transfer and availability of cardiology images between primary, secondary and tertiary care. This will improve patient care at all stages - the main advantage being instant access to the most up to date clinical images for any patient. The Project will dovetail its activity into both the Scottish Clinical Information (SCI) and Electronic Communication of Clinical Information (ECCI) Programmes (see Section 12).

Summary

- 4.31 The establishment of MCNs for Cardiac Services, consisting of a high level national intervention Network and a series of supporting local diagnostic, investigation and treatment Networks, offers NHSScotland an excellent opportunity for developing cardiac services. This will lead to better patient care and eventually to a reduction in morbidity and mortality from heart disease. A considerable amount of the preparatory work needed for a high level intervention Network has already been undertaken by the Task Force and its sub-groups when looking at current provision, needs assessment and prioritisation. Taken with the development of the relevant intervention databases over the last two years, the service is ideally placed to set this Network up in the next few months. The development of local Networks is much more dependent upon local co-operation and development and will require significant leadership. There will be lessons to be learned from the Dumfries and Galloway pilot project.

Recommendations

- 4.32 MCNs for Cardiac Services, consisting of a high level intervention Network and a series of supporting local diagnostic, investigation and treatment Networks, should be set up.
- 4.33 The generic lessons and management arrangements emerging from the MCN Pilot in Dumfries and Galloway should underpin all other local Network development.

5

PRIMARY PREVENTION

Identification of High Risk Patients by Primary Care

- 5.1 Primary prevention of CHD should be undertaken on an opportunistic basis. There is great merit in concentrating primary prevention activity on patients who smoke, those with hypertension and the close relatives of those with CHD, who also have higher risks. The high risks of atherothrombotic disease in diabetics mean that they should all be screened as a matter of routine. (The forthcoming Scottish Diabetes Framework will cover this and all other aspects of the management of diabetic patients.) Screening of the whole population for primary prevention purposes would be neither practical nor a cost effective use of health resources. The pick-up rate is likely to be relatively low with a long payback time.

CHD Demonstration Project

- 5.2 The Task Force has played a crucial role in establishing a Demonstration Project focused on the prevention of CHD, and modelled on the lines of the North Karelia Project in Finland. The White Paper *Towards a Healthier Scotland*, published in December 1999, announced that a total of £15m was to be made available for a number of Health Demonstration Projects, including one initially referred to as 'The Heart of Scotland'. £6m has been allocated to this project and the Task Force was actively involved in the process of assessing bids for funding which was awarded to 'Have a Heart Paisley' (HaHP) early in 2000. Funding for the Demonstration Project runs over a 3 year period, during and after which time emerging benefits will be promulgated widely throughout Scotland.

- 5.3 The Task Force is grateful to those running the HaHP Project for providing the following description.

Have A Heart Paisley

- 5.4 Paisley has one of the worst coronary heart disease records in Scotland. In some areas, it is more than 50% higher than the Scottish average. Paisley is Scotland's largest town with a population of approximately 85,000 and could be described as 'Scotland in microcosm'. The town has a strong sense of community identity. There are already groups of people successfully working together on health issues and there is a strong commitment to partnership working.
- 5.5 HaHP is a multi-agency, multi-sector, multi-setting project which seeks to reduce heart disease at an individual, risk-factor and population level. The Project includes a number of parallel initiatives being developed simultaneously which aim to form a strategic whole. HaHP is fundamentally a community-based approach, relying heavily on what have been called locality networks. The Project covers primary as well as secondary prevention of heart disease. The overarching aim is to prevent heart disease from developing, to delay progression of existing disease and to ensure access to appropriate care once the symptoms of heart disease have developed.
- 5.6 This offers HaHP an opportunity to demonstrate changes across the range of underlying factors which can lead to heart disease, as well as challenge existing policies within each of the partner agencies, showing the way forward for the rest of Scotland and beyond.
- 5.7 Numerous flagship community projects have been approved across the town. Transfer of skills and sustainability are key elements of each project's development. The majority of those approved to date seek to encourage physical activity and healthy eating. A greater emphasis will be placed on community-based smoking cessation projects in coming months.
- 5.8 A fundamental part of HaHP's work is to ensure appropriate care if symptoms of heart disease develop. The project therefore involves hospital (the Royal Alexandra) and GP-based health care teams, working together to ensure the best treatment for patients. The development of a Coronary Heart Disease Register is crucial to the delivery of the secondary prevention aspects of HaHP. Building on the existing cardiology IT system developed in the Royal Alexandra Hospital over a period of years, the SCI project (see Sections 6 and 12) aims to link disparate databases to form the Register. It will hold demographic and clinical information about patients diagnosed with CHD, or those at risk of developing the disease. The Register will also be used to calculate patients' risk factors and assist with clinical audit of CHD patients.

- 5.9 Officially launched by Health Minister Susan Deacon on 2 October 2000, HaHP has now embarked on a campaign to increase awareness and understanding of the project locally. A dedicated project team is in place and there is great enthusiasm for the task ahead: to ensure that the heart health of this and future generations of Paisley people is radically improved - for good.
- 5.10 The Task Force looks forward to the lessons learned from the Paisley experience being rolled out across Scotland as the project develops. In particular, emerging messages will be fed into developing MCNs (see Section 4).
- 5.11 Other areas of the country are also developing primary prevention projects. For example, Lanarkshire has recently appointed a project manager to the "Braveheart" project. That individual is tasked with co-ordinating the large number of community-based activities which are already up and running, and also bringing in funding from the business sector, building on existing contacts.
- 5.12 An integrated primary prevention programme has also been developed in Borders. This includes both population and high risk approaches aimed at reducing mortality from CHD, stroke and cancer. The intermediate objectives are to reduce smoking, serum cholesterol and blood pressure levels, and to increase physical activity. The programme builds on several existing successful local initiatives and further development of the population intervention programme is planned over the next year. Evaluation is being built into the programme at several levels. The aim is that the project will become a model programme capable of being replicated in any Health Board area in Scotland, and within existing resources.

Scotland's Diet and CHD

- 5.13 A key component in the Scottish Executive's strategy to improve public health in Scotland is action to encourage Scots to eat more healthily. Diet has a major impact on health, and is a significant contributor to Scotland's poor health and high rates of CHD in particular.
- 5.14 Wide-ranging activity is already underway within the framework of the Scottish Diet Action Plan, *Eating for Health*, which, on publication in 1996, was given universal support and was later endorsed by the Scottish Parliament in September 1999. The Plan highlights the key players who are in a position to exercise a major influence on the Scottish diet, and recommends action which each might take to help to make improvements. An enormous range of activity has been initiated at local level, in many instances through collaborative partnership working by the NHS, local authorities, voluntary and private interests, and by communities themselves. National and local work, including awareness campaigns and support is also provided by the Health Education Board for Scotland (HEBS).

- 5.15 The Scottish Community Diet Project, funded by the Scottish Executive, was developed by the Scottish Consumer Council and HEBS to work specifically with low income communities. Last year the Project was awarded the prestigious BBC Derek Cooper Award for the most outstanding contribution to improving diet in Great Britain. Of particular value is the Project's grant scheme to encourage the development of Community Food Initiatives.
- 5.16 Poor diet in early years leads to poor health in later life. The diet of Scottish children is therefore of crucial importance if CHD is to be avoided in adult life. The Executive's recent provision of resources from the £100m Health Improvement Fund is enabling Health Boards to work with their local partners, including local authorities, to introduce a range of additional initiatives to improve public health. Diet is receiving a share of these resources and priority is being given to supporting the provision of breakfast clubs and fruit and salad bars in schools, particularly those in deprived areas, and fruit for very young children.
- 5.17 As part of the Health Promoting Schools concept, schools are developing a holistic approach to health matters. To further support the delivery of the Health Promoting Schools concept throughout all Scottish schools, the Executive is committed to funding a Health Promoting Schools Unit which is due to be established by autumn 2001.
- 5.18 The newly-appointed National Diet Action Co-ordinator will encourage greater cohesion and co-ordination of ongoing and future dietary activity, to maximise its impact. The Co-ordinator will have a high profile role, championing the need for improvement in Scotland's diet and supporting the key players with an influence over diet in order to increase their contribution towards implementation of the Diet Action Plan. The initial focus of the post will be on action to encourage primary producers, manufacturers, retailers and the catering sector, to realise their full contribution to implementing the Plan's recommendations.

Physical Activity Task Force (PATF)

- 5.19 *Our National Health: a plan for action, a plan for change* recognises that good health means more than the absence of disease. Research over the past 50 years has led to a consensus that an inactive life leads to increased risk of coronary heart disease, stroke and other health issues.
- 5.20 A commitment was given to the establishment of the PATF in the Health Plan. The objective for the Task Force is to develop a strategy for increasing physical activity in Scotland.

5.21 The PATF will investigate and recommend ways to:

- raise physical activity levels in all age groups in Scotland;
- use physical activity to reduce health inequalities;
- ensure that the relevance of physical activity to raising and maintaining quality of life for all age groups is fully recognised;
- promote physical activity as enjoyable and accessible;
- increase uptake in sustainable forms of physical activity;
- identify the scope of joint working with the relevant agencies at a policy and practical level in pursuit of these objectives;
- advise on how current services, facilities and programmes can be used to better effect and where further investment should be concentrated;
- set national targets for physical activity.

5.22 The PATF, representing all social groups in Scotland, will act as a steering group to take forward the recommendations presented to it by a smaller project team and produce a strategy for increasing physical activity. The project team will in turn carry out and pull together existing relevant research, identify good practice and raise the profile of physical activity in Scotland.

CHD Prevention at Local Level

5.23 Health promotion teams throughout Scotland are involved in a wide variety of initiatives aimed at encouraging healthy lifestyles through exercise, healthy eating and stopping smoking, all of which are relevant to the prevention of CHD.

5.24 Examples include GP exercise referral schemes through which GPs can “prescribe” exercise, particularly for individuals with risk factors for CHD. Other exercise initiatives are also under way aimed at children to encourage them to become more physically active.

5.25 Initiatives aimed at healthy eating include Health Board support for community food initiatives such as food co-ops and development of cooking skills. In addition, there are breakfast clubs in many areas of the country providing a nutritious start to the day for children who attend.

5.26 Many Health Boards have smoking cessation initiatives which offer advice and support to people who wish to reduce, stop or change their smoking habits. These include awareness campaigns amongst young people to help reduce smoking in secondary school pupils.

Smoking Cessation

- 5.27 Thousands of people in Scotland die prematurely each year from smoking-related illnesses, including CHD. There is robust evidence of the benefits in terms of reduction in cardiovascular events across all age groups, including older people. Smoking cessation interventions should therefore be targeted at smokers of all ages, and not just the young and middle-aged.
- 5.28 The Scottish Executive is already taking forward a comprehensive range of measures to reduce smoking levels, which include:
- smoking cessation services - Nicotine Replacement Therapy (NRT) is now available on the NHS;
 - smoking prevention activities, which is one of HEBS's top priorities;
 - a charter on smoking in public places;
 - working with COSLA and chief trading standards officers to prevent under-age sales.
- 5.29 The Executive is also co-operating with other UK Health Departments to support international efforts such as the proposed EC Directive on manufacture, presentation and sale of tobacco products, and on reducing EU subsidies to tobacco growers.

Recommendations

- 5.30 The Task Force recommends that emerging lessons from Have a Heart Paisley and other primary prevention programmes be rolled out across Scotland as soon as possible following evaluation.
- 5.31 Smoking cessation interventions should be targeted at smokers of all ages.

6

PRIMARY CARE ASPECTS OF CHD

- 6.1 The enormous importance of primary care in the delivery of cardiac services is well recognised and acknowledged by the CHD Task Force. The report of the LHCC Best Practice Group *Connecting Communities with the NHS* illustrates the range of work LHCCs are developing in relation to CHD. Most of the day-to-day management of heart disease goes on in the community - from initial diagnosis and investigation through to chronic disease management and palliative care for end-stage disease. Revascularisation and treatment interventions are of great importance but if we are to make the maximum impact on Scotland's unenviable position with regard to prevalence of, and mortality from, CHD it is clear that primary and secondary prevention must be properly addressed. Prevention can only really be tackled in a meaningful way by primary care services working closely with public health and health promotion services.
- 6.2 *The Report of the Acute Services Review* highlighted the need for action in the areas of secondary prevention, cardiac rehabilitation and thrombolysis. While the Review looked at hospital services, it is clear that, particularly in the more rural parts of Scotland, primary care will need to play a significant part in addressing all of these issues. The important issue of pre-hospital thrombolysis and the role of rural general practice in this area is covered in Section 7 of this report. Improving the provision of cardiac rehabilitation in some parts of the country will best be achieved by building on existing strong links between cardiac rehabilitation services and primary care. Section 11 covers this aspect.

- 6.3 It would be impossible to cover all that primary care contributes, and might contribute, to cardiac services in one section and so this section focuses on a small number of key issues. The concept of dividing any discussion of cardiac service provision into primary and secondary care issues is dated and fails to reflect the reality of changing patterns of care in NHSScotland. The future lies in looking at services across the boundaries between the health sectors and professions in the context of MCNs, covered in detail in Section 4. Relevant sections covering heart failure and primary prevention highlight the role of primary care in these areas.

Secondary Prevention

- 6.4 Secondary coronary prevention is an issue of key importance for NHSScotland. The evidence of benefit of therapeutic intervention with beta-blockers, ACE inhibitors, aspirin and statins is irrefutable. The initial focus of the Clinical Standards Board on secondary prevention reflects this and the extension of the existing hospital standards into primary care will be helpful. This is an area where primary care, and LHCCs in particular, can make a major contribution to reducing Scotland's CHD mortality - many are already making a big difference. Primary care nurses - particularly practice nurses - are crucial to improving secondary prevention. The advent of effective LHCCs and the resultant increasing co-operation between GP practices, means that this issue is being addressed at a local population level in a way that was not possible in the past.
- 6.5 However, there are some barriers to effective secondary prevention which need to be overcome. The primary care element of the proposed national database for CHD will help with the problems of identifying and keeping track of eligible patients, and facilitate practical management. The CSBS standard for primary care is the RCGP (Scotland) Practice Accreditation Scheme. This does not currently include a requirement on practices to maintain a CHD register. **The Task Force recommends that the standard should be amended to include the maintenance of a CHD register.** The Scottish Programme for Improving Clinical Effectiveness in Primary Care (SPICEpc), developed by the RCGP (Scotland) enables practices using GPASS (80% of Scottish practices) to maintain such a register. The Task Force recognises that in setting up and maintaining such a register, practitioners will need to obtain informed consent from individual patients and to comply with the Data Protection Act 1998 and the emerging recommendations of the Confidentiality and Security Advisory Group for Scotland. The introduction of local MCNs for cardiac services offers an opportunity to improve the co-ordination and effectiveness of secondary prevention at a local level. The relevant Sections of this report deal with these issues in more detail.
- 6.6 The greatest barrier to wider secondary prevention is that of resources. GPs and LHCCs are acutely aware of the implications of escalating drug costs. Budgets for prescribing sit within a unified cash limited budget which may mean that LHCCs have to consider reductions in other budget areas if prescribing costs exceed budgets. Statins and ACE inhibitors are expensive and more effective secondary

prevention undoubtedly pushes up costs. The research evidence on benefits of statins covers the use of Simvastatin and Pravastatin but most LHCCs have been assuming that a “class effect” applies and have been using other less expensive statins. The existence of a class effect for statins was confirmed last year by the International Task Force for Prevention of Coronary Heart Disease at a consensus meeting on statins.

- 6.7 Considerable efforts have been made in recent years to contain prescribing costs. While there is probably still some scope for further containment, the advent of work such as the HOPE study and the adoption of SIGN guidelines, mean that there is a case to be made for rethinking how these drug cost pressures are addressed. A good case might also be made for secondary prevention drug costs being considered an “unavoidable development” for NHSScotland. The evidence on the clinical- and cost-effectiveness of drugs for secondary prevention means that extending their use should be a priority for Health Boards.
- 6.8 Much of the work in secondary prevention in primary care is undertaken by primary care nurses, but there are other rapidly increasing demands on these nurses. Many LHCCs have made attempts to fund increased nursing time to specifically address this, with varying degrees of success. Given the importance of secondary prevention for the health of the nation, Health Boards should ensure that adequate nursing resources are available in primary care.

Intermediate Specialism

- 6.9 Section 3 of the *Report of the Acute Services Review* suggests that the concept of the intermediate specialist represents an important area of opportunity, and highlights their potential role in CHD. Intermediate specialism could mean the development of special skills on the part of a GP working in a practice, LHCC community hospital or Primary Care Trust, or a shift in the locus of activity of a hospital specialist. There are examples already of GPs working in a local hospital setting managing AMI, and undertaking investigations such as echocardiography in the surgery. There are also examples of consultants offering DGH type services in smaller hospitals. However, these reflect a level of enthusiasm and commitment from individuals which would not necessarily translate easily to the rest of the service.
- 6.10 If the concept of developing intermediate specialism based on a wholly medical model were to be followed, there would be a number of practical problems. Systems of training, accreditation and re-accreditation do not currently exist for intermediate specialists, but could be developed. At a more basic level, general practice in Scotland (as in the rest of the UK) is under increasing pressure and may lack the capacity to take on extended roles and responsibilities. Time pressures on existing GPs are likely to preclude most from even considering the concept, and problems with recruitment and retention mean that there is unlikely to be a body of manpower to take this on in the near future. The current system of payments for GPs involved in hospital work fails to meet the costs of employing a locum to cover absence from the practice which is a powerful disincentive.

- 6.11 The future may lie in the development of an intermediate specialism based upon a predominantly nursing model. There is considerable interest in the concepts of nurse specialist, nurse practitioner and nurse consultant in the field of CHD as in other fields. While nurses are facing increasing pressure, it is not open-ended in the same way as that on GPs and the employed status of nurses with well circumscribed conditions may make it easier to develop a nursing model. In the current climate of cross-boundary working, professional labels should no longer be as important as skills and levels of training and accreditation. Cardiac rehabilitation, heart failure and angina management offer real opportunities for services to be developed and delivered in an intermediate way, using whatever professional resources are available and appropriate. This is an area which local MCNs for Cardiac Services should explore.

Referrals to Secondary Care

- 6.12 If waiting times are to be managed effectively, the referrals from primary care which generate the demand on secondary care need to be considered. The Task Force has seen evidence of considerable variation in referral rates, not just between Health Board areas and individual GP practices, but also between individual GPs in the same practice. Research suggests that these variations have many causes, and factors such as GP age, past experience, current interest or expertise all play a part. Patient demand and expectation have had an increasing role in recent years. It has been suggested to the Task Force that not all referrals are appropriate - but appropriateness is subjective, and often the patient's view is different from the professional perspective. The Task Force acknowledges that there are more than just clinical reasons for referring a patient to hospital.
- 6.13 The use of agreed local referral protocols with standard referral letters containing a core dataset can help in this sometimes difficult area. A written protocol is often helpful in educating patients and their relatives about what can be managed in general practice and what secondary care has to offer. The development of computer "protocol based referral" systems, where the software will advise on the level of urgency and need for referral using a simple set of parameters, also offers a useful tool for GPs. The SCI project is developing such a tool for CHD, and this is covered in Section 12.
- 6.14 The proposed MCNs for cardiac services will allow the development of these referral protocols through consensus at a local level, and ensure their continued revision and evolution.

Recommendations

- 6.15 Primary Care has an important role to play in disease prevention, heart failure, cardiac rehabilitation and aspects of the management of myocardial infarction. Cardiac services should now be integrated and delivered through MCNs. This will overcome the outdated division of services into primary and secondary care and develop services based on patient need, delivered in a setting most appropriate to local circumstances.
- 6.16 In primary care, the maintenance of a CHD database should be a mandatory element of the practice accreditation scheme.
- 6.17 Secondary prevention of CHD is a key issue for NHSScotland and must be a national priority. The use of secondary prevention drugs should be considered an inevitable development for the NHS and work undertaken so that appropriate resources are made available for drug costs and primary care staff to ensure that all patients who might benefit do so. LHCCs have a key role to play in this.
- 6.18 The model of intermediate care in cardiac services offers great potential but further work is required if we are to build upon existing examples of good practice. This issue needs to be explored in a multidisciplinary manner rather than adopting a purely medical model.

7

PRE-HOSPITAL TREATMENT

- 7.1 This section considers 2 types of pre-hospital treatment which local Managed Clinical Networks would be well placed to tackle in a comprehensive manner.

Pre-Hospital Thrombolysis

- 7.2 Thrombolysis - the use of the thrombolytic ('clot-dissolving') drugs to dissolve the clot in the coronary arteries - has played an important part in reducing morbidity and mortality from coronary heart disease in recent years. To be effective, thrombolytic therapy has to be given as early as possible in the development of a myocardial infarct, since delays result in reduced life expectancy for patients. It has been reported that every 30 minutes delay in therapy results in a reduction in life expectancy of one year. It is self-evident that if local circumstances, such as distance from hospital or traffic congestion, are likely to result in a delay in a patient reaching hospital-based thrombolysis, then pre-hospital treatment should be considered. *The Acute Services Review* report highlighted thrombolysis as one key area in need of development. It is clear that considerable effort has gone into developing and improving the provision of thrombolysis in hospitals and reducing delays in treatment getting to patients. However, there has not been the same level of development of community thrombolysis across Scotland. The activity that occurs at present in the community is the result of work by a limited number of enthusiastic and committed GPs and practices.

Standards and Targets for Thrombolysis

- 7.3 Given the importance of timely treatment, it is not surprising that standards have been set by various bodies for the implementation of thrombolysis. However the focus to date has been upon the potential delays that can occur in hospital with the commonest measure used being the “door to needle” time. This is an appropriate starting point for looking at the quality of care and indeed the CSBS target is for at least 50% of patients to be treated within 30 minutes of presentation to hospital. A slightly different approach is taken by the National Service Framework for CHD for England and Wales, which sets a target of 60 minutes call to needle time. Ideally one would want to measure and use the “pain to needle” time as this could be considered the most critical measure for maximising success. This however relies upon patients calling health services rapidly after onset of symptoms and will need considerable thought and attention from public health and health promotion services. Once the initial standards set by the CSBS have been widely met, it would seem prudent to move to looking at the pain to needle time (while accepting the many variables that come into play). Whatever targets are set in the future, it is clear that what is required is that patients receive thrombolysis quickly from appropriately trained and supported NHS staff whether they be doctors, nurses, or paramedics. In many instances, this will have to be done in a pre-hospital setting to be timely.

Current Extent of Pre-Hospital Thrombolysis

- 7.4 The provision of pre-hospital thrombolysis in Scotland is generally patchy and dependent upon local enthusiasm and commitment. Efforts to introduce a co-ordinated programme in some Health Board areas have resulted in:

- 40% coverage of rural areas by GPs in Highlands;
- 48% coverage of rural areas by GPs in Grampian;
- coverage of Wigtownshire and Stranraer locality in Dumfries and Galloway.

Work is underway to extend the coverage in these regions and in some other regions to develop co-ordinated programmes.

- 7.5 The Remote and Rural Areas Resource Initiative (RARARI) has approved an application from the Scottish Ambulance Service for a pilot project relating to the development of pre-hospital thrombolysis in rural areas. It also approved two similar smaller applications from the Western Isles and the Scottish Association of Community Hospitals. Consideration is being given to pooling resources and linking the projects. The main project(s) will focus upon joint working between the ambulance service and general practice in Highland, Grampian, Dumfries & Galloway, Borders and the Western Isles. This is particularly welcome.

Fast Tracking Initiatives

- 7.6 Arrangements for patients with suspected myocardial infarction to by-pass A & E units and be admitted directly to Coronary Care Units (CCU) to minimise delays have been introduced in Aberdeen, Inverness and Lanarkshire. Key factors in the success of these arrangements have been direct radio links between ambulances and CCU, and by the availability of a specialist (doctor or nurse) to provide rapid therapy.

Why has Progress in Pre-hospital Thrombolysis been Limited?

- 7.7 Despite a good evidence base and an acceptance of responsibility by the majority of rural GPs, implementation of pre-hospital thrombolysis has been limited by a number of factors, such as drug problems and training and equipment.

Drug Problems

- 7.8 A barrier to pre-hospital thrombolysis is the availability of a licensed thrombolytic with suitable pharmaceutical characteristics which enable preparation and administration in the community. The criteria for the ideal agent include being non-antigenic and ready for administration as a single bolus. It is hoped that new agents currently under investigation will meet the licensing requirements.

Training and Equipment

- 7.9 The constraints here are:
- many GPs have concerns about their ability to interpret ECGs with sufficient confidence to initiate therapy and will need refresher training to increase their confidence to levels where they will be happy to participate;
 - not all GP practices have ready access to ECG machines out of hours or to defibrillators;
 - initial experience with thrombolytic agents did raise concerns amongst some clinicians about reactions - haemorrhagic, anaphylactic or arrhythmic. However with the passage of time and the development of newer agents, it has become clear that most of these concerns were unfounded. Training and education will need to address this issue if wider coverage is to be achieved;
 - for agents that need complicated infusion or injection schedules, infusion pumps are required and these are not widely available to all GPs.

Models of Pre-Hospital Care

- 7.10 There are four possible models for provision of thrombolytic therapy to patients who suffer a heart attack in the community. The first is a policy of “scoop and run” which involves the patient being transported by the ambulance service to the nearest acute hospital as quickly as possible. Thrombolysis then occurs wholly

within the hospital and there is no pre-hospital element (other than administration of aspirin, pain relief, establishing IV access and oxygen). If linked with fast tracking procedures this should probably be the model of choice for urban and semi-urban areas. This leaves three models which are based upon pre-hospital care:

- GP-only thrombolysis. This is where the GP alone institutes thrombolytic therapy and for very remote communities this may be the only practical solution. Telemetric support from the nearest hospital coronary care unit (eg, remote ECG diagnostic help), clear guidance on the safe preparation and administration of thrombolytics, the provision of training and the availability of a practical thrombolytic agent would make this a viable and realistic option.
- Combination of GP and ambulance provision. This is where the GP and local ambulance personnel jointly provide the service. The ambulance carries the thrombolytic drug and a 12-lead ECG machine, the GP provides diagnostic skills and is legally able to prescribe and administer the drugs. This model seems to have great value for most rural communities and is the model being pursued in the RARARI-funded thrombolysis project.
- Paramedic-only thrombolysis. This model involves a paramedic giving thrombolysis on the authority of a hospital specialist on the basis of telemetric interpretation of an ECG. Paramedic administration of Streptokinase is now possible as a result of the Prescription Only Medicines (Human Use) Amendment No 2 Order 2000. While this model could have general applicability in the future, at present it seems to lend itself more to an urban or semi-urban setting where traffic delays might be a real problem.

7.11 Each of the models has aspects to commend it but local circumstances and expertise will dictate which is the most appropriate in a particular area. The establishment of local MCNs for Cardiac Services offers an ideal opportunity to organise effective delivery of thrombolysis across Scotland in the pre-hospital or hospital setting.

Recommendations

7.12 The timely provision of thrombolysis to patients suffering a myocardial infarction should be a matter of high priority for the health service throughout Scotland. In some areas this will necessarily involve pre-hospital care.

7.13 Health Boards should develop models of thrombolysis appropriate to local circumstances and delivered through local MCNs.

7.14 The RARARI-funded pilot project of the Scottish Ambulance Service should be invaluable in developing and evaluating the different models as well as providing a lead in implementation. Lessons from this project should be rolled out across Scotland.

Defibrillators in Public Places

- 7.15** The Department of Health (DH)'s National Service Framework (NSF) for England for Coronary Heart Disease indicated that £10m from the NHS Modernisation Fund would be used to purchase equipment such as defibrillators, 700 of which are being made available in the first instance in public places such as shopping centres and railway stations. The evidence on which this programme is based is that 97% of people with cardiac arrest die. As many as one in five people who have a cardiac arrest do so in a public place and therefore have the potential to benefit. Once someone has a cardiac arrest, defibrillation must take place within eight minutes, since after that the patient is unlikely to survive. DH take the view that defibrillation by lay people who have been appropriately trained and are competent in the use of Automated External Defibrillators (AEDs) is considered safe and effective and is supported by the leading professional organisations including the Resuscitation Council (UK), who published detailed guidelines on AED use in November 1998.
- 7.16** The DH initiative has prompted interest in the subject from a Scottish perspective, and as a result the CHD Task Force has undertaken an investigation of the factors relating to the siting of defibrillators in public places.
- 7.17** The heart's pumping action is controlled by an electrical system. When the heart stops functioning ('cardiac arrest'), there is abrupt loss of consciousness, absence of pulse and breathing stops. Brain damage occurs within five minutes and death in 10-15 minutes. Defibrillation is the only potentially effective treatment. To achieve this, an external defibrillator is placed on the chest wall over the heart and administers a shock through electrodes.
- 7.18** Some deaths from CHD are due to sudden cardiac arrests. Many of these occur outwith hospital, and the Heartstart Scotland database collects data on these. The database identified 22,161 people with cardiac arrest in the community between 1988 and 1997, an average of 2,200 victims a year. Of these, approximately 7% survived.
- 7.19** Successful resuscitation after cardiac arrest outside hospital is dependent on effective links in the chain of survival. This begins with the recognition of the cardiac arrest by a bystander who is able to give cardio-pulmonary resuscitation (CPR). Early and effective CPR while the emergency team is on its way doubles the chances of successful resuscitation. There is therefore need for training in community CPR. The chain continues with the rapid notification and dispatch of ambulances. Protocols are in place to reduce the time of arrival of the emergency services.
- 7.20** It is widely accepted that in cases of cardiac arrest early defibrillation is critical to survival. It has been shown that for every minute that elapses before defibrillation, 7-10% of patients who might be saved are lost. Some communities have a

population trained in CPR who can recognise a cardiac arrest and rapidly notify emergency services, thereby ensuring efficient and rapid dispatch of an ambulance. The addition of AEDs to this chain has been shown to achieve a further 3% improvement to survival rates, bringing the overall rate to 10%. Concentrating on other aspects of the chain may bring the survival rate up from 7% to 17%, a saving of 220 lives. The addition of AEDs to communities who do not have in place the other links in the chain would not significantly improve the survival rates of those who suffer a cardiac arrest outwith hospital.

- 7.21 At the moment, St Andrew's Ambulance first aiders have an AED available for use at large football matches, but these are often used as a diagnostic tool to check the heart rhythm, rather than for treatment. The Task Force is also aware of the initiative by the Red Cross in Scotland, under which AEDs have been installed in a shopping centre in Falkirk. **The Task Force strongly recommends that such schemes must operate to documented standards and be subject to ongoing medical oversight.**
- 7.22 The more widespread use of AEDs in public places would lead to a requirement for the population to be trained in the recognition of cardiopulmonary arrest, performance of adequate CPR and rapid notification and dispatch of an ambulance. A number of studies have shown that survival can be improved in communities with this efficient chain of response and AEDs if victims are given at least 90 seconds of CPR before defibrillation, as this helps to preserve neurological function. Training is an absolute prerequisite to protect the safety of the population as a whole, since delivering a shock of the magnitude required can cause significant damage to the heart muscle.
- 7.23 Training in the use of AEDs would require at least annual updates on top of updates for CPR. (Some studies suggest regularly 3-monthly updates are needed.)
- 7.24 Technical advances in the development of AEDs have aimed at miniaturisation and simplification, as well as adapting energy requirements to the patient's needs. The modern defibrillators in which DH is investing analyse the patient's heart rhythm and, if the patient is not in ventricular fibrillation, the machine will not allow a shock to be administered. The sensitivity and specificity of these machines has improved to 90%. As with all equipment, there is some possibility of error, but in this case it is small. Those using the DH defibrillators are being trained to use them only if there is no breathing or circulation present. Care is necessary when treating victims with implantable cardiac defibrillators (ICD) to place the electrodes correctly, especially when the victim may be unconscious and unable to tell the rescuer about the ICD.

7.25 If AEDs are placed in public places, there are a number of practical issues. For example:

- who is responsible for the training of people to use them?
- who is responsible for the maintenance of the machines? and
- how can the machines be stored with sufficient security to keep them free from vandalism but accessible enough when needed?

7.26 Potential costs include:

- purchase of the defibrillators;
- maintenance of regular servicing and charging;
- initial training of personnel;
- updates to training, at least once a year;
- insurance for the individuals concerned;
- cost for supervision of trained individuals.

Recommendations

7.27 Any organisation considering the introduction of first responder schemes incorporating AEDs must take account of the need for documented standards and ongoing medical oversight of the scheme.

7.28 Once outcome data are available from the DH initiative and similar activity being undertaken by the British Red Cross, it may be appropriate to pilot the introduction of AEDs in parts of Scotland, taking account of the geographical variation north and south of the Border.

8

HEART FAILURE

- 8.1 The term heart failure refers to a syndrome - a collection of physical signs and symptoms - resulting from a reduction in the pumping ability of the heart. It is characterised by breathlessness, fatigue and fluid retention. While commonly used as a diagnostic label, it is not a diagnosis *per se*. Careful consideration needs to be given to the underlying cause of the condition. The commonest causes are coronary and hypertensive heart disease but alcohol abuse, cardiomyopathies and valvular heart disease merit routine consideration as causes.

Burden of Heart Failure

- 8.2 It is estimated that between 1% and 2% of the total population in the UK suffer from heart failure, with a tenfold increase in the elderly. Accurate quantification is complicated by the fact that some patients with early heart failure have few symptoms and some patients with typical symptoms are shown on investigation not to have heart failure. One study has suggested that as many as 50% of patients in a GP setting labelled as suffering from heart failure on clinical grounds, do not have heart failure demonstrated by echocardiography.
- 8.3 The prevalence of heart failure increases with age and our population is ageing. As the treatment of CHD improves, more patients survive myocardial infarction and more myocardial infarctions are prevented. As a consequence, the number of people with CHD will increase in the community, with a corresponding increase in the number suffering from heart failure.

- 8.4 The importance of heart failure is often underestimated. It is salutary to reflect on the often severe nature and high prevalence of the condition. The mean survival after the onset of severe heart failure is of the order of 1.7 years in men and 3.2 years in women, with a five year survival of 25% in men and 38% in women. Comparisons with cancer are not inappropriate - heart failure is not rare and the outlook is not always good. Indeed the signs and symptoms of terminal heart failure resemble those of terminal cancer - loss of weight, loss of appetite, shortness of breath, weakness, fatigue and jaundice. The quality of life for those with even moderately severe heart failure is often worse than for many other chronic diseases.
- 8.5 Approximately 1% of NHS expenditure is currently spent on treating heart failure, with 60-70% of costs relating to hospital admissions. Heart failure accounts for around 5% of all medical admissions and 25-30% of heart failure patients are admitted every year. Improved diagnosis and management in general practice should reduce rates of admission, although the extra costs of drugs such as ACE inhibitors are likely to negate any savings in the acute sector. Improved primary care management may well result in better care for patients but at an increased overall cost to the NHS, with the increase apparent in drug budgets rather than in hospital costs.

Diagnosis

- 8.6 Diagnosis on clinical grounds can be problematic. However, a clinical suspicion of heart failure is essential in determining who should undergo further evaluation and investigation. Echocardiography is the single most important investigation in the evaluation of a patient with suspected heart failure. It is safe, non-invasive and gives valuable information on the structure and function of the heart. It often confirms the diagnosis and at the same time identifies the underlying cause of the problem. Clear guidance on the investigation of patients with suspected heart failure is given in SIGN Guideline 35, which should be adhered to.
- 8.7 It has been shown that open access echocardiography, when used with specific protocols, can be beneficial in allowing a proportion of patients to be managed in primary care and thus relieve pressure on hospital services. In an ideal world, an expert clinical opinion would be available at the same time as the investigation, but the numbers involved make it unlikely that this will be practical in most areas. The appropriate selection of patients for echocardiography is important. A normal ECG in the absence of any history of CHD is a valuable screening tool to identify those who do not require echocardiography, and could reduce numbers being referred. The diagnosis of heart failure should be confirmed by echocardiography before treatment is started. Drugs such as diuretics and ACE inhibitors can be associated with morbidity due to side effects, and should therefore not be prescribed inappropriately.

- 8.8 Health Boards should consider the provision of, and access to, echocardiography as part of their CHD strategies, which should be designed to reflect local circumstances. This might include the provision of mobile echocardiography either as part of an outreach service by visiting cardiologists or as open access. The Scottish Health Purchasing Information Centre (SHPIC) Report (1998) on heart failure states “Echocardiography is a very useful investigation which should be more widely available, preferably as part of a one-stop specialist service, but if not then through an open access service for general practitioners.”

Recommendations

- 8.9 The Task Force has considered open access echocardiography and recommends that where such services are offered there should be:
- clear indications identified for the investigation;
 - a simple request form which allows recording of sufficient clinical details to justify the investigation;
 - a structured reporting system which provides information in a form which GPs find useful;
 - clarity on where ongoing clinical responsibility for the patient lies after the test is performed;
 - space on the request form for GPs to indicate permission (or otherwise) for a clinical assessment of the patient if this is considered desirable based on the test result;
 - clear communication between hospital and practices if an open-access service is provided, and, where appropriate, educational meetings to ensure optimal use of the service.
- 8.10 It has been suggested that there is unmet need amongst young people resulting, for example, from acute myocarditis or rapidly progressing cardiomyopathy, who present with acute end-stage heart failure. There are a few such cases each year who need stabilisation and assessment, possibly prior to urgent transplantation or other interventions. This has not been possible in Scotland so far because of the absence of expertise in the use, for example, of left ventricular assist devices, also known as ‘artificial hearts’, which can sustain the patient until a donor organ becomes available. **The Task Force recommends that consideration should be given to establishing a national heart failure centre to co-ordinate and optimise management of those being considered for cardiac transplantation or other interventions.**

Palliative Care

- 8.11 There have been many advances in the diagnosis and investigation of patients with cardiac disease in recent decades. Interventions and treatments are much more effective, so that end-stage cardiac failure is no longer as common as it was 30 or 40 years ago. However it does still occur when all treatment options have been exhausted or are contra-indicated, and is likely to be seen more in the future. Severe shortness of breath at night and on lying flat is very distressing for both patients and relatives. For the small but gradually increasing number of patients who find themselves in this position, there is a real need for proper palliative care services. These are just as necessary for patients with terminal cardiac failure, as they are for patients with terminal cancer or neurological illness. Help and support to relatives and carers is as important in this group as in any other.
- 8.12 It is important that palliative care services and Networks include provision for patients with end-stage cardiac failure and that services to help these patients are developed in conjunction with MCNs for Cardiac Services. This is happening in some parts of Scotland and although there is no single model appropriate for the whole of the country, lessons can be learned from initiatives such as the Heart Failure Liaison Service in Glasgow.

Recommendations

- 8.13 SIGN Guideline 35 on heart failure should be implemented in all Health Board areas.
- 8.14 Health Boards should recognise the significance of heart failure and include strategies to address this within their CHD Strategic Plans. Those strategies should ensure the adequate provision of echocardiography services suited to local circumstances. Ideally this should be a part of a one-stop specialist service but if this is not practical, then as an open access service for GPs.
- 8.15 Efforts should be made in primary care to ensure that patients who are thought to have heart failure are reviewed to ensure that the diagnosis is valid.
- 8.16 All patients who have proven heart failure should receive ACE inhibitors (unless there are contra-indications) in addition to appropriate symptomatic treatment.
- 8.17 Provision needs to be made for palliative care services for patients with end-stage heart failure. This should be an integral part of the palliative care MCNs that are being set up and there should be clear links with the local CHD networks as they develop.
- 8.18 Consideration should be given to establishing a national heart failure centre to co-ordinate and optimise management of those being considered for cardiac transplantation or other interventions.

9

REVASCULARISATION

Introduction

9.1 Coronary artery bypass grafting (CABG) for the management of CHD was introduced around 35 years ago and became increasingly popular in the treatment of patients with stable angina. Veins from the leg were initially used as conduits for bypassing the diseased coronary arteries. Although veins are still used, the use of arteries as bypass vessels has become established and these have been shown to offer better long-term patency. The benefits of, and indications for, CABG have been predominantly directed towards improving the quality of life by reducing symptoms. The effect on survival ie, quantity of life, has been less dramatic. Definite improvement has been shown in the case of left main coronary disease or triple vessel disease. In other situations, improvement in 10 year survival cannot be demonstrated, but the procedure offers symptom relief. The operative mortality varies from 1.8-4% depending on risk, and overall 70% of patients are significantly improved. There is an attrition rate with recurrent symptoms which is more often the case after vein graft use rather than when arteries are employed. Further surgery can be carried out, but the risks increase and the benefits decrease.

9.2 More recently the interventional management of CHD has been enhanced by the increased use of percutaneous transluminal coronary angioplasty (PTCA now sometimes called “percutaneous coronary intervention”, PCI). A catheter is inserted through the skin and a balloon

inflated in the diseased vessel to dilate the narrowed segment of artery and increase flow. In the early stages following introduction of the technique, vessel damage or occlusion did occur and standby surgical facilities were required. With recent pharmacological and technological advances this is no longer the case. The danger of thrombosis and vessel damage has been reduced by use of potent anti-thrombotic compounds and by stenting the dilated segment with a metal framework to enhance patency. These developments have reduced the need for standby surgical facilities. The British Cardiac Society Guidelines on PTCA state that, providing the patient can be transferred to the cardiac surgical unit within 90 minutes of the request from the catheter laboratory, then this is acceptable, whether the transfer is within the same hospital or by ambulance transfer to another unit. In Scotland last year only four patients (out of approximately 3,000) required transfer for emergency cardiac surgery and all survived.

9.3 This is a rapidly changing field and the indications for PTCA are expanding all the time. Initially the technique was used only for single vessel coronary disease but is now advocated for two or even three vessel disease. PTCA is no longer restricted to the management of stable angina, with intervention in the acute situation becoming more frequent. Those with unstable angina are increasingly likely to be considered for this form of management. It has been suggested that compared to the 8% of patients with unstable angina currently being investigated by coronary angiography, at least 30% may need consideration for this form of investigation and possibly intervention.

9.4 When considering the future place of CABG and PTCA, it is hard to be dogmatic, but the proportion of patients having CABG seems likely to decrease, while that for PTCA will increase. It is possible that the treatment of acute myocardial infarction will involve immediate intervention by PTCA (rescue angioplasty) in the future but as yet this cannot be stated with certainty. Results of ongoing studies in this area are awaited.

Acute Coronary Syndrome (ACS)

9.5 In patients presenting with chest pain thought to be due to acute myocardial ischaemia, there are several diagnostic possibilities. ECG changes and biochemical changes allow a more specific diagnosis to be made.

9.6 The term acute coronary syndrome (ACS) represents the spectrum of patients presenting with acute chest pain due to CHD. The diagnosis is made by a combination of symptoms, ECG changes and blood enzyme results. Damage to heart muscle cells releases enzymes into the bloodstream where they can be measured. Well-established enzyme tests include the transaminases and CKMB. However, recently, the more sensitive test of troponin release has been introduced. This allows the detection of underlying damage that previously would not have been identified.

- 9.7 The use of troponin levels has improved the ability of clinicians to recognise those patients who may be at greatest risk. In Scotland around 10,000 patients present each year with persistent ST segment elevation on ECG and with raised enzyme levels. These patients have had an AMI and are candidates for thrombolytic treatment, admission to a coronary care unit and for subsequent rehabilitation and correction of risk factors. A further 12,000 patients present each year with ACS, but without persistent ST elevation. These patients have non-Q wave myocardial infarction or unstable angina. Patients with unstable angina who have raised troponin levels are most at risk. The British Cardiac Society and the Royal College of Physicians of London have developed guidelines for the management of patients with ACS without persistent ST elevation. Investigation and intervention in these patients is increasing rapidly and overtaking elective interventions.
- 9.8 Patients who have recurrent symptoms or ischaemic ECG changes despite aspirin and other treatment, especially those with cardiac troponin release, should be referred for revascularisation if appropriate. PTCA using stenting is the procedure of choice, although in some patients CABG is indicated.

Calculation of Need for Revascularisation

- 9.9 Calculation of the need for revascularisation appropriate to Scotland is not straightforward, mainly because of the shortage of reliable data on the burden of CHD in the community. A way had therefore to be found of extrapolating from the data available estimates of need. The methodology adopted is set out in following paragraphs.
- 9.10 Demand for cardiac interventions comes from two sources:
- emergency or urgent treatment for ACS - including Q wave infarct, non-Q wave infarct and unstable angina;
 - elective investigation, mainly referred from primary care.
- 9.11 A series of calculations is attached at Appendix V using different methods derived from the following:
- Overall level - comparative methods:
 - the English National Services Framework (NSF) and Joint Working Group (JWG) on Coronary Angioplasty of the British Cardiac Society and British Cardiovascular Intervention Society - abbreviated to NSF/JWG method;
 - applying Scottish intervention to need ratios for less deprived parts of Scotland.

- Level of need from ACS:
 - the European ENACT study.
- Level of need from primary care:
 - Southampton study (Wood).

9.12 The different methods used arrive at broadly similar overall estimates of need, and these are summarised below.

Table 4: Summary of Calculations

Summary of Calculations	Total Interventions per million (1999 popn. = 5.12 million)
Current Scotland (1999-2000) *	989
Joint Working Group corrected for Scotland	1,407
National Services Framework corrected for Scotland	1,918
Deprivation comparative calculation	1,392
European (ENACT) Option A + 100% Elective Referrals from GP	1,679
European (ENACT) Option A + 60% Elective Referrals from GP	1,403

Associated with this increase in interventions, the number of coronary angiographies will be expected to increase from 12,000 to 16,000 a year.

Conclusions

- 9.13 All of the above calculations suggest a significant need for increased interventions, but further tranches of NHS resources should not be committed until such time as the need for increased intervention has been amply demonstrated. Once the National Database is up and running it will be possible to make informed assessments of the level of need appropriate to all parts of Scotland.
- 9.14 Data presented in Section 3 show that fewer interventions were performed than would be expected for the more deprived communities. **Considerations of equity of access mean that people in those communities should be considered as a priority for increased interventions.**
- 9.15 CABG still plays a major role in the management of extensive coronary disease but there is undoubtedly a considerable increase in what angioplasty can offer. The range of vessels being dilated continues to increase, but the long-term results of stenting are awaited. Intervention in the acute coronary syndrome seems likely to increase, but the outcome of further studies is awaited in terms of mortality.

Recommendations

- 9.16 The Task Force recommends a phased approach to increasing intervention rates from their current level of 989 (CABG and PTCA) per million to a total intervention rate of 1,400 per million over the next three years. The suggested levels are 700 CABG and 700 PTCA but it is recognised that PTCA may well be a larger proportion, especially as intervention in ACS increases. The situation needs to be kept under close review in view of:
- ongoing technological and pharmaceutical developments in the management of patients with CHD;
 - the fact that in some areas the demand for interventions does not appear to be increasing as expected, given the burden of CHD in Scotland.
- 9.17 Considerations of equity of access mean that people in deprived communities should be considered as a priority for increased interventions.
- 9.18 The additional interventions proposed should be undertaken through expansion of activity within the existing four cardiac surgery centres and 11 catheterisation laboratories (see Section 10 for discussion of staffing and other resource issues).
- 9.19 See also the recommendations in paragraph 10.68 relating to achieving the increase in the number of PTCAs.

10

RESPONSIVENESS OF SERVICES TO PATIENTS' NEEDS

Involving the Patient in Making Treatment Decisions

- 10.1 Much has been written about the importance of involving patients in decisions concerning treatment. It is now accepted that patients can discuss and question the decisions of their medical advisers.
- 10.2 One of the arguments sometimes posed against greater patient involvement is that patients do not have the depth of understanding of the alternatives and their implications. This can be countered in two ways. Firstly, clinicians may not have a full understanding of how the patient views the world - everyone has their own rules for running their lives, including ways of balancing risks and benefits. Secondly, most patients, particularly if offered some guidance, are capable of understanding risks and benefits in terms of probabilities and values. They are also able to grasp the implications of uncertainty, particularly if these are clearly expressed.
- 10.3 The recent development of evidence-based practice has allowed better estimates of risk and benefits in the field of CHD treatment.

10.4 Choices for a patient with angina might be expressed in the following way:

- lifestyle changes and medication can give years of relief from symptoms for many patients, but it is possible that the angina will become worse and more frequent. Apart from medication, there are two other main treatment options: coronary artery bypass grafting (CABG) and angioplasty. CABG involves a major operation and recovery period. Angioplasty is a shorter, simpler procedure involving running a small instrument into the coronary arteries, where the blockage is stretched to allow better blood flow.
- For patients undergoing CABG:
 - there is likely to be a marked improvement in angina symptoms for many years, during which most patients will be able to lead a “normal” life;
 - there is likely to be significant discomfort immediately after the operation. Patients are usually in hospital for 6-8 days and not back to work for at least two months and may have some wound discomfort;
 - the chance of dying during or shortly after the operation is approximately 1%;
 - the likely improvement in survival, compared to using medical management only, depends on the number of vessels blocked. Some patients have little or no benefit.
- For patients undergoing angioplasty:
 - there will be some discomfort for a few days, but patients should be able to function normally (eg, resume work) after 4 or 5 days;
 - the chance of dying during or shortly after the operation is less than 1%;
 - there is, as yet, little evidence of any overall increase in survival, but results are not yet available concerning the more recent innovations in this technique. It is likely that there will be some overall improvement in survival, but probably less than for CABG;
 - there is likely to be a marked improvement in angina symptoms for some years, during which most patients will be able to lead a “normal” life. There is some evidence that the benefit is likely to last for a shorter time than CABG, but it is possible to repeat the angioplasty, or to have a CABG operation.

10.5 Guidance for patients will be different depending on such things as age and stage of disease. For patients with complex histories, it will be more difficult to give an accurate assessment of risks and benefits. Nevertheless, by categorising patients by age group and vessel involvement, appropriate guidance should be possible.

- 10.6 It could be argued that there are too many uncertainties even in this relatively simple description. This argument is spurious, because the uncertainties are exactly the same for both clinician and patient, but they would not normally stop a clinician from making a decision. All that is required is for the clinician to make clear to the patient the factors upon which a decision should be based, to allow the patient to make an informed choice. The ultimate decision will, after all, have a greater impact on the patient than on the clinician.

Waiting Times

- 10.7 Waiting for diagnosis and treatment causes people uncertainty, anxiety and stress. That is why the Scottish Executive is committed to reducing the time that people wait for consultations and hospital treatment. Establishing additional one-stop clinics, re-designing services focused on the patient's experience and introducing new walk-in/walk-out hospitals are some of the ways in which the Executive has pledged to take forward improvements in patient care to reduce waiting times.

Table 5: Mean Waiting Time (Days)

SCOTLAND	January to June		
	1998	1999	2000
Coronary Angiography	55	42	42
PTCA	45	50	53
CABG	189	156	108

- 10.8 The Task Force has worked with the National Waiting Times Support Force in its efforts to establish national waiting times for a number of key services, including those for CHD.
- 10.9 In considering waiting times for CHD it must be borne in mind that 25% of those who need an angioplasty or CABG have to be treated urgently, and therefore may never appear on a waiting list.
- 10.10 In the light of its assessment of current facilities and resources, the Task Force believes that it is possible to meet the following maximum non-urgent national waiting times which feature in *Our National Health, a plan for action, a plan for change*:
- from the decision to investigate to angiography: 12 weeks;
 - from angiography to intervention (PTCA or CABG): 24 weeks.
- 10.11 The Task Force was aware, however, that any national waiting times should relate to the complete patient journey. It therefore established a sub-group to consider how to achieve a waiting time of two weeks for rapid assessment of patients not

requiring emergency admission, but presenting with chest pain thought to be cardiac in origin.

- 10.12** The sub-group developed a simple questionnaire (see Appendix VI) on the operation of rapid access chest pain clinics (RACPC) which was sent to all Clinical Directors of Cardiology Services in Scotland. Eighteen questionnaires were issued, of which 13 were returned. Eight of these respondents indicated that they operated RACPCs. All eight clinics provided exercise tolerance tests (ETT) with a clinical opinion, ECG and blood test.
- 10.13** The questionnaire revealed significant variation in how these clinics are managed, and also variation in clinic frequency and waiting times for assessment. In those areas of the country which are not currently meeting the 2 week target in this area, the sub-group identified a number of possible reasons for this, the most of important of which was lack of consultant time due to pressure of work. This is particularly true in the case of single-handed consultants, for example in Forth Valley.
- 10.14** A number of cardiology units use GP specialists to run RACPCs. This is regarded as an entirely satisfactory model. However, GP specialists are generally paid at Clinical Assistant rates, which are approximately £50 less than the amount the GP would be required to pay to employ a locum, while he or she undertook this hospital based activity. If more GPs are to be recruited to such specialist areas, the issue of sessional rates will have to be addressed.
- 10.15** The logistical problems associated with rapid referral using traditional communication methods are being tackled through the ECCI project (see Section 12). Online referral, often protocol-based, is particularly suited to the management of patients with chest pain requiring rapid assessment and a number of existing RACPCs already use protocol-based referrals.
- 10.16** The sub-group felt that there were two possible ways in which more consultant time might be freed up to allow them to contribute to the running of rapid access chest pain services. Return patients could be assessed at consultant level to establish whether or not they should be referred back to primary care or shared care as appropriate. A second issue relates to the effect of cardiologists participating in the general medical receiving rota. Such participation, combined with the technical commitments of most cardiologists, leaves little time for input to other activities. It was suggested that cardiologists might be relieved of general medical duties, and instead have a parallel rota for cardiology/coronary care units, possibly involving more than one Trust. However, the Task Force felt that in general this was not feasible in Scotland, as general medical rotas would be unsustainable without the participation of cardiologists.

Recommendations

10.17 The Task Force recommends that the following action be undertaken in order to achieve the desired two week waiting time target in this area:

- appointment of a minimum of two consultant cardiologists in each Acute Trust setting;
- Trusts to urgently review the design of traditional out-patient clinics to allow the consultant cardiologist to see all return patients, with the aim of reducing the number of unnecessary returns;
- Trusts to consider increased use of GP specialists to run rapid access chest pain clinics, employed at a rate which at least meets their locum expenses;
- SEHD to consider more rapid expansion of the ECCI project and use of protocol-based referrals for patients with chest pain.

Management of Patients while on the Waiting List

10.18 Patients must be managed actively while on waiting lists for revascularisation. The overall death rate on the waiting list for CABG is around 1.8% and is unpredictable. Death can occur unexpectedly when the patient is apparently stable. There are, however, two situations where there appears to be an enhanced risk; shortly after going on the waiting list and shortly after receiving an admission date for surgery.

10.19 In setting out to develop a system of prioritisation for surgery, the Task Force decided, after considerable discussion, to avoid a numerical score. This was felt to be too rigid an approach and open to misinterpretation. Certainly the Task Force wished to avoid any method, such as that used in New Zealand, which might suggest a rationing system for intervention. The draft methods of assessing priority were discussed and agreed at the annual meeting of the Scottish Cardiac Society in 1999 and have been circulated to all cardiologists and cardiac surgeons. The prioritisation criteria are listed in Appendix VII.

10.20 Points to note are:

- gender is not a consideration;
- in assessment of priority, consideration should always be given to functional (biological) age rather than chronological age;
- obesity and cigarette smoking are relevant in terms of increased operative and pre-operative risk and require discussion with the patient;

- it may be appropriate to take into account precarious or jeopardised employment status;
- patients should be placed on the cardiac surgical waiting list on receipt of the referral letter from the consultant cardiologist;
- any exceptional circumstances indicating high priority should be clearly stated;
- as a general rule the surgeon should, whenever possible, review the patient before admission for surgery.

Access to Interventions

- 10.21** Concern has rightly been expressed that patients distant from cardiac centres wait longer for cardiac surgery and that those from deprived areas are less likely to receive an operation. These concerns are fully explored in Section 3 of this report.
- 10.22** The way in which patients are put on the waiting list for cardiac surgery is an extremely complex mixture of assessment of symptoms, investigations and angiographic findings. The patient's attitude to their condition and to the prospect of major surgery is also taken into account. A variety of factors affect the pattern of surgical referral which can be either based on geographical location, or reflect an established link between cardiologist and surgeon.
- 10.23** In Scotland, the siting of cardiac surgical centres in Aberdeen, Edinburgh and Glasgow means that some patients are already travelling widely, although the majority are referred to the nearest cardiac surgical unit. A few patients elect to be referred elsewhere if this would mean they are closer to family and friends. The use of the private sector for waiting list initiatives has demonstrated that patients are willing to be referred elsewhere, and also to travel, if it means that their operation can be done sooner.
- 10.24** Having identified a number of local variations in handling waiting lists, the waiting list sub-group considered the scope for further standardisation. Agreement was sought on the data required for surgical referral which would simplify referral between surgical centres and help to remove inequity of access to surgery. It was felt that regular publication of waiting times for operation would allow equalisation of these times on a national basis, and again address concerns as to equity of access. These developments, in conjunction with a high level intervention Network (see Section 4), would allow transparency of processes and balanced national waiting times. This approach is in no way intended to preclude patient preference or referral by a cardiologist to a named cardiac surgeon.

10.25 The standard referral letter (see Appendix VIII) was developed and presented to the Scottish Cardiac Society in September 2000. It generated considerable discussion but there was overall general agreement as to the preferred approach. Additional points made were:

- robust referral data might reduce the need for a pre-operative visit for some patients and would be a useful reference for clinical practice;
- the scope for the electronic transfer of these data from cardiologist to cardiac surgeon should be explored urgently.

Recommendations

10.26 The Task Force believes that the removal of inequity of access to interventions requires:

- establishment of a high level intervention Network by SEHD, coupled with active management of waiting lists;
- universal implementation of an agreed standard referral letter from cardiologist to cardiac surgeon. SEHD should explore urgently the scope for electronic transfer of this data;
- universal implementation of agreed standard criteria for priority for surgery.

Staff and Facilities

Cardiologists

10.27 The past 10 years have seen major advances in clinical cardiology, including investigative and management techniques. Over this period, Scotland has seen an increase in cardiologists, investigative facilities and in procedures.

Table 6: Staffing and Facilities

	1990	2000
Cardiologists	38	70
Cardiac Catheterisation Laboratories	6	11
Cardiac Surgical Centres	4	4
Coronary Angiography	6,079	11,013
PTCA	521	2,401
CABG	1,737	3,000

10.28 At present, Scotland has approximately 70 consultants involved in cardiological practice. This equates to one per 73,000 of the Scottish population and approaches the figure of one per 70,000 suggested by the British Cardiac Society. However, included in this total are a number of cardiologists with academic university appointments, who each contribute only approximately five clinical sessions per week. Others have major responsibilities in general medicine. The number of cardiologists should therefore be expressed as whole-time equivalents (10 sessions/week). This gives a more accurate indication of the consultant provision.

Table 7: Consultant Cardiologist Requirements

	Number of Cardiologists 2000	WTE Cardiologists 2000	Number of Cardiologists Required	Additional Number of Cardiologists
SCOTLAND	70	56.4	99	+29
Argyll & Clyde	6	4.2	9	+3
Ayr & Arran	4	2.8	9	+5
Borders	1	0.7	2	+1
Dumfries & Galloway	2	1.4	3	+1
Fife	3	2.5	6	+3
Forth Valley	3	2.1	6	+3
Grampian	5	4.2	8	+3
Glasgow	18	14.0	20	+2
Highland	2	1.5	3	+1
Lanarkshire	7	6.0	11	+4
Lothian	12	10.6	14	+2
Tayside	7	6.3	8	+1

10.29 Table 7 indicates that there is a considerable shortfall in consultant cardiologist numbers.

10.30 Single-handed consultant service delivery is no longer acceptable. Single-handed practitioners in any discipline leave the service they provide vulnerable to breakdown during episodes of illness or holiday, and the practitioners themselves vulnerable to unsustainable demands and stresses because of their professional isolation. The first priority must therefore be additional consultant appointments for:

- Borders;
- Fife (Dunfermline);
- Forth Valley (Stirling);
- Grampian (Elgin).

Unless this situation is tackled, it will not be possible to meet the target of two weeks for referral from GP to specialist advice.

10.31 Currently, consultant numbers are increasing at about 4% a year across the board. Trainee numbers are based on supplying this level of demand. Any further proposed increase in consultant cardiologist numbers above this level would require a concomitant increase in cardiology trainee numbers. **The Task Force therefore recommends that a proportion of the recently announced 375 new training posts should be allocated to cardiology. This recommendation should be taken into account as part of the fundamental review of medical workforce planning announced in *Our National Health: a plan for action, a plan for change*.**

10.32 As these new cardiologist posts come on stream, the next step should be augmentation of consultation numbers in areas where consultant to population ratios are more than 1:100,000:

- Ayrshire & Arran;
- Argyll & Clyde;
- Fife;
- Forth Valley;
- Grampian.

10.33 There are more favourable consultant-to-population ratios in Greater Glasgow and Lothian, which are appropriate because they function as tertiary referral centres and have major research and teaching components.

10.34 Increasing consultant numbers to meet rising demand is only part of the solution. Service redesign and MCNs will make a significant contribution to managing the workload through a multi-disciplinary approach which optimises use of the resources available.

Nurses

10.35 It is timely to examine the potential for nurses to be more proactive and lead the development of new initiatives to meet the needs of patients with cardiovascular disease, in both primary and acute care settings. As the professional group which carries out the greatest proportion of care, extended nursing roles will benefit continuity of care. Unlike their junior medical colleagues, nurses do not regularly rotate their duties and this also benefits continuity. It will be essential before taking on any new areas of responsibility that nurses have the knowledge and clinical competence to meet the requirements of their new role. Any new initiatives must also be evaluated in terms of clinical effectiveness.

- 10.36** A key area in acute cardiac care is the administration of thrombolytic therapy following acute myocardial infarction. This treatment is known to be effective but many areas have difficulty in meeting the national targets for its rapid administration. As a result, new initiatives are being approved to improve thrombolysis administration.
- 10.37** These include the introduction of cardiac nurse practitioners who are involved in the assessment and triage of acute cardiac problems presenting both within Accident and Emergency Departments and Medical Admission Units, and also nurse-initiated thrombolytic therapy following agreed protocols. Evaluation of the knowledge and ability of the nursing staff to undertake such roles has been necessary, but participating centres are enthusiastic about the benefits of this practice. Such developments should be encouraged and introduced elsewhere.
- 10.38** There is also potential for development of nursing practice within other acute areas. Nurses working in CCU have considerable clinical expertise and could play a more active role in resuscitation, haemodynamic monitoring and organisation and titration of therapy.
- 10.39** Several nursing initiatives have been reported in the area of interventional cardiology. These include the role of cardiac specialist nurse practitioners in the pre- and post-procedural care of patients admitted for an elective procedure, eg, coronary angiography or pacemaker insertion. The nurse is responsible for history taking, clinical assessment, the provision of information and education, obtaining informed consent, cannulation, venesection and ordering investigations. In addition, the nurse provides ongoing care post-procedure to reinforce information provided on diagnosis and future management.
- 10.40** There is also interest in the role of the nurse in the management of chest pain in the elective setting, such as rapid assessment or open access chest pain clinics. Nursing roles include history taking, focused clinical examination and the organisation of appropriate investigations including ECG, ETT, laboratory investigations, and communication between primary and secondary care.
- 10.41** In the United Kingdom, most ETTs remain physician-supervised, because of the assumed potential for complications. However, non-physician-supervised ETTs (by nurse or cardiac technician) have shown complication rates equivalent to those supervised by physicians. ETTs could therefore be considered as a possible area of responsibility for a nurse trained in the technique and in emergency care procedures. This would release medical staff from this role and free up medical (sometimes consultant) time.
- 10.42** Following discharge from acute care, there are initiatives to support nurse-led follow-up of patients, for example, post-MI clinics. In some areas this is offered by a multi-disciplinary team as a one-stop service to promote the co-ordinated delivery of care, allowing appropriate investigation, assessment and referral. In

addition, this allows the identification of problems and the supervision of education and support. In at least one centre, this is being evaluated as a nurse-led clinic.

- 10.43 Cardiac rehabilitation, risk management and secondary prevention clinics are services which are led by nursing and PAMs staff within both secondary and primary care.
- 10.44 As indicated in Section 8, the burden of heart failure in the community is a major problem. It is associated with a high mortality and morbidity often resulting in numerous hospital admissions. Many heart failure patients have clearly benefited from the introduction of nurse supervised interventions in heart failure. Improved management in the community has reduced hospital re-admission rates. Comprehensive assessment, improved drug and dietary compliance and implementation of pharmacological therapy following agreed guidelines and protocols have enhanced the quality of life for these patients.
- 10.45 In addition, nurses have an important role in health promotion services, such as smoking cessation support groups/clinics and general health promotion by health visitors. There is an increased interest in developing the role of practice nurses and health visitors to focus on the needs of patients with CHD. The appointment of CHD facilitators to support the establishment of accurate disease registers, provide education and support for primary care staff and to work with the teams to implement evidence-based practice for patients with CHD has led to improvements in care.
- 10.46 Many nurses are currently involved, either alone or in collaboration with resuscitation training officers (many of whom are also nurses), in the provision of CPR training in a number of formats; as advanced life support instructors, as basic life support trainers and in initiatives such as Heart Start training.
- 10.47 New roles are being developed for cardiac nurses in the areas of education, research and practice development. The aim is to ensure that education is up-to-date with advances in clinical practice. A joint appointment in Dundee between the Trust and University is an example of integration and collaboration between clinical practice and higher education.
- 10.48 The development of cardiac nursing is dependent on the provision of relevant post-registration education for the specialist practitioners of the future. This is currently lacking. Higher education establishments need to work in collaboration with clinical staff to deliver the education required to allow nurses to fulfil their potential in this area as part of a truly multi-professional team.
- 10.49 The Task Force is aware that a Scottish Royal Colleges' Committee has been formed to consider multi-professional working.

Pharmacists

- 10.50** Pharmacists have a pivotal role in prevention of cardiovascular disease and the safe delivery of clinically effective cardiovascular services.
- 10.51** In Scotland, there are 1151 community pharmacies. One in ten Scots visits a community pharmacy every day creating a unique opportunity to provide information on health-related issues to a wide range of people. Pharmacists working within communities have developed new roles that contribute to the prevention of heart disease.
- 10.52** In all Health Boards, community pharmacists have been involved in co-ordinating and delivering smoking cessation services. These services include patient assessment, the provision of NRT and counselling tailored to meet individual needs. Monitoring the effectiveness of treatment for the individual underpins the development of evidence-based practice. NHS Glasgow has an established programme of health promotion activities through their network of community pharmacies. This includes a smoking cessation programme with 215 community pharmacies where patients can access advice and get their NRT on the NHS. In Fife, 441 patients attended 20 community pharmacists over a three month period for support in stopping smoking. An 8-week evaluation has demonstrated a 53% quit rate with high customer satisfaction. A subsequent 12 week and six month evaluation is planned.
- 10.53** An increasing number of community pharmacists, as members of the multi-professional team, are involved in screening patients for cardiovascular risk factors. Within the national demonstration project “Have a Heart Paisley” (HaHP), community pharmacists are involved in a number of initiatives including: development of a disease register through collation of data on patients administering glyceryl trinitrate (GTN) spray and patients who may be appropriate for aspirin therapy, based upon evaluation of their current therapy; a pharmacist-led smoking cessation programme; and window campaigns to increase the awareness of the HaHP project within the population.
- 10.54** *Our National Health: a plan for action, a plan for change* gave a commitment to extend the model schemes for community pharmacy to include heart disease. The Scottish Executive will enter into discussions with the profession to take this forward.
- 10.55** Pharmacists have an important role to play in improving the pharmaceutical care of those patients with established heart disease. Irrespective of the clinical setting, patients with established coronary heart disease require integrated pharmaceutical services, providing consistent standards of care. In several Health Boards, hospital pharmacists are involved in ensuring that appropriate secondary prevention therapy is initiated and that the patient response to treatment is monitored. Often patients have had no symptoms before their heart attack.

Many of the medicines prescribed for secondary prevention have side effects, in particular, the lipid lowering agents and antihypertensives. Pharmacists in all care environments provide information and advice tailored towards the individual's particular needs and contribute to the cardiac rehabilitation programme. Such initiatives help patients to get the best out of their medicines and help with concordance. Clearly, there are opportunities to share this expertise within the context of the wider team and MCNs could facilitate this.

- 10.56 Pharmacists in all care environments are involved in optimising patients' treatment for a wide range of chronic diseases. This frequently requires a medication review. Diabetics are at risk of developing cardiovascular disease and pharmacists working in diabetic clinics are targeting patients with cardiovascular complications. They are conducting medication reviews and optimising secondary prevention treatment (including antihypertensive therapy).
- 10.57 In Lothian, community pharmacists have been integrated into the primary care team to support the review of patients with type two diabetes mellitus, a patient group with high co-existing cardiovascular disease. This pilot project has achieved improvement in glycaemic and blood pressure control over a six-month period. Patient involvement has been core in achieving this outcome.
- 10.58 For patients with heart failure, Forth Valley have, again within the context of the multi-professional clinical team, a pharmacist and nurse-led service. The pharmacist contributes to medication reviews and optimises medicine therapy to the standards promoted in the SIGN guidelines.
- 10.59 With the implementation of guidelines for patients with atrial fibrillation, the number of patients on warfarin is steadily increasing. Pharmacists, as members of the clinical team, are involved in designing and providing anticoagulant clinics. They are delivering care to individual patients and monitoring and adjusting warfarin therapy. To enable patients to be treated as close to home as possible, Ayrshire and Arran has established a pharmacy-led, locality-based anticoagulant clinic. Stobhill Hospital has introduced pharmacist in-patient anticoagulation monitoring and dose adjustment in acute medicine for the elderly.
- 10.60 All these developments require good inter- and intra-professional communication supported by documentation. A national pharmaceutical working group has developed a paper-based system for documenting the pharmaceutical care of patients requiring secondary prevention treatment for CHD. If shown to be effective, this should be developed into a software package to enhance the quality of care as patients transfer within and across health care sectors. Software integration will need to be assured so that it can be incorporated into current clinical IT systems in primary and secondary care. If demonstrated to be effective, the MCNs will need to consider how best to secure implementation. Pharmacists are enthusiastic to collaborate with others to develop safe and effective electronic prescribing and medicine administration systems.

10.61 MCNs will be critical in securing services designed to meet patients' needs and will facilitate multi-professional working. A national network of specialist pharmacists promotes effective treatment and consistent standards of pharmaceutical care. These pharmacists are ideally placed to be integrated into the MCNs.

PAMs and Technicians

10.62 There should be proper recognition of the important and increasing roles of the Professions Allied to Medicine (PAMs) and cardiac technicians. Cardiac technicians are contributing more and more, for example, to exercise testing, echocardiography, investigation of arrhythmias and pacemaker monitoring. Rehabilitation has in many instances been led by PAMs. Rehabilitation will have an increased role not only following AMI, but also in other clinical aspects of CHD.

Investigative Facilities

Cardiac Catheterisation

10.63 Glasgow, Grampian and Tayside seem adequately supplied with cardiac catheterisation facilities. It is possible that service reconfiguration will occur in Glasgow, but there should be no reduction in the overall number of catheterisation laboratories. In recent years laboratories have been opened in:

- Ayr;
- Dumfries;
- Inverclyde;
- Inverness;
- Lanarkshire.

10.64 A second laboratory has been built at Hairmyres Hospital, Lanarkshire to meet the needs of the five interventional cardiologists who use these facilities.

10.65 There have been discussions about the possibility of providing an additional catheter facility for Fife and Forth Valley, since patients in these areas have longer waiting times for investigation and intervention than do, for example, Lothian patients. However, the cardiologists in these areas wished to continue their current networking arrangements with the Edinburgh hospitals undertaking investigations (Western General, Royal Infirmary). Additional funding has therefore been made available to replace an outdated laboratory at Edinburgh Royal Infirmary. This will release finance to allow the proposed additional catheter facility to be developed at the Western General. It should be emphasised that these developments are not primarily to benefit Lothian, but to improve access for neighbouring Health Boards to allow networking to continue, to reduce waiting times and thus to reduce inequities of access to investigation and intervention.

- 10.66 There has been a considerable increase in PTCA rates in recent years to around 570 pmp. The Royal Infirmary and Western Infirmary in Glasgow both undertake PTCA. The senior interventional cardiologist at the Western Infirmary has just retired and not as yet been replaced. Overall the rates are lower in Glasgow than in Edinburgh and Lanarkshire and consideration should be given to increasing the number of angioplasty procedures undertaken in Glasgow. Re-organisation of catheter sessions would help, but either an additional interventional cardiologist or re-training of a current cardiologist is required.
- 10.67 The Task Force has considered whether or not Dundee (Ninewells) should introduce PTCA. There are no cardiac surgical facilities in Dundee but Edinburgh and Aberdeen are now 1½ hours away. The development of coronary artery stenting and new platelet inhibitor drugs has considerably reduced the need for emergency CABG and consideration could be given to developing PTCA in Dundee. Indeed in the past year emergency surgery was required more often after diagnostic coronary angiography than PTCA. It may be in the future that diagnostic coronary angiography should only be done by operators able to undertake PTCA in an emergency.
- 10.68 The Task Force recommends that an incremental increase in PTCA towards a target of 700 pmp could be achieved by:
- new cardiac catheterisation laboratories at Royal Infirmary and the Western General, Edinburgh;
 - increase in activity in Glasgow by re-allocation of sessions and/or appointment of additional interventional cardiologist;
 - making full use of the cardiac catheterisation laboratories at Hairmyres, Lanarkshire;
 - continuing expansion of intervention at Aberdeen Royal Infirmary;
 - the high level intervention Network should examine the case for undertaking PTCA at Ninewells.

Cardiac Surgical Facilities

- 10.69 There is, and will continue to be, a need for CABG. Long-term studies of PTCA are not yet available. The Task Force believes that the proposed increase in CABG to 700 pmp can be met by expansion of the existing cardiac surgical centres.
- 10.70 It is important to note that any unit increasing its number of bypass operations by 200 per year will require not only an additional cardiac surgeon and supporting staff, but also anaesthetists, nurses, technicians, theatre time and ITU beds. A dialogue will be needed to address the issue of resources.

- 10.71 The development of a high level intervention Network using agreed referral and priority protocols and backed up by improved information technology would allow transparency, increased accountability and abolish problems associated with geography and deprivation.

Recommendations

- 10.72 The Task Force recommends that the following action be undertaken in order to achieve the desired two week waiting time target in this area:

- appointment of a minimum of two consultant cardiologists in each Acute Trust setting;
- Trusts to urgently review the design of traditional out-patient clinics to allow the consultant cardiologist to see all return patients, with the aim of reducing the number of unnecessary returns;
- Trusts to consider increased use of GP specialists to run rapid access chest pain clinics, employed at a rate which at least meets their locum expenses;
- SEHD to consider more rapid expansion of the ECCI project and use of protocol-based referrals for patients with chest pain.

- 10.73 The Task Force believes that the removal of inequity of access to interventions requires:

- establishment of a high level intervention Network by SEHD, coupled with active management of waiting lists;
- universal implementation of an agreed standard referral letter from cardiologist to cardiac surgeon. SEHD should explore urgently the scope for electronic transfer of this data;
- universal implementation of agreed standard criteria for priority for surgery.

- 10.74 The Task Force therefore recommends that a proportion of the recently announced 375 new training posts should be allocated to cardiology. This recommendation should be taken into account as part of the fundamental review of medical workforce planning announced in *Our National Health: a plan for action, a plan for change*.

10.75 The Task Force recommends that the proposed incremental increase in PTCA towards a target of 700 pmp could be achieved by:

- new cardiac catheterisation laboratories at the Royal Infirmary and Western General, Edinburgh;
- increase in activity in Glasgow by re-allocation of sessions and/or appointment of additional interventional cardiologist;
- making full use of cardiac catheterisation laboratories at Hairmyres, Lanarkshire;
- continuing expansion of intervention at Aberdeen Royal Infirmary;
- the high level intervention Network examining the case for undertaking PTCA at Ninewells.

11

CARDIAC REHABILITATION

11.1 Cardiac rehabilitation (CR) services can be defined as comprehensive, long-term programmes encompassing medical evaluation, cardiac risk factor modification, prescribed exercise, education and counselling. CR is routinely advocated for patients who have suffered AMI. These services are now being offered to patients who have undergone cardiac surgery, those suffering from heart failure and angina patients.

11.2 This Section draws on work undertaken by the Scottish Needs Assessment Programme (SNAP), on which the Task Force was represented.

11.3 CR programmes are designed to:

- limit physical and psychological effects of cardiac illness;
- reduce the risk of sudden death or re-infarction;
- control cardiac symptoms;
- stabilise or reverse the atherosclerotic process;
- enhance the individual's psychosocial and vocational status.

11.4 CR will only achieve its aims when the individual collaborates in managing change.

11.5 CR has four distinct phases:

- Phase I During in-patient stay. Reassurance, information, medical evaluation, risk factor assessment, involvement of family.
- Phase II Immediate post discharge period. 4-6 weeks. Follow-up contact, education, support for behavioural change and risk factor modification. Medical evaluation to help risk stratification and management.
- Phase III Structured programme. 6-12 weeks. Usually involves exercise, risk factor modification, education, counselling and support for behavioural change.
- Phase IV Long-term maintenance of physical activity and lifestyle change usually in community.

11.6 Delivery of CR is variable in Scotland. A questionnaire survey led by the CHD Task Force found that:

- CR programmes remain focused on two main client groups - those post MI and post CABG;
- Phase III programmes are offered in a hospital setting in over 80% of centres. Within primary care, CR is delivered by around 10% of practices;
- programme components vary, with little information on uptake;
- resources are varied. The lead is mainly taken by nurses and PAMs. Additional members of the multi-disciplinary team provide input on a “grace and favour” basis, without adequate resourcing;
- there is limited, if any, evaluation of outcomes;
- collection of data is difficult.

11.7 Most CR programmes are hospital-based, run by a multi-disciplinary team encompassing education, secondary prevention, stress management and usually focused on a structured exercise programme. Community-based cardiac rehabilitation programmes are a recent and important development to improve access. The Clinical Standards Board for Scotland is involved in setting standards and assessing performance, and the SIGN guideline on rehabilitation is in preparation. The CHD Task Force supports these developments.

Evidence of Benefit

- 11.8** There are benefits to be achieved through the various aspects of cardiac rehabilitation. However, care needs to be taken when translating the results of trials to a service context as patients, resources and health care systems will differ and therefore potentially affect results. Current evidence indicates that Phases I, II and III are effective. There are no evidence-based studies of Phase IV.
- 11.9** Cardiac rehabilitation is safe. Post-myocardial infarction, there is evidence of reduction in total mortality, fatal re-infarction and sudden death. Following CABG, and in patients with angina and heart failure, the benefits of rehabilitation are on morbidity and quality of life rather than on mortality.

Eligibility, Participation and Compliance

- 11.10** A CR programme cannot be effective if there is a low patient participation rate or if patients do not comply with the recommended lifestyle changes. Attendance is influenced by factors such as age and deprivation. Renewed efforts are needed to encourage low participation groups to take part in rehabilitation and to improve compliance with the programme recommendations. Factors which are potential barriers to successful rehabilitation should be identified so that they can be managed and reduced. Provision of CR to all eligible groups will require additional resources.

Menu-Based Cardiac Rehabilitation

- 11.11** Historically, CR programmes provided a fixed package of rehabilitation. However, a newer approach is that patients should be individually assessed and directed towards rehabilitation most suited to their needs. Adoption of such a menu-based approach would improve the take-up of CR.
- 11.12** The menu should incorporate both core and supplementary strands, and initial assessment should determine the degree of intervention required. Core rehabilitation should be provided by rehabilitation staff and supplementary services provided by specialist professionals working with the local MCN for Cardiac Services.

Recommendations

- 11.13 NHS Boards should, as part of their CHD Strategy, plan to commission services to deliver CR in accordance with the forthcoming SIGN Guideline, and integrated with the local MCN for Cardiac Services.
- 11.14 The setting for delivering rehabilitation should be that most suitable to local circumstance and can safely include community settings outwith health service premises for Phase III and Phase IV. CR can appropriately be offered by primary or secondary care staff but in either case there should always be good communication between staff.
- 11.15 There is a need for audit in CR and this will require improved IT systems. There should be an agreed common Scottish dataset linked to the national CHD database, which will allow comparison of outcomes.
- 11.16 Health care professionals involved in the provision of CR services should have the appropriate knowledge and skills, and specialist post-registration education relevant to CR should be available on a national basis.
- 11.17 Angina, post-cardiac intervention and heart failure are now regarded as likely indications for CR, but both quantitative and qualitative evidence are limited and further research is required. The Chief Scientist Office should consider commissioning such research.
- 11.18 Additional resources will be required to allow the provision of CR to all groups who may benefit.

12

NATIONAL DATABASE

Background

- 12.1** Recognition of the need for a National CHD Database in Scotland is not new. The Scottish Office Policy Review Group commented in 1996 on the fragmentary nature of CHD monitoring, and in particular the failure of current systems to measure the burden of CHD in the community and predict need for services. The Departmental CHD/Stroke Priority Action Team, which was established to take forward the recommendations of the Policy Review, commissioned a CSO-funded project, the Scottish Coronary Assessment Network (SCAN) which gathered information on current CHD data collection systems in Scotland, and provided an appraisal of possible options for the future. SCAN concluded that existing Scottish CHD datasets appeared patchy and fragmented and although reasonable for death and hospital data, were less good for community morbidity and risk factors.
- 12.2** More recently, *the Report of the Acute Services Review* identified “the pressing need for a coherent national database if the NHS in Scotland is to make rational provision for patients with coronary heart disease”. Following publication of this report, the CHD Task Force assumed the development of a national database as one of its key priorities. The Clinical Standards Board for Scotland and the CHD Task Force have developed standards for secondary prevention following an AMI (see Section 13). This work has further emphasised the crucial need for a robust database in this area.

Without sufficient and accurate data, it will be impossible for the CSBS to determine whether standards are being met. In addition, the work of the CHD Task Force's Needs Assessment sub-group has highlighted this issue. Progress has been hampered in this sub-group by the shortage of reliable data for CHD activity in the community.

12.3 Against this background the Database sub-group was set up with the remit:

“To develop a national database based on routine patient management data in primary care, drawing on existing datasets and work currently in progress on CHD data collection as appropriate.”

12.4 It was clear from a summary assessment of databases, and from the SCAN project, that an enormous amount of information is already collected and collated on CHD in Scotland. However, a particular shortfall which has been identified is the dearth of information about the prevalence of CHD in the community. The point has been made that there is not only a need to link existing databases, preferably electronically, but also a need for an extra component which should be based in primary care. This would complete the CHD “databases’ jigsaw” in Scotland. **The Task Force recommends that the new national database should be made up of the following elements linked electronically:**

- new primary care-based database with electronic links to secondary (and tertiary) care; (see recommendation in paragraph 6.5)
- Scottish Cardiac Surgery Database;
- Scottish Coronary Angioplasty Database;
- Scottish Coronary Angiography Database;
- hospital SMR1 Dataset and elements of the SMR20 Dataset;
- proposed database for cardiac rehabilitation.

12.5 There is widespread recognition, both in the Scottish Executive Health Department and NHSScotland, of the enormous actual and potential value of the databases covering cardiac surgery, angioplasty and angiography, started by Dr Jill Pell of Greater Glasgow Health Board. Resources are being made available to support and sustain this work and to link it with ISD activities.

12.6 SMR1 records details of NHS in-patient and day case discharges from Scottish hospitals. Patients receiving treatment for CHD are identified by the International Classification of Diseases (ICD) code in the main diagnosis field. SMR20 is the Scottish Cardiac Surgery Register which records details on all patients both treated and waiting at Scottish Cardiac Surgery Centres. It covers all heart

transplants, children's heart surgery and almost all CABGs carried out on NHS patients in Scotland. ISD does not currently receive routine SMRI and SMR20 returns from relevant private hospitals in Scotland. The Task Force believes that such data should be available to ISD from this source.

Methodology

12.7 Having identified the lack of information about prevalence and management of CHD in the community as the major deficit in this area, the Group focused on the development of a new primary care-based CHD Database, bearing in mind the following potential uses for the Database which had been identified by the Task Force:

- clinical management system;
- clinical Governance function;
- statistical and epidemiological function;
- tool for MCN for Cardiac Services;
- audit and research functions.

12.8 The Group fully recognised the low baseline from which CHD data collection in primary care is starting in Scotland and was clear that the Database would have to provide demonstrable benefits in terms of patient management to gain acceptance. It would therefore have to comprise routinely collected data in order not to impose an additional burden on hard pressed general practitioners. The minimum dataset (MDS) entry should not be onerous, but nonetheless the MDS should be extensive enough to be useful in practical (clinical) terms. The Group was confident that development of a truly national database will address and resolve the problems associated with current patchy CHD data collection in primary care.

12.9 It quickly became apparent that no existing database fully fitted the requirements identified by the Task Force as prerequisites for the primary care based element of the National Database. These included:

- linkages between primary, secondary and tertiary care as well as to ISD;
- integration with GPASS;
- use in routine patient management;
- regular data transfer (preferably electronic) to update the national database.

Primary Care-Based Database: The Way Ahead

12.10 An opportunity arose for the sub-group to take forward its aims in this area. Scottish Executive Health Department (SEHD) IM&T colleagues retained PA Consultancy to research the development of the GPASS system in Acute and Primary Care Trust settings. The question which this project was asked to address was whether new GPASS might provide a cost effective basis for the development of clinically useful hospital information systems, and if so, how that could be achieved. The sub-group was given the opportunity to influence the focus of this project. As a result, one of the two clinical areas being explored in the initial stages of the project was CHD (the other was diabetes). The desired outcomes identified for the project were:

- introduction of primary care level CHD data collection within GPASS;
- secondary care CHD system(s) made available based on:
 - an existing system or
 - an existing system interfaced with GPASS or
 - a “new” system developed from GPASS.
- shared care functions such as referral based on standard protocols/data, rapid access protocol based out-patient booking, provision of clinical advice, and discharge letter based on standard data.

12.11 The feasibility study demonstrated conclusively that GPASS has the potential for use within secondary care and more widely within primary care. This work is now being taken forward by the Scottish Clinical Information (SCI) Project.

Progress on Implementation

12.12 SCI is overseen by a Programme Board on which the CHD Task Force has representation. SCI has developed a range of products including:

- SCI out-patient management system;
- SCI store;
- SCI CHD clinical system;
- SCI applications which integrate primary and secondary care.

The last two listed are of particular interest to the CHD Task Force.

12.13 The primary aim of SCI CHD is to provide support for clinicians managing patients with CHD, whether based in primary or secondary care. In the secondary care setting, the system will support the patient admission process by allowing the admitting clinician access to patient data held on the linked primary care system (with appropriate data protection measures in place). If for example the patient presents in Accident & Emergency with chest pain, the past history and most recent patient episodes will be accessible, and the database can be updated in real time. If the patient is then transferred, for example to CCU, it will be possible to view all recorded patient data in the unit, thereby facilitating transfer. Laboratory tests such as cardiac enzymes and troponins can be ordered in A & E and accessed via the SCI store once the patient is in CCU. The patient's medication record will also be recorded on SCI CHD, reducing the potential for prescribing error. At the time of discharge a letter will be generated automatically and sent electronically to the patient's GP.

12.14 SCI applications which integrate primary and secondary care aim to avoid double data entry and minimise the amount of work required to maintain the database in both primary and secondary care. This product links strongly to the Electronic Communication of Clinical Information (ECCI) out-patient booking and online referral project which is also under way. Integration of primary and secondary care systems means that GPs will be able to view secondary care episodes, and vice versa. SCI will also achieve seamless links, for example with the SCI out-patient management system. Although the vast majority of GP practices in Scotland use GPASS, the SCI application is not restricted to GPASS users, but aims to link any primary care IT system with secondary care in that area.

12.15 SCI products are now being piloted in a number of areas throughout Scotland, notably in the Royal Alexandra (RAH) in Paisley. Development of IT to support CHD care has been underway in RAH under the leadership of Dr Iain Findlay for some ten years. The main systems/modules cover:

- clinical recording in A & E, outpatient and inpatient settings;
- waiting list management;
- test requesting/results reporting;
- GP access to discharge summaries on line and on line referral to rapid access chest pain service.

12.16 Given the RAH's experience, SEHD has established a collaboration which is a key part of the SCI programme, to develop comprehensive and linked systems in support of the full spectrum of primary and secondary CHD care.

12.17 There is considerable interest in SCI products in other parts of Scotland, including Dumfries and Galloway where it is anticipated that SCI will improve communications within the pilot MCN for Cardiac Services. The proposed minimum dataset (see Appendix IX) which was devised by the Task Force relates to secondary prevention. It has now been refined and is being used by SCI to develop clinical screens, in conjunction with Scottish Clinical Information Management in Primary Care (SCIMP). While the Task Force is clear that the agreed minimum dataset must achieve universal coverage, it is also keen to allow flexibility for individuals or units with a particular need or interest to add fields for their own use.

12.18 The establishment of a national CHD database is clearly a pre-requisite for the assessment of performance against the CSBS standards. Unless hospitals can provide the necessary data to the CSBS, such assessment will not be possible. This will be equally true when the Board extends its activity to other aspects of CHD, including management in primary care.

Conclusion

12.19 The above developments bring nearer to fruition the completion of the CHD “databases jigsaw” referred to earlier in this Section. However, the Task Force recognises that the question of closer integration of the various parts of the jigsaw may require further exploration in the future by SEHD in conjunction with ISD.

Recommendations

12.20 The Task Force recommends that the new national database should be made up of the following elements linked electronically:

- new primary care-based database with electronic links to secondary (and tertiary) care; (see recommendation in paragraph 6.5)
- Scottish Cardiac Surgery Database;
- Scottish Coronary Angioplasty Database;
- Scottish Coronary Angiography Database;
- hospital SMR1 Dataset and elements of the SMR20 Dataset;
- proposed database for cardiac rehabilitation.

12.21 The Task Force recommends that continuing priority be given by SEHD and ISD to the full integration of existing CHD databases to develop a truly National Database. The Task Force believes that this is fundamental to the successful implementation of this Report. In the meantime:

- ISD should provide a costed proposal for integration of existing databases by December 2001;
- the minimum dataset should be employed universally across Scotland in order not to compromise the quality of data generated by the National Database.

13

STANDARDS

- 13.1 The Task Force and the CSBS set up a CHD Accreditation Steering Group to oversee the development of the clinical standards for Coronary Heart Disease. The group was convened in September 1999 and its membership is given in Appendix I.
- 13.2 The Group decided early on in its deliberations to focus initially on standards for secondary prevention following acute myocardial infarction, an area which has a solid evidence base. The Group interpreted 'secondary prevention' as encompassing all those factors which should be addressed in order to reduce the likelihood of recurrence of any clinical manifestation of coronary heart disease. It is recognised that other arterial co-morbidities are not uncommon in patients with myocardial infarction and these must be borne in mind.
- 13.3 Within this phase of standard setting for coronary heart disease, the CHD Accreditation Steering Group of the CSBS focussed specifically on the care provided in an acute hospital setting for secondary prevention following diagnosis of an AMI. This includes the initial admission and out-patient review clinics.

13.4 The following key issues are important in relation to interpretation of the standards:

- secondary prevention begins at the time of diagnosis of myocardial infarction;
- secondary prevention is lifelong;
- the process of care addresses the immediate, medium and long-term risks resulting from the index or previous infarction and the underlying process of atherosclerosis;
- the standards are evidence-based.

13.5 A draft version of the Clinical Standards for Secondary Prevention following Acute Myocardial Infarction (March 2000) was distributed widely throughout Scotland for consultation, accompanied by a Background Information document. Two well-attended open meetings were also held in March 2000 to discuss the draft standards. Following these meetings, during the consultation period, a modified version of the standards was piloted at three Trusts across Scotland.

13.6 Throughout the consultation period, comments were received from a wide range of individuals and organisations, including members of the general public, Community Support Groups, Voluntary Organisations, Local Health Councils, Colleges, Professional Organisations, General Practices, Local Health Care Co-operatives, Trusts and Health Boards. Obviously, it was not possible for the final version of the standards to reflect all points of view put forward. Nevertheless, the project group considered every comment received as the standards were developed.

13.7 The standards underwent several stages of revision, taking on board comments made at the open meetings, written consultation responses and findings from the pilot peer review visits. The standards were published in December 2000.

13.8 The Clinical Standards for Secondary Prevention following Acute Myocardial Infarction are underpinned by current available evidence (in particular SIGN Guidelines). Patients, carers and the public as well as healthcare professionals have driven the process of setting the standards. Lay input has been via a variety of mechanisms, including patient and general public membership of the project group, wide invitation to open meetings, written responses to the draft standards and an opinion-gathering phone-in organised in conjunction with the voluntary organisation, Chest, Heart and Stroke Scotland.

- 13.9 The Board has now assessed performance of services throughout Scotland in relation to these clinical standards for Secondary Prevention following Acute Myocardial Infarction and will shortly be publishing its report. The CHD Accreditation Steering Group continues to be involved in the process, leading up to publication, and will have an ongoing role in review of the standards.
- 13.10 The CSBS has also set Generic Standards, which are standards of care that are applicable to most, if not all, clinical services provided by NHSScotland. The Clinical Standards for Secondary Prevention following Acute Myocardial Infarction should be read in conjunction with the Generic Standards. There is some overlap between the two and some issues covered in the Generic Standards are included in the Secondary Prevention Standards where the CHD Accreditation Steering Group thought this appropriate, for example in relation to discharge arrangements.
- 13.11 With regard to secondary prevention in primary care, the group agreed that at this stage, due to variability of data capture, it was not possible to begin work in this area. Work is ongoing to establish a national CHD database founded in primary care (see Section 12). Once this database has reached a more advanced stage, standards focusing on the primary care setting will be developed. The way is being paved for this through the CSBS approval of the Quality Assurance programme developed by the Dumfries and Galloway MCN. This has standards which cover primary and secondary care.

Recommendation

- 13.12 The Task Force is fully supportive of the CSBS' current focus on secondary care aspects of CHD management. However, it recommends that, as soon as data collection systems permit, the CSBS turns its attention to the development of standards relating to the management of CHD patients within primary care.

14

STROKE SERVICES

Background

- 14.1 Stroke is a major cause of ill health in Scotland. Annually around 1,500 Scottish people suffer their first stroke, of whom 75% are aged 65 or more. Hospital-based linkages studies suggest an annual incidence of approximately 3 per 1,000. The major impact of stroke looks set to increase, with some estimates suggesting up to a 30% absolute increase in the number of patients experiencing a first stroke in 2010 compared with the rate in the early 1980s.
- 14.2 The Chief Scientist Office, in conjunction with Chest Heart and Stroke Scotland, has recently funded the Scottish Borders Stroke Study (SBSS). This study has demonstrated that incidence data on stroke can be measured routinely in a population when there is good co-operation between primary care, secondary care and social services. Errors in death certification of stroke, which were also measured, demonstrated that mortality data was flawed and implied that mortality could not be used accurately as a surrogate marker for incidence. However, currently mortality data is routinely used to inform primary prevention strategies. Lessons learnt from the SBSS should be used to advise other Health Boards on how to measure incidence accurately.

- 14.3 This Scottish study population has one of the highest incidences of stroke in the world. This is not due to an increased risk of stroke but to a greater proportion of the elderly in the study population. Analysis of the SBSS data with similar studies worldwide has provided a model that can estimate first ever stroke numbers to within 5% of current estimates. This model could be used to predict numbers of first-ever stroke cases in Scotland, using predicted calculations for the numbers of elderly, to inform provision.
- 14.4 Those at increased risk of CHD are also at increased risk of other forms of vascular disease, including stroke. Primary and secondary prevention programmes such as Have a Heart Paisley (HaHP) (Section 5), which aim to reduce risk factors for CHD at both individual and community level, should also have a beneficial effect on mortality from stroke, as demonstrated in the North Karelia Project.
- 14.5 The goal of health care for stroke patients is well expressed in SIGN Guideline 13 on the management of patients with stroke:
- reduce incidence by primary and secondary prevention;
 - reduce case fatality;
 - rehabilitate to achieve maximum function potential.

Stroke and the Task Force

- 14.6 A considerable amount of work has already been undertaken by other agencies in relation to stroke services, and for that reason the Task Force has concentrated on other aspects of its remit.
- 14.7 The work of other bodies includes the Cochrane Collaboration's systematic reviews of a number of aspects of stroke; research by the Clinical Standards Advisory Group on the clinical effectiveness of NHS services for patients suffering from stroke; the 4 SIGN Guidelines on different aspects of stroke, all of which are under review (Number 13: *Management of Patients with Stroke Part I: Assessment, investigation, immediate management and secondary prevention*; Number 14: *Management of Patients with Stroke Part II: Management of carotid stenosis and carotid endarterectomy*; Number 20: *Management of Patients with Stroke Part III: Identification and management of dysphagia*; and Number 24: *Management of Patients with Stroke Part IV: Rehabilitation, prevention and management of complications, and discharge planning*) and the two CRAG-funded National Audits of carotid endarterectomy and of stroke services. A further CRAG-funded study of secondary prevention of stroke in primary care will be completed during 2001. It is providing benchmarking and audit data and will ultimately be subsumed within the SPICE programme developed by the Royal College of General Practitioners and rolled out nationally if appropriate.

- 14.8 The predecessor of the CHD Task Force, the CHD/Stroke Priority Action Team, also looked at stroke services and made a number of recommendations, including the need for each Health Board to develop and implement a strategy for management of stroke patients.
- 14.9 Valuable information about the wishes of stroke patients themselves is available as a result of the work undertaken by Chest Heart and Stroke Scotland and the Scottish Association of Health Councils' study on Patients' and Carers' experiences of stroke services in Scotland. Patients believe present services are inadequate and poorly organised, resulting in unnecessary death and disability. The studies suggest that only about 50% of patients go through properly organised services, and that this results in between 300-500 unnecessary deaths each year, with many more patients left unnecessarily dependent and therefore an increased burden on carers.
- 14.10 Well organised stroke services, and in particular specialised stroke units, have been shown to reduce both mortality and morbidity. The key element of such units is expert multidisciplinary care provided through team working, preferably in a geographically-based setting which will allow regular team meetings. Many areas of the country do not currently meet this standard of service provision (although the chances of being admitted to a stroke unit in Scotland are around double that of stroke patients in England and Wales). The variation in care provided for stroke has been well documented in the CRAG National Audit and provides a basis for action and improvement.

Management of Suspected Stroke

- 14.11 Patients should have rapid access to inpatient and outpatient services. Those with minor symptoms which resolve quickly (transient ischaemic attack or TIA) should be seen in a fast track assessment clinic within two weeks. They should have a full medical assessment, including a CT scan and (if appropriate) Doppler ultrasound of carotids and echocardiography. Ideally, those investigations should be available at a "one stop clinic", although currently this is not feasible in all parts of the country. The initial visit should include a management plan, discussion with the patient (including discussion of risk factor reduction), and the start of any appropriate treatment.
- 14.12 Patients with major or persisting symptoms should have access to rapid inpatient assessment, preferably in a dedicated stroke unit staffed by a multidisciplinary team and providing specialist stroke rehabilitation.

- 14.13** It is recognised that such care may not be practical in remote and rural areas of Scotland. In these circumstances, the Task Force believes that patients should nonetheless be managed in a standardised fashion, using agreed protocols derived from SIGN Guidelines. The establishment of MCNs for stroke, linking small community hospitals and GPs with the nearest DGH or teaching hospital, would allow the development of such protocols. GPs would also be able to discuss the management of individual stroke patients being cared for in community hospitals or at home with senior hospital-based specialists.

Continuing Care and Rehabilitation

- 14.14** About 30% of survivors from stroke will be fully independent within three weeks and by six months around 50% will have achieved this. The first three months are critical in ensuring that the maximum potential for functional recovery is achieved.
- 14.15** Discharge planning should begin well in advance, with close involvement of the patient and carers. The same services as were provided in the acute phase need to continue, although it is recognised that the care of the patient may well be in a different location, such as a rehabilitation unit. Co-ordinated discharge planning in collaboration with primary care and local social services is essential.
- 14.16** Follow-up should be according to the needs and circumstances of the patient and should, whenever possible, be undertaken in the patient's home environment. Integrated early supported discharge schemes have been found to reduce length of stay without compromising outcome. There is also evidence that rehabilitation at home after initial management in hospital is preferred by some patients. Stroke units are now extending their boundaries to provide such services and this is to be encouraged. MCNs for stroke will have a crucial role to play in co-ordinating stroke rehabilitation wherever it is delivered. The key aim in this area must be to avoid a diffuse and uncoordinated approach to rehabilitation which has been shown to be associated with poor outcomes.

Stroke Managed Clinical Networks

- 14.17** A demonstration MCN for Neurology with particular reference to stroke is being taken forward by clinicians based at the Institute of Neurological Sciences (INS), South Glasgow University Hospitals NHS Trust and Wishaw Hospital, Lanarkshire Acute Hospitals NHS Trust. The overall aim of the pilot is to formalise the neurological input to stroke services across the Lanarkshire region. The Network is led by a neurovascular team based at the INS, including neurology, neuroradiology and neurosurgery staff.
- 14.18** The Network promotes collaboration among the many people involved in delivering services at various points of the stroke pathway, from health promotion and primary prevention, through acute investigation and treatment of patients with transient ischaemic attack, to acute hospital treatment for disabling stroke and secondary prevention. Teleradiology links will help select patients suitable for rapid

transfer from the Lanarkshire acute hospitals to the INS. The pilot is being evaluated over a two-year period. **The Task Force recommends that the lessons emerging from the demonstration pilot should inform the development of MCNs for stroke services in all other parts of the country.**

Potential Future Developments

- 14.19** The advent of thrombolytic therapy has revolutionised the management of AMI and greatly improved survival rates. Given that 80% of strokes or “brain attacks” are related to cerebral infarction associated with cerebral artery thrombosis, thrombolytic therapy for stroke is now being evaluated in the setting of clinical trials.
- 14.20** For thrombolytic therapy to have any chance of success, treatment needs to start within 5-6 hours of onset of symptoms. Prior CT scanning is a pre-requisite to exclude the diagnosis of cerebral haemorrhage as a cause of the stroke. Scanning access is currently difficult within this time span across much of Scotland.
- 14.21** Pilot studies examining both feasibility and benefit of this potential form of treatment are in place and should be completed and assessed before considering any more general introduction of the procedure.

Conclusion

- 14.22** Guidelines for the immediate and long-term management of stroke patients have been produced and will be reviewed and revised using the standard SIGN processes in due course. The views of the patient and their carers have been clarified by Chest, Heart and Stroke Association of Scotland. The CRAG audit has identified deficiencies in stroke service delivery which must be remedied.

Recommendations

- 14.23** The CSBS will in the near future be developing standards for stroke management as it has done for CHD. Once implemented, these will improve the standards of clinical care, but in the meantime the Task Force recommends the following:
- Health Boards should proactively support the development of MCNs for stroke services and use of clinical protocols based on SIGN Guidelines within those Networks;
 - Health Boards should review current provision of “one stop clinics” for assessment of TIA within 2 weeks of onset of symptoms, with a view to developing improved access to such clinics;

- MCNs should include a dedicated stroke unit serving a specific geographical area;
- MCNs should pay particular attention to the issues of integrated discharge planning (involving primary and secondary care and social services), and co-ordinated stroke rehabilitation, regardless of the setting in which this is delivered;
- the lessons emerging from the demonstration Neurology MCN pilot should inform the development of MCNs for stroke services in all other parts of the country.

15

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

- 15.1 As the Chief Medical Officer notes in his Foreword, this Report is being published as a consultative document by the Scottish Executive Health Department. In order to help translate the Report into a comprehensive CHD/Stroke Strategy for tackling these clinical priorities, comments on the Task Force's recommendations would be welcome. Copies of the Report are being circulated to interested bodies, who have until the end of December 2001 to submit their comments to the Department. The text of the Report is also available on <http://www.show.nhs.uk/sehd/publications/cdtf.htm>
- 15.2 The implementation of many of the Report's recommendations will require individuals, teams and organisations to work in different or new ways across organisations and health systems. In addition to the development of professional and technical skills to support the changes in service delivery, consideration must be given to the leadership and management development implications for individuals and teams.
- 15.3 In particular, each local health system should consider the needs of those responsible for implementing the CHD/Stroke Strategy. The Strategic Change Unit (SCU) has supported the establishment of Local Development Teams (LDT) in each health system. LDTs should ensure that their strategic development plan reflects the clinical priorities identified in this Report and the development needs of those implementing its recommendations.

- 15.4 The Task Force is aware that the Third Round of funding sponsored by the New Opportunities (NOF) will include bids for projects related to coronary heart disease and stroke. The Task Force welcomes the fact that this funding will be available, within the general rules governing NOF funding, to assist with implementation of the recommendations set out in this Report.

Summary of Recommendations

Equity of Access

- 15.5 Health Boards should give particular attention to the needs of more deprived and more geographically remote communities when planning services for CHD.
- 15.6 LHCCs should, through their involvement in Social Inclusion Partnerships (SIPs), develop innovative ways of encouraging patients who have symptoms suggestive of heart disease to consult their GP earlier rather than later.

Managed Clinical Networks

- 15.7 MCNs for Cardiac Services, consisting of a high level intervention Network and a series of supporting local diagnostic, investigation and treatment Networks, should be set up.
- 15.8 The generic lessons and management arrangements emerging from the MCN Pilot in Dumfries and Galloway should underpin all other local Network development.

Primary Prevention

- 15.9 Emerging lessons from Have a Heart Paisley and other primary prevention programmes be rolled out across Scotland as soon as possible following evaluation.
- 15.10 Smoking cessation interventions should be targeted at smokers of all ages.

Primary Care

- 15.11 Primary Care has an important role to play in disease prevention, heart failure, cardiac rehabilitation and aspects of the management of myocardial infarction. Cardiac services should now be integrated and delivered through MCNs. This will overcome the outdated division of services into primary and secondary care and develop services based on patient need, delivered in a setting most appropriate to local circumstances.
- 15.12 In primary care, the maintenance of a CHD database should be a mandatory element of the practice accreditation scheme.

- 15.13** Secondary prevention of CHD is a key issue for NHSScotland and must be a national priority. The use of secondary prevention drugs should be considered an inevitable development for the NHS and work undertaken so that appropriate resources are made available for drug costs and primary care staff to ensure that all patients who might benefit do so. LHCCs have a key role to play in this.
- 15.14** The model of intermediate care in cardiac services offers great potential but further work is required to build upon existing examples of good practice. This issue needs to be explored in a multidisciplinary manner rather than adopting a purely medical model.

Pre-Hospital Treatment

- 15.15** The timely provision of thrombolysis to patients suffering a myocardial infarction should be a matter of high priority for the health service throughout Scotland. In some areas this will necessarily involve pre-hospital care.
- 15.16** Health Boards should develop models of thrombolysis appropriate to local circumstances and delivered through local MCNs.
- 15.17** The RARARI-funded pilot project of the Scottish Ambulance Service should be invaluable in developing and evaluating the different models as well as providing a lead in implementation. Lessons from this project should be rolled out across Scotland.
- 15.18** Any organisation considering the introduction of first responder schemes incorporating AEDs must take account of the need for documented standards and ongoing medical oversight of the scheme.
- 15.19** Once outcome data is available from the DH initiative on siting AEDs in public places, and similar activity being undertaken by the British Red Cross, it may be appropriate to pilot the introduction of AEDs in parts of Scotland, taking account of the geographical variation north and south of the Border.

Heart Failure

- 15.20** Where open access echocardiography services are offered, there should be:
- clear indications identified for the investigation;
 - a simple request form but one which allows recording of sufficient clinical details to justify the investigation;
 - a structured reporting system which provides information in a form which GPs find useful.

- clarity on where ongoing clinical responsibility for the patient lies after the test is performed;
- space on the request form for GPs to indicate permission (or otherwise) for a clinical assessment of the patient if this is considered desirable based on the test result;
- clear communication between hospital and practices if an open-access service is provided, and, where appropriate, educational meetings to ensure optimal use of the service.

15.21 SIGN Guideline 35 on heart failure should be implemented in all Health Board areas.

15.22 Health Boards should recognise the significance of heart failure and include strategies to address this within their CHD Strategic Plans. Those strategies should ensure the adequate provision of echocardiography services suited to local circumstances. Ideally this should be a part of a one-stop specialist service but if this is not practical, then as an open access service for GPs.

15.23 Efforts should be made in primary care to ensure that patients who are thought to have heart failure are reviewed to ensure that the diagnosis is valid.

15.24 All patients who have proven heart failure should receive ACE inhibitors (unless there are contraindications) in addition to appropriate symptomatic treatment.

15.25 Provision needs to be made for palliative care services for patients with end stage heart failure. This should be an integral part of the palliative care MCNs that are being set up and there should be clear links with the local CHD networks as they develop.

15.26 Consideration should be given to establishing a national heart failure centre to co-ordinate and optimise management of those being considered for cardiac transplantation or other interventions.

Revascularisation

15.27 There should be a phased approach to increasing intervention rates from their current level of 989 (CABG and PTCA) pmp to a total intervention rate of 1,400 pmp over the next three years. The suggested levels are 700 CABG and 700 PTCA but it is recognised that PTCA may well be a larger proportion, especially as intervention in ACS increases. The situation needs to be kept under close review in view of:

- ongoing technological and pharmaceutical developments in the management of patients with CHD;

- the fact that in some areas the demand for interventions does not appear to be increasing as expected, given the burden of CHD in Scotland.

15.28 Considerations of equity of access mean that people in deprived communities should be considered as a priority for increased interventions.

15.29 The high level interventional Network should, as a matter of urgency, look at where and by whom coronary angiography and angioplasty are carried out, with a view to determining whether current and future needs will be met appropriately.

15.30 The additional interventions proposed should be undertaken through expansion of activity within the existing four cardiac surgery centres and 11 catheterisation laboratories.

Responsiveness of Services to Patients' Needs

15.31 The following action should be undertaken in order to achieve the desired two week waiting time target in this area:

- appointment of a minimum of two consultant cardiologists in each Acute Trust setting;
- Trusts to urgently review the design of traditional out-patient clinics to allow the consultant cardiologist to see all return patients, with the aim of reducing the number of unnecessary returns;
- Trusts to consider increased use of GP specialists to run rapid access chest pain clinics, employed at a rate which at least meets their locum expenses;
- SEHD to consider more rapid expansion of the ECCI project and use of protocol based referrals for patients with chest pain.

15.32 The removal of inequity of access to interventions requires:

- establishment of a national high level intervention Network by SEHD, coupled with active management of waiting lists;
- universal implementation of agreed standard referral letter from cardiologist to cardiac surgeon. SEHD to explore urgently the scope for electronic transfer of this data;
- there should be universal implementation of agreed standard criteria for priority for surgery.

15.33 A proportion of the recently-announced 375 new training posts should be allocated to cardiology. This recommendation should be taken into account as part of the fundamental review of medical workforce planning announced in *Our National Health: a plan for action, a plan for change*.

15.34 The proposed incremental increase in PTCA towards a target of 700 pmp could be achieved by:

- new cardiac catheterisation laboratories at the Royal Infirmary and Western General, Edinburgh;
- increase in activity in Glasgow by re-allocation of sessions and/or appointment of an additional interventional cardiologist;
- making full use of cardiac catheterisation laboratories at Hairmyres, Lanarkshire;
- continuing expansion of intervention at Aberdeen Royal Infirmary;
- the high level intervention Network should examine the case for undertaking PTCA at Ninewells.

Cardiac Rehabilitation

15.35 NHS Boards should, as part of their CHD Strategy, plan to commission services to deliver CR in accordance with the forthcoming SIGN Guideline, and integrated with the local MCN for cardiac services.

15.36 The setting for delivering rehabilitation should be that most suitable to local circumstance and can safely include community settings outwith health service premises for Phase III and Phase IV. CR can appropriately be offered by primary or secondary care staff but in either case there should always be good communication between staff.

15.37 There is a need for audit in CR and this will require improved IT systems. There should be an agreed common Scottish dataset linked to the national CHD database, which will allow comparison of outcomes.

15.38 Health care professionals involved in the provision of CR services should have the appropriate knowledge and skills, and specialist post registration education relevant to CR should be available on a national basis.

15.39 Angina, post cardiac intervention and heart failure are now regarded as likely indicators for CR, but both quantitative and qualitative evidence are limited and further research is required. The Chief Scientist Office should consider commissioning such research.

15.40 Additional resources will be required to allow the provision of CR to all groups who may benefit.

National Database

15.41 The new national database should be made up of the following elements linked electronically:

- new primary care-based database with electronic links to secondary (and tertiary) care; (see recommendation in para 6.5)
- Scottish Cardiac Surgery Database;
- Scottish Coronary Angioplasty Database;
- Scottish Coronary Angiography Database;
- hospital SMR1 Dataset and elements of the SMR20 Dataset;
- proposed database for cardiac rehabilitation.

15.42 Continuing priority be given by SEHD and ISD to the full integration of existing CHD databases to develop a truly National Database. The Task Force believes that this is fundamental to the successful implementation of this Report. In the meantime:

- ISD should provide a costed proposal for integration of existing databases by December 2001.

15.43 The minimum dataset should be employed universally across Scotland in order not to compromise the quality of data generated by the National Database.

Standards

15.44 The Task Force is fully supportive of the CSBS's current focus on secondary care aspects of CHD management. As soon as data collection systems permit, the CSBS should turn its attention to the development of standards relating to the management of CHD patients within primary care.

Stroke

15.45 Health Boards should proactively support the development of MCNs for stroke services and use of clinical protocols based on SIGN Guidelines within those networks.

15.46 Health Boards should review current provision of 'one stop clinics' for assessment of TIA within two weeks of onset of symptoms, with a view to developing improved access to such clinics.

15.47 MCNs should include a dedicated stroke unit serving a specific geographical area.

15.48 MCNs should pay particular attention to the issues of integrated discharge planning (involving primary and secondary care and social services), and co-ordinated stroke rehabilitation, regardless of the setting in which this is delivered.

15.49 The lessons emerging from the demonstration Neurology MCN pilot should inform the development of MCNs for stroke services in all other parts of the country.

APPENDIX 1

Task Force Sub-Groups

Task Force Sub-Groups

Database Sub-Group

Remit:

To develop a national database based on routine patient management data in primary care, drawing on existing datasets and work currently in progress on CHD data collection as appropriate.

Membership

Dr A Keel, Scottish Executive Health Department, Chairman
 Dr C D Baker, General Practitioner, Canonbie
 Professor S Capewell, Chair of Clinical Epidemiology, University of Liverpool
 Dr J Chalmers, Consultant in Public Health Medicine, ISD
 Mr M Irvine, GPASS Development Director
 Dr C Isles, Consultant Physician, Dumfries and Galloway
 Dr M Lough, Airdrie Health Centre
 Dr J Pell, Consultant in Public Health Medicine, Glasgow
 Mr A. Redpath, Statistician, ISD
 Dr S Pringle, Consultant Cardiologist, Dundee
 Mr A Walker, Health Economist, Glasgow
 Mr W S Scott, Scottish Executive Health Department

Needs Assessment Sub-Group

Remit:

To identify the burden of CHD in the community in light of the recommendations in the SIGN Guideline on Coronary Revascularisation in the Management of Stable Angina Pectoris in order to:

- i. advise the Task Force on the appropriate/optimal target rate per million population for CABGs in Scotland; and
- ii. ascertain the optimal target rate for coronary angioplasty in Scotland.

In order to achieve the objective, the group should take into account the following factors:

- deprivation indices;
- the incidence and prevalence of angina;
- access to investigative procedures ; and
- access to interventional procedures.

Membership

Professor A R Lorimer, Chairman
 Dr N A Boon, Clinical Director Cardiology, Edinburgh
 Dr A Findlay, Consultant in Public Health Medicine, Fife Health Board
 Dr C Morrison, Consultant in Public Health Medicine, Greater Glasgow Health Board
 Dr K Jennings, Consultant Cardiologist, Aberdeen
 Dr M Taylor, Director of Postgraduate General Practice Education, University of Aberdeen
 Dr A Keel, Scottish Executive Health Department
 Mr W S Scott, Scottish Executive Health Department

Waiting List Sub-Group**Remit:**

To review deaths on the waiting list, priority for surgery and assess equity of access.

Membership

Professor A R Lorimer, Chairman
 Dr N A Boon, Clinical Director Cardiology, Edinburgh
 Mr K Davidson, Consultant Cardiac Surgeon, Glasgow
 Mr A Faichney, Consultant Cardiac Surgeon, Glasgow
 Dr I Hutton, Consultant Cardiologist, Glasgow
 Mr R Jeffrey, Consultant Cardio-thoracic Surgeon, Aberdeen
 Dr K Jennings, Consultant Cardiologist, Aberdeen
 Mr J D McArthur, Consultant Cardiologist, Glasgow
 Mr P Mankad, Consultant Cardiac Surgeon, Edinburgh
 Dr I Starkey, Clinical Director of Cardiology, Edinburgh
 Professor D Wheatley, Professor of Cardiac Surgery, Glasgow

The Group devised a standard form of categorisation of patients on the waiting list for cardiac surgery in Scotland, based on their clinical condition, and a standard referral letter.

CHD Accreditation Steering-Group**Remit:**

- i. to develop standards for the treatment of coronary heart disease and to consult widely with relevant health care professionals and lay people to achieve wide acceptance of these standards;
- ii. to plan and oversee the process of external peer review of performance in NHSScotland in relation to these standards;
- iii. to report the conclusions of the external peer review nationally and locally to the Clinical Standards Board for Scotland (CSBS).

Membership

Professor A R Lorimer, Chairman
 Dr M Barlow, Associate Specialist in Cardiology, Glasgow
 Ms J Bennett, Chest Heart and Stroke Scotland
 Mrs M Bennie, Consultant in Pharmaceutical Public Health, Edinburgh
 Dr J Chalmers, Consultant in Public Health Medicine, ISD
 Ms M Durie, Member, Clinical Standards Board for Scotland
 Mr A Faichney, Consultant Cardiac Surgeon, Glasgow
 Dr C Isles, Consultant Physician, Dumfries and Galloway
 Dr A Keel, Scottish Executive Health Department
 Dr S Lynch, General Practitioner, Calsayseat Practice, Aberdeen
 Mr T Reilly, Lanarkshire Health Council
 Mr W S Scott, Scottish Executive Health Department
 Ms M Thow, Department of Physiotherapy, Glasgow Caledonian University
 Mr A Todd, Patient, Edinburgh
 Professor D Wheatley, Professor of Cardiac Surgery, Glasgow
 Sister M White, Cardiac Rehabilitation Unit, Paisley

Waiting Times Sub-Group**Remit:**

To consider how to achieve a waiting time of two weeks for rapid assessment of patients presenting with ischaemic pain whom the GP thinks need to be seen immediately or within a maximum of two weeks timescale.

Membership;

Dr A Keel, Scottish Executive Health Department, Chairman
 Dr A Bridges, Consultant Cardiologist, Stirling
 Dr C Burton, General Practitioner, Sanquhar
 Dr D Davidson, General Practitioner, Paisley
 Dr J Donald, Primary Care Referral Adviser, Edinburgh
 Dr F Dunn, Consultant Cardiologist, Glasgow
 Dr B Green, Consultant Cardiologist, Dundee
 Dr A Hargreaves, Consultant Cardiologist, Falkirk
 Dr I Hunter, General Practitioner, Polmont
 Dr R Liddell, General Practitioner, Turriff
 Dr D Murdoch, Consultant Cardiologist, Glasgow
 Mr W S Scott, Scottish Executive Health Department

Horizon Scanning Sub-Group

Remit:

To consider cardiological developments over the next decade, specifically drug therapy, imaging technologies and interventions.

Membership:

Professor A R Lorimer, Chairman

Dr F Dunn, Consultant Cardiologist, Glasgow

Professor H Dargie, Consultant Cardiologist, Glasgow

Professor K Fox, Professor of Cardiology, Edinburgh

Mr R Jeffrey, Consultant Cardio-thoracic Surgeon, Aberdeen

Dr M Metcalfe, Consultant Cardiologist, Aberdeen

Professor P Macfarlane, Professor of Electrocardiography, Glasgow

Dr S Pringle, Consultant Cardiologist, Dundee

APPENDIX II

AMI Deaths in Scotland

Acute Myocardial Infarction Deaths in Scotland

Directly standardised¹ mortality ratios by age (15+) deprivation category

Age Group	Deprivation Category	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	% decline 1990-1999
Males												
15-64	1&2	84.1	82.4	65.0	60.5	61.0	53.1	46.0	49.7	41.8	42.9	-49.0
	3&4	109.6	101.8	110.5	96.9	82.1	76.1	71.0	69.2	69.0	64.5	-41.1
	5,6&7	138.9	138.8	134.2	133.6	105.9	100.1	88.5	87.2	89.1	78.8	-43.3
	Odds ratio 5-7 vs 1-2	1.65	1.69	2.06	2.21	1.73	1.89	1.92	1.75	2.13	1.84	
65+	1&2	1508.4	1527.1	1467.5	1530.5	1319.3	1327.5	1253.3	1163.6	1152.5	1093.2	-27.5
	3&4	1470.8	1723.9	1664.9	1645.2	1519.1	1457.9	1458.6	1252.7	1294.9	1299.6	-25.3
	5,6&7	1791.8	1744.3	1710.1	1699.2	1569.4	1504.4	1435.1	1422.4	1312.4	1363.7	-23.9
	Odds ratio 5-7 vs 1-2	1.19	1.14	1.17	1.11	1.19	1.13	1.15	1.22	1.14	1.25	
Females												
15-64	1&2	23.2	22.8	16.8	20.9	17.2	18.9	16.3	11.4	10.1	8.9	-61.8
	3&4	37.2	35.7	31.3	26.6	24.9	24.1	20.9	20.4	20.3	19.3	-48.1
	5,6&7	54.3	56.0	49.0	44.8	38.3	37.1	28.4	30.1	29.0	28.4	-47.7
	Odds ratio 5-7 vs 1-2	2.34	2.46	2.91	2.15	2.22	1.97	1.74	2.64	2.88	3.21	
65+	1&2	895.5	808.32	853.51	810.8	708.36	744.01	648.74	595.14	594.02	594.2	-33.6
	3&4	968.69	999.35	945.53	934.8	839.09	800.1	745.93	692.33	687.9	647.21	-33.2
	5,6&7	1032.71	1078.41	1026.77	1069.71	887.65	899.92	811.39	814.32	768.81	746.93	-27.7
	Odds ratio 5-7 vs 1-2	1.15	1.33	1.20	1.32	1.25	1.21	1.25	1.37	1.29	1.26	

¹ Directly standardised using 1991 census population figures

Source: General Registrar's Office for Scotland

APPENDIX III

CABG, PTCA by Deprivation

CABG, PTCA and Angiographies, Ratio of Procedures Performed to Expected DEPCAT, Scotland 1998-99

		Deprivation Category								All categories
		1	2	3	4	5	6	7		
Angiography	Males	45-64	176.8	131.4	102.5	90.4	88.9	84.4	107.4	100
		65-74	200.6	123.7	101.5	97.9	89.3	70.8	87.9	100
		75+	139.1	101.2	99.1	88.8	107.1	96.2	101.2	100
		All Ages	180.3	126.9	103.2	91.9	89.4	80.0	105.9	100
	Females	45-64	201.8	100.8	109.1	94.4	92.2	90.8	102.2	100
		65-74	162.9	127.4	107.3	89.9	81.2	96.7	100.7	100
		75+	182.3	96.9	100.8	97.5	88.2	74.1	117.2	100
		All Ages	168.3	107.5	109.8	93.4	86.4	95.1	102.1	100
PTCA	Males	45-64	199.3	151.0	126.1	80.7	98.3	67.8	78.9	100
		65-74	181.8	108.7	137.0	91.8	94.3	50.3	54.6	100
		75+	196.0	130.6	93.0	82.6	132.7	55.5	27.6	100
		All Ages	182.0	134.4	131.2	83.3	96.8	61.6	79.7	100
	Females	45-64	110.1	87.7	149.4	80.2	103.0	109.4	71.2	100
		65-74	189.1	112.3	97.8	118.3	85.6	67.2	84.3	100
		75+	185.2	62.2	119.7	101.3	129.1	55.5	27.7	100
		All Ages	158.7	93.2	127.0	93.8	98.8	87.0	78.1	100
CABG	Males	45-64	207.1	148.9	106.6	81.2	102.0	79.2	90.5	100
		65-74	240.0	112.5	106.2	94.6	86.1	88.0	57.3	100
		75+	153.6	77.6	114.5	74.6	116.1	108.3	113.1	100
		All Ages	209.1	129.9	109.3	84.4	95.7	82.1	81.3	100
	Females	45-64	162.2	119.7	123.1	73.7	97.1	113.9	88.6	100
		65-74	123.1	107.0	108.5	97.2	104.3	90.2	79.0	100
		75+	211.8	129.5	63.8	89.6	96.0	107.9	104.4	100
		All Ages	154.7	113.3	109.5	84.5	99.8	101.4	86.2	100

Source: ISD Scotland

Note 1: CABG & PTCA figures include operations carried out at Ross Hall (NHS and private) and HCI (NHS).

Note 2: Population data used – 1991 census resident population, source GRO(S)

APPENDIX IV

CABG, PTCA by Health Board of Residence

CABG, PTCA and Angiography – Ratio of Procedures Performed to Expected by HB of Residence, 1998-99

		Scotland	Argyll & Clyde	Ayr & Arran	Borders	Dumf. & Gall.	Fife	Forth Valley	Grampian	Glasgow	Highland	Lanarkshire	Lothian	Orkney	Shetland	Tayside	Western Isles	
Angiography	Male	45-64	100	89.3	68.0	118.5	67.3	116.0	75.1	159.0	116.7	98.6	78.5	123.0	68.5	65.2	96.7	43.3
		65-74	100	94.8	64.2	144.0	83.7	84.8	83.3	143.2	112.0	115.1	72.9	155.8	27.3	102.1	66.2	47.8
		75+	100	88.0	69.8	121.5	67.0	63.8	44.3	121.5	134.7	53.2	100.7	177.0	61.2	0.0	58.8	27.7
		All ages	100	91.3	68.9	126.0	73.3	101.9	75.0	150.0	117.1	103.3	76.0	136.9	53.0	67.4	83.1	47.5
	Female	45-64	100	106.1	63.4	134.1	78.0	94.4	123.0	130.1	115.0	115.0	82.1	118.0	95.3	152.4	61.2	121.3
		65-74	100	94.5	56.5	96.1	79.3	64.1	86.9	149.2	133.1	100.7	67.1	155.0	39.0	94.4	57.1	52.8
PTCA		75+	100	62.7	39.5	278.7	57.6	63.8	100.4	91.9	152.2	32.3	63.9	169.4	0.0	78.0	63.8	71.7
		All ages	100	96.6	59.1	157.3	76.8	80.3	102.2	132.6	121.2	101.1	75.9	141.3	32.5	139.3	64.9	80.0
	Male	45-64	100	60.9	62.3	90.8	58.9	118.8	77.5	67.5	80.8	138.0	120.5	187.9	154.3	131.1	86.7	71.9
		65-74	100	53.8	38.6	205.7	65.5	103.4	78.7	72.9	71.7	123.9	119.7	231.7	67.1	147.6	60.8	0.0
		75+	100	65.5	34.1	124.7	0.0	90.3	30.5	37.3	25.1	106.3	106.2	411.2	0.0	0.0	43.0	0.0
		All ages	100	60.6	51.6	126.3	67.4	114.3	74.7	68.6	76.1	135.0	121.6	204.6	106.5	116.0	76.6	63.6
Female	45-64	100	74.8	47.3	113.7	128.4	125.6	125.6	95.5	70.0	72.5	202.1	127.5	164.3	116.5	0.0	71.7	137.8
	65-74	100	63.7	37.0	114.7	77.8	131.6	107.8	107.8	96.6	78.8	112.1	129.7	188.7	0.0	0.0	57.1	139.3
	75+	100	36.3	20.1	0.0	0.0	126.6	64.9	64.9	43.8	54.1	87.1	112.8	390.2	0.0	0.0	31.2	0.0
		All ages	100	66.8	41.5	101.0	89.0	126.7	93.3	77.3	76.1	155.5	123.5	192.0	51.6	0.0	65.2	129.3
	Male	45-64	100	108.5	78.9	72.8	49.2	135.3	86.9	131.2	136.8	75.0	73.7	76.8	18.7	168.1	124.7	32.9
		65-74	100	103.2	72.5	74.7	112.5	99.0	80.1	136.1	116.3	90.4	76.6	123.5	37.3	203.1	80.0	93.3
CABG		75+	100	64.1	111.2	150.8	81.2	102.5	53.8	127.0	158.9	36.3	91.6	79.6	0.0	0.0	91.7	75.7
		All ages	100	102.9	77.5	83.3	74.2	118.8	81.7	132.3	130.2	79.3	75.7	94.9	21.9	158.7	104.3	67.4
	Female	45-64	100	110.7	95.5	52.4	96.5	58.4	96.5	101.1	146.3	73.2	95.5	69.9	235.9	141.5	61.2	64.3
		65-74	100	135.0	79.5	77.5	84.7	90.2	85.2	118.3	111.8	74.2	103.0	109.9	0.0	91.3	69.7	0.0
		75+	100	61.8	34.1	0.0	49.7	94.4	27.3	163.6	190.9	0.0	105.9	107.6	0.0	0.0	78.6	0.0
		All ages	100	115.9	83.9	58.3	85.5	76.2	82.2	116.1	133.7	64.7	100.0	95.7	43.4	97.6	68.5	23.9

Source: ISD Scotland

Note 1: CABG & PTCA figures include operations carried out at Ross Hall (NHS and private) and HCI (NHS).

Note 2: Population data used – 1998 mid year GRO estimate.

APPENDIX V

CALCULATION OF NEED

Calculation of Need

Overall Need by Comparisons

The English National Services Framework and Joint Working Group Method

According to the Joint Working Group on Coronary Angioplasty (JWG) the National Services Framework (NSF) target was expected to be around 550 per million for England and Wales¹. (The UK rate in 1996 was 359 per million.) The actual NSF document² refers to an expectation that the Framework will lead to an increase in the national rate to over 750 per million for angioplasty and a similar rate for CABG, with variations according to need by Health Authority (HA).

The JWG estimated that a national target of 550 per million would imply a variation in provision from those with least need (as measured by the crude CHD death rate) of 400-450 per million to 800-850 per million for the HAs in England and Wales with the most need - ie, highest crude rates of CHD mortality. The JWG postulates a ratio of 1:1 PTCA:CABG.

The range of crude CHD death rates in England for 1996-98 is from 348 per 100,000 for the Isle of Wight to 120.8 for Kensington and Chelsea and Westminster. The equivalent range in Scotland is from 363.3 for the Western Isles to 231.9 for Grampian. The overall Scottish rate is much higher than the English rate - 262.1 in 1998 compared to 227.2 for England. Figures for 1996-98 show that in Scotland 48% of the population live in Health Board (HB) areas with crude CHD death rates equivalent to or higher than the 10% of HA in England with the highest rates.

According to the JWG the range in PTCA rates for England, given an overall rate of 550 per million, should be from 400 per million in the HA with the lowest rate of CHD mortality to 850 in the HA with the highest mortality. If we assume a straightforward proportional relationship between mortality rates and the intervention rate required, then a formula for a 'recommended' intervention rate for any HA can be calculated derived from its crude death rate. However, the use of the outlying values makes the calculation subject to extreme values. The average for the top and bottom 3 HAs has been used to calculate the range - ie, 318.4 per 100,000 for Isle of Wight, Rotherham and North Cumbria and 145.2 for Croydon and Lambeth, Southwark and Lewisham, and Kensington and Chelsea and Westminster.

The formula is of the type $y = mx + c$ where:

- y = the dependent variable - ie, the predicted or 'recommended' intervention rate;
- m is a constant - the slope of the line equal to the range in intervention rates expected by the JWG (850 minus 400 = 450) divided by the range in death rates (318.4 minus 145.2) - ie, 2.598;

1 Joint Working Group on Angioplasty, 'Coronary angioplasty: guidelines for good practice and training' Heart, 2000, 83, pp 224-235.

2 National Service Framework for coronary heart disease - Section 5 - revascularisation, Department of Health, 2000, p 13.

- x is the difference between the death rate for the HA and the lowest HA death rate in England - ie, HA/HBA rate - 145.2;
- c is the lowest intervention rate recommended by the JWG - ie, 400 pmp.

The same formula can be applied to each Scottish Health Board area using the crude CHD death rates for a similar period (1996-98) to work out the 'recommended' level of intervention. The calculation results in a recommended figure of 3601, or 704 pmp - see Table 1.

If we apply the increase in CABG suggested by the NSF - ie, from 550 to 750 or a 36.3% increase - the equivalent target for Scotland would be 4,910 CABG - ie, 1.363 times 3601. This is equivalent to an intervention rate of 957 per million.

Table 1: Scotland - CHD Mortality Rate 1996-8

Indicates actual CABG and PTCA rates and possible future requirements for CABG and PTCA procedures.

Number of CABG and PTCA operations equivalent to English operation rates at i) 550 pmp and ii) 750 pmp.

	Crude CHD Mortality Rate 1996-98	n CABG equiv. to English 550 p.m.	n of CABG ops equiv. to English 750 p.m.	Actual Number of CABG 98/99	n PTCA equiv. to English 550 p.m.	n of PTCA ops equiv. to English 750 p.m.	Actual Number of PTCA 98/99
Argyll & Clyde	301.6	325	443	290	325	443	128
Ayrshire & Arran	306.4	289	394	214	289	394	87
Borders	269.4	74	101	38	74	101	56
Dumfries & Gall.	308.5	114	155	72	114	155	48
Fife	274.4	246	335	166	246	335	157
Forth Valley	251.0	181	247	145	181	247	97
Grampian	231.9	327	447	309	327	447	138
Greater Glasgow	290.8	669	913	675	669	913	328
Highland	260.2	141	192	76	141	192	120
Lanarkshire	286.1	408	556	333	408	556	348
Lothian	243.7	496	676	295	496	676	580
Orkney	288.9	14	20	3	14	20	6
Shetland	242.2	15	20	18	15	20	7
Tayside	275.8	277	378	203	277	378	139
Western Isles	363.3	25	34	12	25	34	13
Scotland	273.8	3601	4910	2849	3601	4910	2252

Note 1: Number of operations includes both NHS and private patients treated at Ross Hall and HCI hospitals.

DEPCAT 1& 2 level of provision

As discussed in Section 3, the relationship between operation rates and deprivation in any age sex group does not reflect the strong relationship between Acute Myocardial Infarction (AMI) mortality and deprivation³. CHD intervention rates are higher in less deprived populations. This does not mean that there are unnecessary procedures in less deprived populations. There is firm evidence (based on audit of data from the Scottish Cardiac Surgery and Scottish Coronary Angioplasty Registers) that SIGN Guidance 32 '*Coronary Revascularisation in the Management of Stable Angina Pectoris*' is being implemented and that patients are being selected appropriately for revascularisation. In other words, patients in less deprived groups are not being over treated.

If we assume the level of provision of CABG and PTCA for DEPCAT 1 & 2 is appropriate we can calculate the equivalent number of procedures for the other DEPCATs by applying the ratio of actual to expected⁴ procedures to the expected numbers for the whole country. This yields an estimated need for CABG of 4091 procedures (799 pmp) and for PTCA of 3037 (593 pmp).

Table 2: Numbers of CABG and PTCA procedures at level of provision to need in DEPCAT 1&2

	Actual CABG*	CABG at depcat 1&2	Actual PTCA*	PTCA at depcat 1&2
Argyll & Clyde	290	393	128	276
Ayrshire & Arran	214	389	87	244
Borders	38	71	56	64
Dumfries & Galloway	72	135	48	87
Fife	165	219	157	180
Forth Valley	145	255	97	162
Grampian	307	344	138	261
Greater Glasgow	675	740	327	580
Highland	76	143	119	114
Lanarkshire	333	585	347	383
Lothian	295	446	579	390
Orkney	3	16	6	9
Shetland	18	17	7	11
Tayside	203	307	139	258
Western Isles	12	29	12	19
Scotland	2846	4091	2247	3037

Source: ISD Scotland

³ See 'Access and needs assessment' Section of report.

⁴ See 'Access and needs assessment' Section of report. Expected procedures were calculated by multiplying the national age sex specific operation rates by the population in question - e.g males 45-64. This was then adjusted for need by multiplying by the ratio of the population's crude AMI mortality rate to the Scottish rate.

Early Interventions for ACS in Scotland 1998/99

Figures from the Scottish Cardiac Surgery and PTCA databases provide the following numbers of interventions for ACS:

- CABG - 624 (68 had AMI in week before surgery)
- PTCA - 1,250
- Total - 1,874⁵

This represents an intervention rate in Scotland for ACS of 8.9% - i.e. 1874 out of 22,000 patients.

ENACT Study

The ENACT study⁶ reviewed clinical practice in Europe in terms of management of ACS. The study showed that there was a wide range of intervention rates in Europe. However, on average, for every 100 patients presenting with ACS there would be 30 coronary angiograms (CAs) and 23 interventions (PTCA and CABG) with PTCA the more frequent intervention.

The possibilities for Scotland, if we corresponded to Europe would be as follows:

- 22,000 ACS emergency admissions;
- 30% would have CA = 6,600;
- 23% would have intervention = 5,060.

Assuming a probable ratio of 2 to 1 for PTCA to CABG Scotland would need 1,687 CABG (instead of 624) and 3,373 PTCA instead of 1,250.

These potential numbers depend on whether or not early intervention post myocardial infarction/unstable angina becomes established. It should be noted that many European centres such as France and Germany have considerably higher rates of intervention. The numbers above are possibly conservative.

Primary Care Referrals

We have used Wood's data from Southampton to estimate the number of primary care referrals for investigation and intervention. Wood showed that the incidence of angina amongst those aged 31-70 was 1.13% for men and 0.53% for women. This equates to 1.6% for Scottish men and 1.0% for Scottish women.⁷ The numbers of incident cases for the Scottish 1999 population⁸ is as follows:

- men - population is 1,284,071 at 1.6% = 20,545
- women - population is 1,339,414 x 1.0% = 13,394.

⁵ From Dr Jill Pell, GGHB.

⁶ European Heart Journal 2000, 21 1440-9.

⁷ Private communication from Dr Caroline Morrison, GGHB.

⁸ GRO(S) mid year population estimate for ages 30-69.

If we assume that all incident cases are referred (unlikely) then we will have 33,939 referrals. McMurray and Hutton both suggest that the CA rate is the same for men and women at 20% of referrals - ie, 4,109 men and 2,679 women or 6,788 in total. If we then assume a 60% re-vascularisation rate in men and 40% re-vascularisation in women, due to their different anatomy, then we will have 2,465 men and 1,072 women revascularised - 3,537 in total. If the PTCA:CABG ratio is 1:1 then we need 1,769 PTCA and 1,769 CABG. If the PTCA:CABG ratio is 2:1 then we need 2,358 PTCA 1,179 CABG.

However, as 100% of referrals is unlikely, if we assume 60% of incident cases are referred⁹ then the calculations would be as follows:

- incident cases 20,545 men and 13,394 women
- 12,327 male and 8,036 female referrals
- if 20% are given CA - 2,465 male and 1,607 female CAs
- at a 60% re-vascularisation for men = 1,479
- and 40% re-vascularisation for women = 643
- total re-vascularisation = 2,122
- if PTCA:CABG = 1:1 then 1,061 PTCA and 1,061 CABG
- if PTCA:CABG = 2:1 then PTCA = 1,415 and 707 CABG

Summary table of possible scenario for elective procedures - 60% of incident cases referred and 20% of these get CA and revascularisation of these is 60% for men and 40% for women:

Ratio of PTCA:CABG =1:1

Procedure	Number of Procedures	Rate per million
CABG	1,061	207
PTCA	1,061	207
Total	2,122	414

Ratio of PTCA:CABG =2:1

Procedure	Number of Procedures	Rate per million
CABG	1,415	276
PTCA	707	138
Total	2,122	414

CORONARY REVASCULARISATION IN SCOTLAND

Acute Coronary Syndrome

	Current Scotland* (from Dr Pell's database)	A Using ENACT Data 23% Interventions all to PTCA	B Using ENACT Data 23% Interventions PTCA2: CABG1
CABG	624	-	1,687
PTCA	1,250	5,060	3,373
Total	1,874	5,060	5,060

Primary Care Elective Referrals

	Current Scotland	Potential 100% Referrals CABG1:PTCA1	Potential 100% Referrals CABG1:PTCA2	Potential 60% Referral CABG1:PTCA1	Potential 60% Referral CABG1:PTCA1
CABG	1,891	1,769	1,179	1,061	707
PTCA	1,300	1,769	2,358	1,061	1,415
Total	3,191	3,537	3,537	2,122	2,122

* Source: Scottish Cardiac Surgery Register and Scottish Angioplasty Register

APPENDIX VI

Rapid Access Chest Pain Clinic Questionnaire

Rapid Access Chest Pain Clinic Questionnaire

TRUST NAME:

1. How frequently does the clinic operate?

Sessional (no. of sessions per week)

☐

Daily

☐

Other (please specify)

2. What is the staffing commitment to the clinic?

	Please specify the number of sessions undertaken per week for each member of staff (space has been provided for up to 8 members of staff for each grade)							
Consultant								
SpR								
SHO								
Staff Grade								
Clinical Assistant								
Technician								
Other								

3. Please tick the tests routinely available as part of the clinic from the list below:

ETT with a clinical opinion

☐

ETT without a clinical opinion

☐

ECG

☐

Blood Tests

☐

4. Who provides a clinical opinion on the tests?

5. What is the current maximum waiting time?.....

6. How do GPs make referral to the clinic?.....

Referral protocol/proforma

☐

Telephone

☐

E-Mail

☐

Letter

☐

Other (please specify)

APPENDIX VII

Prioritisation Criteria

Prioritisation Criteria

EMERGENCY

Level 1 This is a small group encompassing problems encountered during PTCA or coronary angiography, or as a complication of acute myocardial infarction.

Ideal time – as soon as possible

Acceptable time – within 24 hours

URGENT

Level 2 Many in this group will never have appeared on a waiting list, but will have been admitted acutely. Alternatively, they may also have been on the elective waiting list but have suddenly deteriorated.

Criteria

- Unstable and in hospital with continuing chest pain despite appropriate therapy, or with critical underlying disease, such as left main stenosis > 75% associated with severe symptoms. There should be documented ECG evidence of ischaemia and biochemical evidence such as troponin levels should be taken into consideration.
- Intervention should be undertaken as soon as possible after the decision to proceed, and the patient should not leave hospital. (For such patients, PTCA may be the intervention of choice rather than CABG. PTCA of a culprit lesion may obviate the need for surgery or may allow elective CABG at an appropriate time).

Ideal time – 5 working days

Acceptable time – 2 weeks

PRIORITY

Level 3

Criteria

- Symptoms despite maximal medical therapy. Three vessel proximal disease.
- Exercise test positive at Stage I of standard Bruce Protocol or more than 3mm ST depression at 6 minutes and/or significant reversible perfusion defect on nuclear imaging. Left ventricular (LV) function normal or only slightly impaired.
- Note myocardial revascularisation in the presence of severely impaired LV function shows promise but requires an evidence base.

Ideal time – 6 weeks

Acceptable time – 3 months

ELECTIVE

Level 4

Criteria

- Severe symptoms despite maximal medical therapy. Three vessel disease where long term prognosis will be improved by surgery.
- Exercise test positive Stage II or III and/or significant perfusion defect on nuclear imaging.

Ideal time – 3 months

Acceptable time – 6 months

Level 5

Criteria

- Patients who have 1 or 2 vessel disease not amenable to PTCA and who have continuing symptoms despite medical therapy. Positive exercise test Stage II or III and/or reversible perfusion defect.

Ideal time – 6 months

Acceptable time – 6 months

APPENDIX VIII

Standard Referral Letter

Standard Referral Letter

Patient:
 Address:

Surgeon:
 Cardiologist:
 Physician:

DOB: / / Age:
 Hosp ID: Sex:
 Phone:

Priority: Priority Elective
 Urgent
 Reason:

Reason for Referral

Coronary Disease	Mitral Stenosis	Arrhythmia
LV Aneurysm	Mitral Incomp	Pacemaker
VSD (post infarct)	Aortic Stenosis	Transplant
Aorta An/Dissn	Aortic Incomp	Endocarditis

Proposed Operation:

History Examination

Prev Card Surgery Specify:
 Prev Angioplasty Within 1/12 T'lysis No prev Mis Date of Last MI:
 Unstable angina Within 1/12 CCF Dyspnoea > angina NYHA grade
 Hypertension P Vasc Dis Pacemaker On dialysis
 Diabetes Dyspepsia COAD/Asthma Smoker within 12/12
 H/O CVA/TIA Dizzy/Syncope Carotid Bruit (R) Carotid Bruit (L)
 VVs - R VVs - L
 Height: cm Weight: K Heart Rhythm: BP: /
 Medications: Aspirin Oral Nitrate Beta Blocker Ace Inhibitor
 Warfarin IV Nitrate Ca Antagonist Nicorandil

Other Comments:

(eg other conditions)

Investigations

Hb	Hct	Creatinine	Blood Group	Antibodies
ETT:	Positive	Strongly +ve		
LV:	Normal	Impaired	Poor	LVEDP:
CAD:	L Main	LAD	Prox LAD	Diagonal
{ Stenosis } { >50% }	CX	OMI	OM2	Intermediate
	RCA	PDA		
Valve:	AV Gradient:	AV Regurn (>mild)	PAP:	
	MV Gradient:	MV Regurn (>mild)		
	Other:			

DEFINITIONS USED IN STANDARD REFERRAL LETTER

DEMOGRAPHICS:	Addressograph acceptable - must include Name, Address, Date of Birth, Age, Sex and Telephone Number. CHI Number?
MEDICAL STAFF:	Surgeon - to whom patient being referred (if not spec will be to shortest WL) Cardiologist - responsible for preop investigation incl Cardiac Cath Physician - other consultant making referral for cardiology assessment.
PRIORITY:	Follow CHD Task Force Guidelines - Urgent: Operation within 2 weeks of referral Priority: Operation within 3 months of referral Elective: Operation within national agreed guarantee (currently 12 months but Task Force prioritisation criteria suggest 6 months) Reason: Brief explanation of priority eg, unstable; inotropes; IABP: L Main stenosis; High AV gradient etc
PROPOSED OPERN:	Procedure referring cardiologist thinks appropriate
PREV CARD SURG:	Open or closed procedure. Specify number of previous operations and nature plus date of most recent.
HISTORY/EXAM:	Indicate significant conditions likely to influence perioperative risks eg, Hypertension = BP > 140/90 or specific antihypertensive therapy PVD = significant claudication/previous vascular surgery/known AAA Pacemaker = pacemaker in situ even if functioning perfectly Dyspepsia = significant symptoms and/or regular treatment COAD/Asthma = significant respiratory component to dyspnoea Ws = obvious varicosities in either leg or any previous W surgery
ETT RESULT:	Indicate if "so +ve" it should be taken into account in allocating priority
LV FUNCTION:	Normal = Ejection fraction >50% Impaired = Ejection fraction 30-49% Poor = Ejection fraction <30%
OTHER COMMENTS:	Comments relevant to priority allocation or to operative procedure and/or risks involved should be recorded in spaces provided or below.

COMMENTS

APPENDIX IX

Proposed Minimum Dataset

Proposed Minimum Dataset

The following fields are proposed as being the minimum compatible with the proposed uses of the database and the requirements for practicality. Where dates are requested for events and investigations, it is to be assumed that the date of the most recent episode is required. The design of the data entry screens for these fields will be such as to allow for as many tick box responses as possible with minimal typing in of data.

Fields for Patient Identification (all of this data will be entered automatically by the GP clinical systems except for the consultant details)

Surname
Forename/Initial
Address
Postcode
Date of Birth
CHI Number
GP and Practice Code
Discharge Consultant and Hospital
Follow-up Consultant and Hospital

Diagnostic Fields

MI	Y/N	date (of most recent)
Symptomatic CHD	Y/N	date of diagnosis
Asymptomatic CHD	Y/N	date of diagnosis
Heart Failure	Y/N	date
Valvular Disease	Y/N	date of diagnosis

Risk Factor Fields

Smoking -	never/former/current amount and date recorded
Hypertension -	Y/N
Diabetes -	Y/N
Hyperlipidaemia -	Y/N and date of last lipid check
Family History -	Y/N

Treatment or Intervention Fields

Aspirin -	Y/N/Contra-indicated
Beta Blocker -	Y/N/Contra-indicated
Statin -	Y/N/Contra-indicated
ACE Inhibitor -	Y/N/Contra-indicated
Exercise Test -	date and result - normal/abnormal/inconclusive
Echocardiography -	date and result - normal/abnormal
Angiography -	date and result - normal/abnormal
PCTA	Y/N date
CABG	Y/N date
Thrombolysis given -	Y/N/Contra-indicated and date and preparation
Cardiac Rehab -	referred/completed/defaulted

Invisible Default Data from ISD Added Centrally

ISD Location Code
(GMC no of GP/consultant)
Health Board of Residence

Further copies of this document are available from The Stationery Office Bookshop
71 Lothian Road, Edinburgh, EH3 9AZ
Tel: 0870 606 55 66

Designed and produced on behalf of the Scottish Executive by Astron B21013 08/01

