

Scottish Needs Assessment Programme



SNAP Briefing

Peripheral Arterial Disease

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PREFACE

This SNAP briefing is intended as a background for commissioners and providers of services for Peripheral Arterial Disease in Scotland. It was originally intended to provide a full needs assessment report but the Acute Services Review Vascular Subgroup examined this subject in some detail and it was felt inappropriate to duplicate this work. We have therefore provided a brief summary as a background to the current planning work going on in Scotland to develop services through clinical networks.

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1. Introduction

The term Peripheral Arterial Disease (PAD) denotes a group of diseases affecting the arterial system. The principal conditions are:

- carotid arterial disease.
- abdominal aortic aneurysm
- peripheral arterial disease of the lower limbs

These have a major impact both on individuals and on health services: carotid arterial disease is a major risk factor for stroke; abdominal aortic aneurysm is associated with sudden death; peripheral arterial disease of the lower limbs causes pain and reduced mobility and may lead eventually to amputation.

Effective interventions are available for these conditions and advances in treatment are occurring rapidly; however treatment costs are high and affected patients are in older age groups. Many have other medical problems such as diabetes and coronary heart disease (CHD) making this a difficult and expensive group to treat.

2. Peripheral arterial disease of the lower limbs

This develops symptomatically in around 7000 new cases in Scotland each year with a prevalence of 45,000 symptomatic cases at any given time. Most cases are not fatal or seriously disabling but mortality amongst sufferers is approximately three times the average, mainly due to CHD or stroke. Twenty to twenty five per cent of cases have reconstructive procedures within four to seven years and seven per cent require amputation

3. Abdominal aortic aneurysm

This affects approximately 13,000 men aged between 65 and 74 in Scotland with around a third of these having an aneurysm larger than 4cm in diameter and thus potentially requiring urgent operation.

4. Carotid arterial disease

This is the underlying cause of more than 2000 Transient Ischaemic Attacks (TIAs) a year in Scotland; roughly one for every five strokes. These are the symptomatic tip of the iceberg of carotid disease. The significance of asymptomatic disease is still unclear and surgical treatment of asymptomatic cases has not been shown to be beneficial. The risk of stroke for those with carotid stenosis of 70% or more is high, 12% experiencing a stroke within three years of which seven percent will be severe.

Whether the incidence of these conditions is changing over time is unclear due to the lack of good population based data. Rates of intervention, however, are rising.

5. Prevention

Primary prevention by lifestyle changes has potential to reduce incidence in younger cohorts. Given the currently falling rates of mortality from CHD, which has similar underlying causal factors, this may already be beginning but the data

needed to detect this is lacking.

6. Management

Effective interventions are available for these conditions. These are, however, expensive and potentially hazardous and therefore must be targeted appropriately. The basis of treatment has traditionally been surgical techniques to restore or bypass diseased vessels. This is being partly replaced by less invasive transluminal procedures using balloon or laser angioplasty and stenting.

Evaluation of the costs and outcomes of these expensive and rapidly changing technologies is required and presents a major challenge. There is also more recognition, and some evidence of benefit from optimal medical management, mainly exercise programmes and drug therapy.

7. Intervention rates

Crude rates of intervention per million population in Scotland for 1995 were:

Carotid endarterectomy	86
Lower limb arterial reconstruction	275
Lower limb amputation	152
Aortic aneurysm repair	156

These data are from SMR1 linked datasets. It is likely that these rates are changing in response to changing patterns of care and new developments in treatment. Planning and management of services for people with PVD is currently hampered by a lack of data, preferably collected prospectively, on the processes and outcomes of care.

8. Variations by area and over time

Rates of intervention appear to vary considerably by Health Board area with a two-fold variation in (standardised) rates for aneurysm repair; three-fold difference for iliac and femoral repair and amputation and five-fold differences in rates for carotid endarterectomy and transluminal procedures. Whilst rates of disease may vary slightly from one area to another these levels of variation reflect service factors such as referral thresholds and pathways, availability of specialist services and facilities for diagnosis and intervention.

The rates for most procedures rose between 1989 and 1993. For aneurysm repair, amputation and femoral bypass this was by around 20 to 30%. In contrast the rates of iliac bypass fell steadily whilst carotid endarterectomy rates rose five fold in the same period and the rate of transluminal procedures doubled.

The demand for services for vascular disease is likely to continue to rise as the proportion of people in older age groups rises.

9. Service configuration

Patients with PVD present complex problems requiring not only surgical but also medical, radiological, therapist and rehabilitation skills. This makes the provision of well co-ordinated, seamless care a challenging task and multidisciplinary team (MDT) working needs to be an integral part of services. This is particularly true for patients with PVD of the lower limbs, of whom the majority do not require

surgery.

10. Acute Services Review

There has been extensive debate at national level about the need to centralise the provision of the more specialised aspects of surgery and radiology for these conditions. Around a third of vascular disease presents as an emergency and 24-hour provision of surgeons, anaesthetists and support are required.

Commissioners of care need to consider how this is to be provided and to focus on the key service quality issues for their patients. The Acute Services Review has clarified many of these issues and has recommended a model of Integrated Vascular Services providing care for populations of at least 500,000. It is anticipated the staffing of these would be in keeping with the principles of managed clinical networks. A key task for the networks would be the collection of appropriate data to inform service design and improvement.

11. Outcomes

Elective surgery for abdominal aortic aneurysm results in one and five year survival rates of 90 and 70 % respectively with significant peri-operative complications in a quarter to a third of cases. Only half of cases of ruptured abdominal aortic aneurysm reach hospital alive and of these only half have a successful repair.

Good data on outcomes from surgical and radiological interventions for PVD of the lower limbs is not yet available from well designed trials and these are awaited.

Carotid endarterectomy is cost effective in properly selected patients: operating on symptomatic patients with 70% or more stenosis results in the prevention of one stroke for every 12 cases operated on.

12. Screening

Screening is not currently recommended for any of these conditions, as surgery has not so far been shown to be cost effective in asymptomatic cases.

Projected number of arterial procedures by health board

The accompanying tables show projected numbers of arterial procedures for residents of each health board area for the years 2000, 2003 and 2007. These projections are calculated by applying average operation rates, for Scotland in 1995, to the population projections for each health board area. They take account of demographic change in the population but *not* trends in operation rates over time. The latter may well be increasing, in some cases rapidly due to local changes in service provision.

Table 1: Projected numbers of procedures: Aortic Aneurysm Repairs and Reconstructions/Open Procedures on Renal Arteries and Visceral Branches of Aorta

	1997	2000	2003	2007
Argyll & Clyde	69	70	71	74
Ayrshire & Arran	63	65	66	69
Borders	20	21	22	23
Dumfries & Galloway	28	29	30	31
Fife	57	58	60	62
Forth Valley	44	45	46	48
Grampian	79	82	85	89
Greater Glasgow	139	136	134	133
Highland	34	36	38	40
Lanarkshire	83	85	88	92
Lothian	116	117	120	124
Orkney	3	3	4	4
Shetland	3	3	3	4
Tayside	69	70	71	73
Western Isles	5	5	5	5
Scotland	813	825	842	872

Table 2: Projected numbers of procedures: Carotid Reconstruction/Endarterectomy/Embolectomy

	1997	2000	2003	2007
Argyll & Clyde	36	37	38	39
Ayrshire & Arran	33	34	35	36
Borders	10	11	11	12
Dumfries & Galloway	15	15	15	16
Fife	29	30	31	32
Forth Valley	23	23	24	25
Grampian	41	42	44	47
Greater Glasgow	72	71	70	70
Highland	18	19	20	21
Lanarkshire	44	45	46	48
Lothian	59	60	62	65
Orkney	2	2	2	2
Shetland	2	2	2	2
Tayside	35	36	37	38
Western Isles	3	3	3	3
Scotland	421	427	439	455

Table 3: Projected numbers of procedures: Iliac and Femoral Bypass/Endarterectomy/Embolectomy

	1997	2000	2003	2007
Argyll & Clyde	114	117	119	123
Ayrshire & Arran	104	107	110	114
Borders	33	34	36	38
Dumfries & Galloway	46	47	48	50
Fife	94	96	99	103
Forth Valley	72	74	76	80
Grampian	132	136	141	150
Greater Glasgow	230	226	224	224
Highland	57	60	63	67
Lanarkshire	137	142	146	153
Lothian	192	195	200	208
Orkney	6	6	6	6
Shetland	5	6	6	6
Tayside	113	115	117	121
Western Isles	9	9	9	9
Scotland	1344	1369	1400	1452

Table 4: Projected numbers of procedures: Amputations

	1997	2000	2003	2007
Argyll & Clyde	62	64	65	67
Ayrshire & Arran	57	59	61	63
Borders	19	20	20	22
Dumfries & Galloway	25	26	27	28
Fife	52	53	55	57
Forth Valley	39	41	42	44
Grampian	72	75	78	82
Greater Glasgow	125	123	122	122
Highland	31	33	34	37
Lanarkshire	73	76	78	82
Lothian	105	107	110	114
Orkney	3	3	3	3
Shetland	3	3	3	3
Tayside	63	64	66	68
Western Isles	5	5	5	5
Scotland	736	750	770	798