ScotPHN report

# Updating the Scottish Needs Assessment Programme Report on Type 2 Diabetes: Screening and Prevention

## Part C: Services for People with Type 2 Diabetes in Scotland

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## Summary

Key results from all data sources are summarised here. Following on from part B, which covered population screening for and prevention of diabetes, this part C covers screening and prevention and treatment activities for existing patients with diabetes.

Eight MCNs wanted to shift the balance of care further to primary care but mentioned that resources for training staff in diabetes care, for example in delivering Structured Patient Education (SPE) were a barrier.

Foot screening was generally described as systematic and taking place at least annually, generally in an acute setting only if high risk. Active foot disease prevalence in the type 2 diabetic population varied between health boards from a minimum of 159/100,000 to a maximum of 509/100,000 at 24.4.2009. The latest available Diabetes Action Plan (DAP) monitoring report shows six MCNs were or were on target to record foot risk score for at least 75% of people with diabetes.[1] The Scottish Diabetes Survey 2009 shows across Scotland 28.8% of registered people with type 2 diabetes had had a foot risk calculation in the last 15 months.[2] Cardiovascular screening was in general reported as systematic, and taking place as part of the annual check, screening mechanisms varied. The DRS programme is making continued progress; for Scotland 80% of the type 2 population were screened in 2009.[2] There was a lot of variation between health boards in use of slit lamp or digital camera eye screening, and in percentage overdue, especially for digital eye screening, and in the rate of optometrist referrals per 100,000 of the type 2 diabetic population.

Ten areas had some form of structured education on offer for new patients, but for existing patients the availability of SPE was more limited, with maximum estimated take up where offered between 15% and less than 5%. The DAP reported four Boards had made SPE available to all new patients or were on target to in May 2008.[1] There was variation in numbers of GPs and practice nurses who had received training in diabetes care, and in numbers and diabetes time of generalist and specialist podiatrists and dietitians. There were 6 adult psychology sessions

for diabetes per week for the whole of Scotland in 2006. These were concentrated more on type 1 diabetes. Since then Grampian has five more sessions. From 2009 another 3*0.5 and 2*0.25 WTE Chartered Psychologist posts will be created across Scotland for 3 years to train and supervise adult diabetes service staff.

One of the main changes to IT systems highlighted by MCN managers was provision of better links between systems, with dietetic, medication and psychological support data requested. Suggestions were given for improvements to data validity.

The SDS 2009 reported that 89.9% of registered people with type 2 diabetes had had an $HbA_{1c}$ test in the past 15 months, and the proportion of people on patients with diabetes registers with (type 2) who had $HbA_{1c}$ <7.5%, varied from 60.2% to 70.8% between Scottish NHS Boards with a Scottish mean of 63.8%.

An equity audit carried out in NHS Lothian found that similar proportions of patients from less and more affluent areas had $HbA_{1c}$ <7.5%. South Asians had less good diabetic control than the white population.

Generally, some of the 2007-08 quality and outcomes framework indicators consistently saw lower achievement. These were, particularly, microalbuminuria testing in the last 15 months, and to a lesser extent foot pulses and neuropathy testing. Scottish patients with diabetes have the lowest longer term survival of all Scottish primary renal diagnostic groups. This is because of vascular disease.

# Introduction to Part C report

***Services for People with Type 2 Diabetes in Scotland***

This report presents the survey of current practice element of the 2009 update for the Scottish Public Health Network (ScotPHN) of a diabetes needs assessment which was originally carried out by Scottish Needs Assessment Programme (SNAP) in 1999.[1] The services review was carried out in parallel with a separate research review of evidence. The update was for type 2 diabetes only.

The present report brings two separate pieces of work on diabetes services under the same umbrella. Both review and compare diabetes services, one at national and the second at a local level.

The first, by Drew Millard of ScotPHN, reported in part one, comprises the bulk of results of a national survey of Diabetes Managed Clinical Network Managers. Population screening and prevention results (including material from questionnaires to Directors of Public Health) are located in the research review, since that focuses on these topics. The services report utilises other service data where available and appropriate.

Sections on the psychology specialist workforce in diabetes (3.7.6 and 3.7.7) are by Andrew Keen.

The second piece of work, by Sarah Wild (Edinburgh University) and Sheila Wilson (NHS Lothian), is reported in Appendix 1. It is an audit of the equity of diabetes services in Lothian. The Lothian work is included to give an up to date local perspective on healthcare equity issues. It has its own approach and focus while also following on logically from the comparison of diabetes services at national level.

# 1. Aims

The aims of the national work were:

Firstly, to describe current services for people with type 2 diabetes in Scotland, (however, material on population screening and prevention has been located in the research review, since that review is centrally concerned with these topics).

Secondly, to assess how well they are meeting the health and care needs.

Thirdly, to identify the critical components of the service – this means those core parts of the service that are provided in the majority of areas.

Fourthly, to compare services in different part of Scotland with each other.

The Lothian work aimed to review inequities in diabetes prevalence, services and outcomes in specific population groups. Equity audit has the ultimate purpose of ensuring resources and services are fairly rather than equally distributed.

# Part 1: National survey: comparative data from health boards (by Drew Millard, Scottish Public Health Network)

## 2 Methods

The methods used to address these aims were threefold:

1. Review of existing information and reports. These included the Scottish Diabetes Survey 2009 (SDS)[2] and the latest quarter 4 Diabetes Action Plan[3] indicators (DAP(Q4)[4] from NHS QIS, and recent reports on Psychology Services[5] (with updated comment from authors)[6] and Renal Services from the Scottish Renal Registry.[6] Some MCN websites were consulted for general information.
2. Analysis of a limited amount of primary data from routinely collected sources, these included the Quality and Outcomes Framework (QOF) (http://www.isdscotland.org/isd/3305.html) and the Diabetic Retinopathy Service (DRS) (http://www.ndrs.scot.nhs.uk/) and Scottish Care Information - Diabetes Collaboration (SCI-DC) (http://www.dgdiabetes.scot.nhs.uk/scidc.shtml), and Workforce reports from the Scottish Workforce Information Standard System (SWISS) (http://www.isdscotland.org/isd/5858.html).
3. Telephone interviews with one key figure in each of the 14 Diabetes Managed Clinical Networks in Scotland (usually the Managed Clinical Network Manager (or the lead clinician if the manager was not available). These covered screening and prevention, (see research review) ongoing monitoring and care, with particular attention to foot risk and structured education, staffing provision, learning and information and future developments. There were some additions to the interview questions after the first interviews had been carried out. Interviewees who had not been asked these were individually asked to respond to them by email, and this ensured all interview data was complete.

It is important to note that the routinely available data sources consulted under 1 and 2 above almost without exception related to both type 1 and type 2 diabetes, and did not distinguish the two. Use of this data was justified by the fact that c.85% of people with diabetes are type 2. The exceptions to this (where one-off data extraction for type 2 only was requested) are noted in the text.

Some data sources were very comprehensive, and there would have been little point in reproducing large sections of them for this report. They are therefore signposted where appropriate.

The 14 telephone interviews with MCN managers and lead staff had a 100% response rate. They were digitally recorded and sent back to interviewees for comment, revision for accuracy if they wished, and provision of any factual information not available at the time of interview but sourced later. Most interviewees (11/14) made some clarifications. The interviews took place in March to April 2009. There were some additions to the interview questions after the first interviews had been carried out. Interviewees who had not been asked these were individually asked to respond to them by email, and this ensured all interview data was complete.

A full summary of interview results by question and health board in tabular A3 format is available separately. For the data sourced from the interviews and questionnaires the source is referenced as such where confusion might otherwise arise. Other sources are stated or referenced in the text.

A note is necessary on the QOF data analysis. The clinical audit concept of the standard was used. Taking the standard as 100% achievement of possible QOF points, the measure used was the percentage of practices in each health board achieving this.

Other relevant documents were consulted for background information[1;7-12]. Finally, the terms MCN and Health Board are used interchangeably when referring to geographical areas, but not when referring to organisations.

# 3 Results

As an introduction to the results each diabetes indicator in each health board area for 2007-08 was compared using the criterion of whether or not 100% of QOF points were achieved. This approach discriminated better between boards than the alternative option of using mean QOF scores. The data was too complex to show on a single chart, and for that reason separate aspects are presented in the body of this report under the appropriate subject headings, with apparently anomalous results explained at the relevant point.

Some indicators consistently saw lower QOF points achievement levels than other indicators in all health boards. These were, particularly, microalbuminuria testing in the last 15 months, (DM13) and to a lesser extent foot pulses and neuropathy testing (DM9 and DM10). Appendix 5 lists QOF indicator descriptions.

## *3.1 Ongoing monitoring and care*

### 3.1.1 The balance of care

There was progress towards a position where patients moved seamlessly between primary and secondary care as the need dictated. The data did not take account of detailed scenarios where patients go to hospital for part of their care but get the rest in primary care. Examples of that were to see a Diabetes Specialist Nurse only, to see a Podiatrist for high risk feet, or for antenatal care.

The percentage of patients diagnosed with type 2 diabetes estimated to be seen as routine mainly in primary care alone varied between 99% and 40-50%.

- One estimate was in the 40-50% range (Lanarkshire, though stated not of high accuracy)
- Four in the mid 60% range (Grampian, Lothian, Shetland, Tayside),
- Two in the mid 70% range (Fife, Highlands (not including Argyll and Bute)),
- Three in the 80% range (Ayrshire and Arran, Dumfries and Galloway, Western Isles), and
- Two in the 90% range (Forth Valley and Orkney),
- Two MCNs could not give any estimate of this (Borders and Glasgow).

Of the 11 boards who answered about plans to shift the balance of care for type 2 diabetes further, eight wished to shift it further to primary care, although in Greater Glasgow and Clyde only in the Clyde area, two wanted to keep it the same, (Shetland, Ayrshire and Arran) and one (Orkney) wanted to move it in the direction of secondary care (it was currently 99% primary care).

Barriers to shifting care included the training needs and skills available in primary care, patient safety, financial resources for training staff, and time for staff to carry out structured patient education (SPE). There were also financial resources needed for new secondary care services, for example in a context of historical shared care, where patients are returning to GP only care. Finally, behaviour change issues affected both staff and patients.

#### 3.1.2 Service arrangements for people from ethnic minorities

Among the eight MCNs who mentioned having some specific activity around ethnic diabetes services, one mentioned the Diabetes UK National resource pack, one had an advocacy worker and did opportunistic screening at BME health events, and had funding in place for an dedicated project worker to do a health needs assessment to help diabetes sufferers from ethnic minorities to engage and access culturally appropriate services. In another nurses and dietitians had done a one off visit to an Islamic centre, in another an ethnicity subgroup aimed to ensure access to culturally appropriate care and group

education for ethnic minorities, and had held five awareness events. There was the possibility of a plan for bilingual clinical support workers and a bilingual pharmacy outreach service was in place. In another, a HNA was planned and better collection of ethnicity data was happening in two more.

Nine MCNs mentioned translation or interpretation services, in four that was the only provision mentioned, and two other boards mentioned no special provision.

The DAP(Q4) stated that five MCNs were on target or had achieved collection of data on ethnicity to over 80% of patients and seven were on target to complete or had achieved a review of services for people with diabetes from ethnic minority communities. A further DAP(Q4) target related to ethnic groups was to undertake a needs analysis of their population to identify disadvantaged groups, which six MCNs were on target for or had done.

The SDS 2009 (table 8) reported that the ethnicity data was available for 56% of the registered diabetic population [2].

#### 3.1.3 Awareness raising activity

Most MCNs had undertaken some awareness raising activity, but for diabetes generally without specifically distinguishing type 2 (although in practice probably targeted mainly at type 2). Two MCNs stated they had done something specifically for type 2 diabetes.

Of those who had covered diabetes in general, most mentioned it had been in conjunction with Diabetes UK campaigns and these involved participation in diabetes week in some way, for example, press coverage in Forth Valley, a stand in a shopping centre in Lothian and in Grampian, and a press event in Grampian. Tayside MCN had events for patients to which they were allowed to bring others, and Glasgow mentioned awareness raising events by DSNs. Specifically for type 2, an example was a 'living well with diabetes' day in

Dumfries and Galloway, and in Shetland involving patients' relatives and friends in SPE.

Four MCNs said they had not undertaken a specific awareness raising activity about diabetes in the past year, but one of these said diabetes was mentioned at other health events, and one had a road show in development.

#### 3.1.4 Type 2 diabetes and inpatient hospital care

Most people with type 2 diabetes who are admitted to hospital are there not because of diabetes itself, but because of complications of it such as cardiovascular disease – heart disease, peripheral vascular disease and stroke. Admission could be categorised as follows:

- Admission where diabetes is the principal cause, for example after hypoglycaemia, or for stabilisation of diabetes or for diabetic keto-acidosis[a] (both the latter are unusual causes of admission in type 2 diabetes, since insulin is now more often started on an outpatient basis).
- Admissions for complications – mainly renal failure, heart disease, peripheral vascular disease and amputations, stroke. (Note that attendance for dialysis is not counted as an admission because patients are usually only in for 3-4 hours)
- Admissions where the length of stay is longer for people with diabetes, or where they are treated an inpatients rather than day cases, because the diabetes may need to be controlled before or after surgery
- Admissions unrelated to diabetes.

Data from Grampian (not broken down by type of diabetes) show that on an average day, there were over 200 people with diabetes in acute beds, but of these only about nine were in for diabetes. About a quarter were in for cardiovascular reasons.

[a] http://www.scotpho.org.uk/home/Healthwell-beinganddisease/Diabetes/Data/diabetes_secondarycare.asp

Having such a large number of inpatients with diabetes leads to a large workload for diabetes teams, and especially DSNs, who will often be called on for adjustment of insulin dosage. Note that about 30% of people with type 2 diabetes are on insulin, and that the percentage of insulin-treated patients will be higher amongst those admitted.

One MCN said there needed to be more planning for patients with diabetes who were having elective surgery, in one other a diabetes inpatient nurse was being recruited for a hospital which did not have one to fill a gap perceived for diabetes as a whole, and in another the length of admission was reported to be longer if a patient had diabetes.

#### 3.1.5 Patient representation on the MCN steering group

All MCNs reported active patient representation on their MCN, although in one case (Highland) the MCN had not met for some months owing to lack of an MCN manager. It had been non-existent for eighteen months according to a comment from NHS Highland on the draft of this report. In most cases there was more than one patient representative. All MCNs also had patient input through another channel. The other channels included other patient involvement groups and patient networks, Diabetes UK representation, representation on service planning groups and consultations, involvement in conference presentations at annual patient conferences, and membership of specific subgroups of the MCN. A patient email service was another route in one MCN. There was some evidence of links with patient involvement groups in other MCNs and patient involvement through events around the long term conditions framework.

#### 3.1.6 Further ways patients were involved in MCNs

Some themes from the previous section were expanded here; at patient conferences, for example, patient involvement could happen through patients telling their stories, delivering workshops, and helping to run the conference. Patients helped in design of leaflets and educational materials, were involved

in choosing the model of SPE to be used in the area, and their input came to the MCN through the evaluations of SPE. Open days and patient satisfaction surveys were other methods mentioned.

#### 3.1.7 Training provision for MCN patient members

Most of the MCNs had patient training in place or offered in some form, although not always through the MCN itself. Five had no formal training in place, perhaps offering it as required, but three of these planned to use Diabetes Voices. Of those with training in place, six mentioned Diabetes Voices. Other approaches included training accessed through a dedicated patient focus and involvement department in the Board, and Hearty Voices training (two years ago), a package for cardiovascular MCNs, though here there was an intention to use Diabetes Voices in future. Two MCNs reported low patient interest or take up for Diabetes Voices training. The DAP(Q4) states that 11 MCNs were on target to or had had training and support mechanisms in place for lay members of MCNs[4].

#### 3.1.8 Generic care pathways for people with type 2 diabetes

Most MCNs said they had a generic care pathway for people with T2DM. The two that were less certain said for example that although it did not manifest as a formally mapped out path or algorithm, it existed in parts in different documents. In one case, the Local Enhanced Service (LES) pathway was referred to, which was implemented electronically through linked computer screens completed by relevant health professionals.

#### 3.1.9 Accessing the generic care pathway

Interviewees were asked how a new member of staff would access the care pathway. In the majority of MCNs this was on either intranet or internet or both, usually the MCN diabetes website. The care pathway was often contained within a diabetes handbook or guidelines. One MCN alerted new staff to look at the website, another said they were shown it at induction. One

had distributed a PDF diabetes management plan document some while ago, but planned to put it on the internet shortly. In one case the pathway was accessed through the clinical decision support system (CDSS) screens and through SCI-DC. Having SCI-DC data entry screens on the same website was mentioned as a way of helping people to find the guidelines documents in which pathways sat.

#### 3.1.10 Special care pathways for people having an operation

MCNs did not all say they had special care pathways for people with T2DM who needed to go into hospital to have an operation. Pathways for referral were mentioned by three, and protocols for pre-operative preparation were mentioned by a further six, including fasting and insulin management, also moving from oral medication to insulin for a specific operation. Guidance in place in hospital systems was mentioned by one MCN. Two MCNs said they had something in development on this, one said no and one did not know.

Although the guidelines for management of type 2 diabetes were often held on websites, respondents confirmed that some of them might be out of date, or temporarily withdrawn from the website. Very few guidelines were sent for inclusion in this HNA, and a number said the guidelines were presently unavailable. For the HNA, simply listing all the guideline titles for the MCN would be unlikely to suffice, as an in depth analysis of their content would be needed to ascertain underlying variations.

#### 3.1.11 Clinical Audits of Protocol against Practice in the past three years

Some respondents found it difficult to recall details of clinical audits, although others said many went on. The annual review of SCI-DC and QOF data was seen by some as a form of audit. Specific audits were mentioned of microalbuminuria, foot data, referrals to Structured Patient Education (SPE), or for CV disease, or erectile impotence, and the use of exenatide, lipid levels, non attenders for DRS, diabetic ketoacidosis (DKA), Hb1Ac campaign of intense education and support, type 2's going on insulin and pregnancy. Other

than these, the monitoring of the LES was mentioned by two respondents, although one mentioned that LES indicators were currently being revised.

Audit measures mentioned were either very specific or referred only to the data source. Specific measures included,

- Structured Patient Education (SPE): those offered, those taking it up, and those attending,
- DKA: time to fluid/insulin, amount of KCl, use of antibiotics This is more for type 1 diabetes, but there are some DKA episodes in type 2 diabetes
- Labour glycaemic control: maternal glucose control in labour and fetal hypoglycaemia rate
- Type 2 going on insulin: $HbA_{1c}$ at referral, insulin use and results
- Microalbuminuria: BP, ACE, lipids, accuracy of initial diagnosis (among a myriad of things)

Routine measures from SCI-DC, retinal screening services, and QOF included:

- % with foot screen or risk scores,
- % with DRS attendance

QOF, SDS and SCI-DC were the most common data sources. LES data and GP systems were also mentioned. Some of the audits must have used prospective data gathering or retrospective from case notes, since the data mentioned would not be available from routine diabetes systems. Telephone data gathering was specifically mentioned for one audit of microalbuminuria.

The audit results went to the MCN itself or to a relevant subgroup of the MCN. Six respondents said audits had influenced local policy on provision a lot, including one saying it had confirmed good practice, and four a little. For four respondents the effect on local policy was either not known or not applicable as no specific audits were mentioned.

## *3.2 Diabetic Retinopathy services*

### 3.2.1 Diabetic Retinopathy Screening (DRS) for people with diabetes

The DRS programme began its first year of implementation in 2006-7. It aims to identify diabetic eye disease early so that it can be treated before damage has become severe. The programme has been successfully rolled out across all Scottish Health Boards, and, as reported in the 2007-08 annual report[13] is making continued progress, with some boards reporting achievement of the QIS target of 80% of the eligible population being screened each year. The information technology platform has been further improved in the latest year (2008-09). The DRS collaborative has also achieved progress in training and accrediting front line staff in  through the City and Guilds level 3 certificate in retinal screening. A training manual and key performance indicators are now operational.

Screening rates and outcomes for diabetic retinopathy are a core source of comparative information specific to diabetes. Information on retinopathy screening comes from the Diabetic Retinopathy Screening (DRS) system. It includes patients with type 1 or type 2 diabetes, and does separately report them. Although improvements are being made, the current system has shortcomings. It tends to overestimate the proportion of the population receiving screening since the definition of screening is not consistently applied at local level and some screening events are included in the data that should not be included since they do not meet the DRS definition of screening. Screening should now refer to quality assured digital photography.

In the DRS data reported below for the year from April 2008 to March 2009, it appears that more than 100% of the eligible population are screened which appears impossible. This is explained because the current data reflects a period prevalence, which actually combines prevalence and incidence measures.  The explanation of this given by the Scottish DRS Collaborative Coordinator is quoted below (square brackets added):

> "The reason that some are more likely [to have an event – e.g. 111.5% of the eligible population were invited to be screened in Grampian] is because the denominator has decreased over time. So we count the number of people who have been invited over the year, but during the year some of those people will die or move away or become suspended for some reason e.g. they move out of the screening programme because the Ophthalmologist decides to look after them. At the same time more people are diagnosed and they are also invited (as they are normally invited within 90 days). We definitely only count people not invites, so we can't count a person twice if they are invited twice. Ultimately [this] means that we end up with individuals in the numerator who are no longer in the denominator."

A new system of key performance indicator reports which is currently under development will solve this problem, but the 2008-09 data now reported is the best currently available. Appendix 7 gives a full summary of this data.

The definitions of percentage figures relating to screening from the current DRS need some clarification, since denominators vary. So to clarify, the 'Eligible population' is the diabetic population >=12 years old who are eligible to be screened, minus those temporarily or permanently suspended from the screening programme. Other denominator definitions are given in Table 1:

**Table 1 Denominator definitions**

| **Indicator** | ***Denominator*** |
|---|---|
| Percentage invited for screening | *eligible population* |
| Percentage successfully screened | *eligible population* |
| Percentage of slit lamp examinations | *total number successfully screened* |
| Percentage of referrals to Ophthalmology | *total number successfully screened* |
| Number of people overdue for recall for Photographic screening | *eligible population* |
| *Number of people overdue for recall for slit lamp screening* | *eligible population* |

The total population on the SDS diabetes register 2009 is 228,004. It varies by a factor of ten between mainland health boards. From the Scottish Diabetes Survey 2009, (table1) Greater Glasgow and Clyde has the highest numbers at

52,604, and Borders the lowest at 5,137. The island boards are lower again between 894 (Orkney) and 1120 (Western Isles). The population prevalence for diabetes is between 3.9% and 5%. For all Scotland, 87.45% (199,264/228,004) have type 2 diabetes.

Slit lamp examinations are carried out where eye condition is not suitable for digital imaging, for example in older people with cataract. The figures for those overdue for recall for both types of imaging give an indication of service strain as well as of a shortfall in care.

The percentage of referrals to Ophthalmology gives an indication of the severity of diabetic retinopathy in the health board area concerned, which may have implications for earlier and more effective prevention activity. All of these need to be understood in the context of the percentage of the eligible population who were successfully screened. Figure 1 below shows percentage invited for retinal screening and percentage screened by health board area 2008-09  shows those invited and successfully screened.

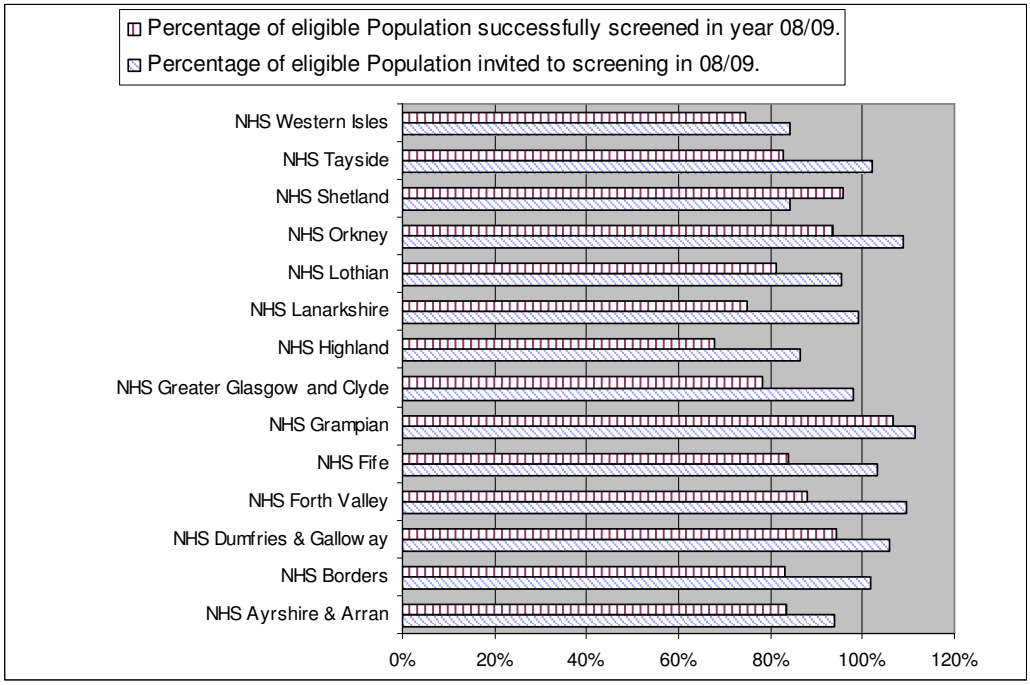



**Figure 1: Percentage invited for retinal screening and percentage screened by health board area 2008-09**

It is apparent that percentage successfully screened is associated with the percentage invited in each Board. However these percentages cannot be taken as indicators of performance or need for the reasons noted above: denominators are reduced because people are no longer counted, (and the reasons for that may be more negative than they are positive). The Scottish percentages overall were: Invited: 99.86%, Successfully Screened: 72%.

Figure 2 below shows consistent percentages referred to Ophthalmology, but some Boards have higher levels of examination by slit lamp. That applies to Forth Valley, Lothian and Ayrshire and Arran. There could be a variety of reasons for that, not all related to eye condition. Availability of digital cameras, levels of staff trained to use them, and working practices may be involved. Only ophthalmologists and optometrists are recognised as qualified to carry out slit lamp examination. Ophthalmologists are a limited resource, so the higher levels of slit lamp screening in some boards may relate to there being higher numbers of optometrists available in relation to the number successfully screened. Accredited nurses can carry out DRS screening but using the digital photography method rather than slit lamp.

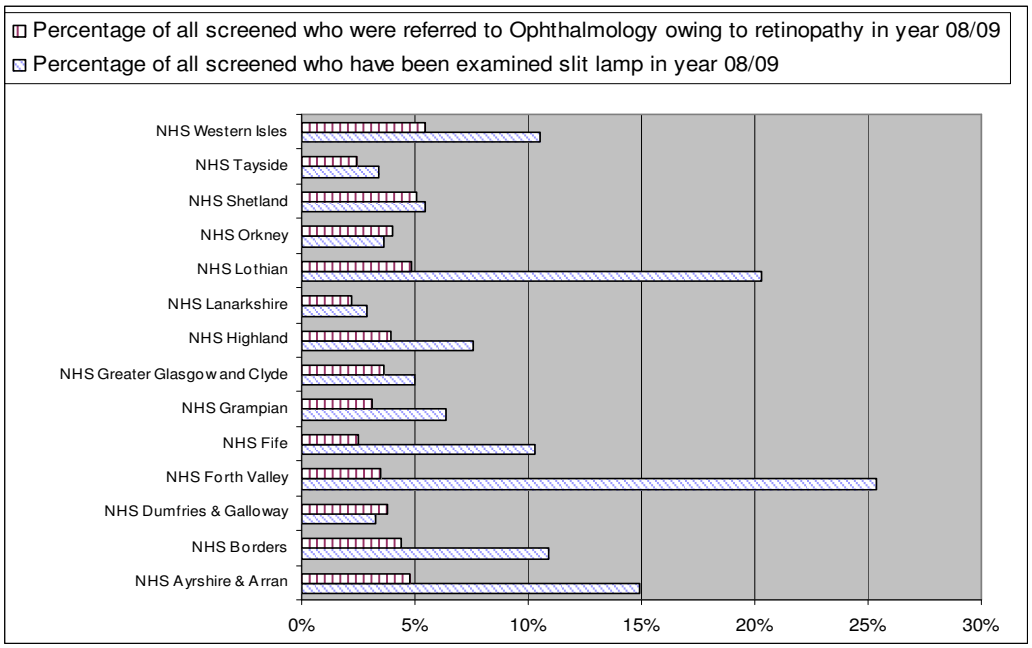



**Figure 2: Percentage by slit lamp and percentage referred to Ophthalmology in 2008-09**

For reference, Scottish figures overall are:

By slit lamp: 9.42% Referred to Ophthalmology: 3.54%

Figure 3 shows those overdue for recall for both types of screening.

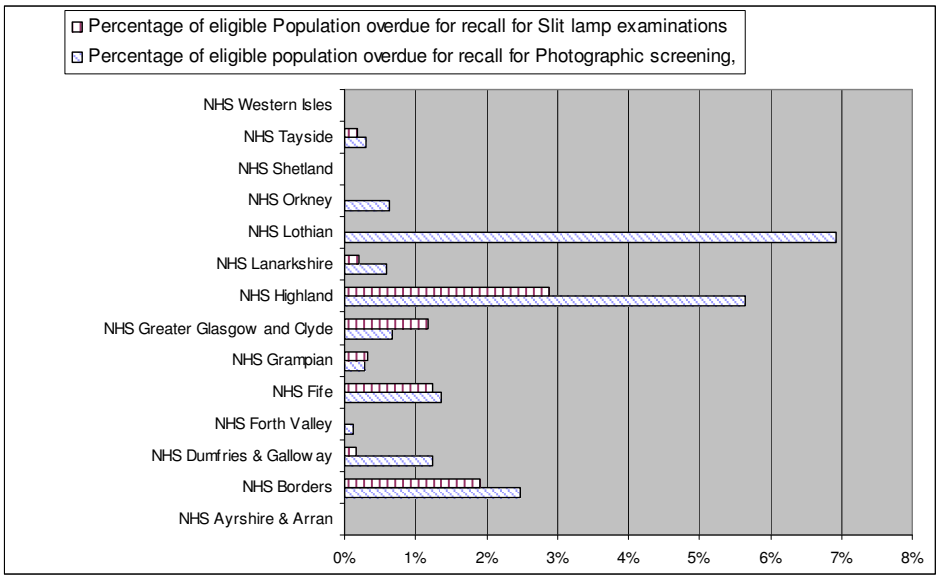



**Figure 3: Percentage Overdue for Photographic or slit lamp screening recall 2008-09 by Health Board**

The overdue figure for slit lamp screening is said to be an indicator of service strain. There are some striking differences between boards in these figures, and it is instructive to compare Figure 2 and Figure 3.

That comparison shows Forth Valley, which had the highest percentage of slit lamp examinations, has a very low percentage overdue for either slit lamp or digital screening; Lothian, which had the next highest percentage of slit lamp examinations has no slit lamp examinations overdue, but a large percentage of digital examinations overdue; Ayrshire and Arran had the next highest proportion of slit lamp examinations and has no examinations overdue, either slit or digital. After that the relationship no longer holds up so well for Borders and Fife. Highland has the largest percentage of slit and digital overdue but had similar percentages of slit and digital examination to Grampian which has only a small number overdue. Therefore frequency of slit lamp examination has some relationship to the percentage of slit lamp overdues, but is probably not the only factor.

Finally, the percentage achievement of 100% of QOF points for having carried out retinal screening in the last 15 months is shown by MCN area in Figure 4.

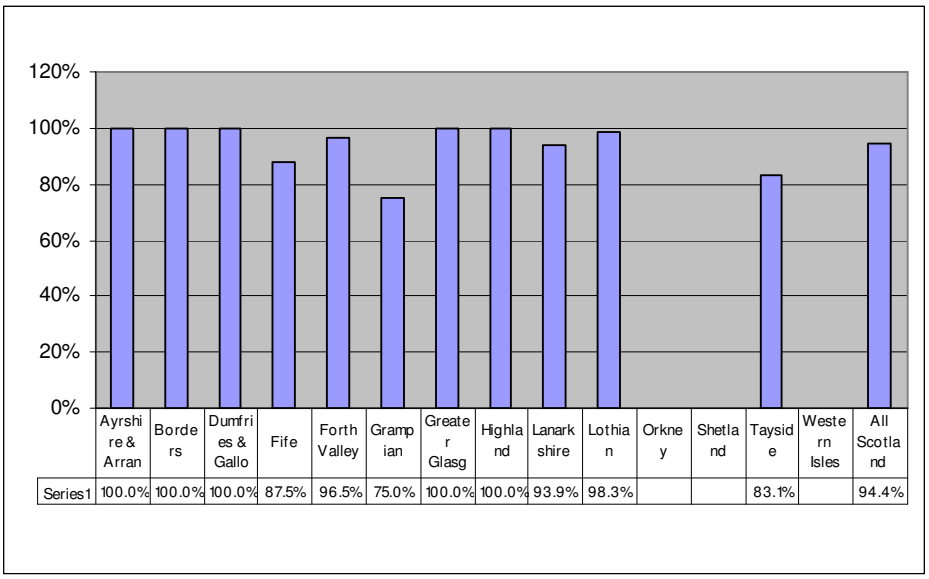



**Figure 4 Percent of QOF practices (on nGMS, 17c and 2c contracts combined) with 100% QOF points achievement for retinal screening for each Health Board in 2007-08**

Note: QOF data for practices on 17c and 2c contracts is not always comparable with data for nGMS contracts. This is not an issue for comparison of mainland NHS boards on the basis of all three contract types. However, island boards have small numbers of nGMS practices and larger proportions with non-GMS contracts; hence comparisons using aggregated QOF data are not possible for them in this report, and so their data is left blank on the graph

A key QIS indicator reported in the DAP(Q4) was that 12 MCNs were on target to or had implemented the DRS programme.[4] The SDS 2009 (table 48) reported that 80.6% of people with diabetes (and 80% of those with type 2) had had eye screening in the past 15 months[2].

### 3.2.2 Optometrist usage

The incidence rate of optometrist referrals per 100,000 of the type 2 diabetic population for the calendar year 2008 is given in Figure 5 below. There is a lot of variation. This data was requested from the SCI-DC data and dated 24.4.09.

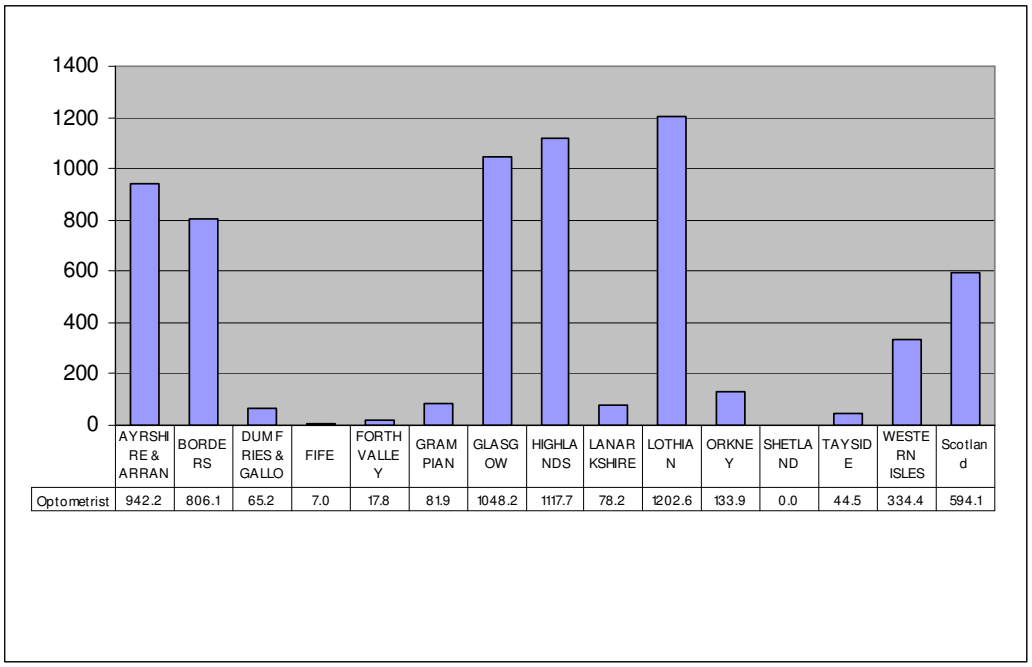



**Figure 5: Referral to optometrist rate per 100,000 population with type 2 diabetes at 24.4.09**

### *3.3 Foot Risk Screening services for people with diabetes*

Foot screening was described at interview as systematic in almost all boards. It generally took place at least annually as part of a wider annual check, and more often (or as necessary) for patients with medium or high risk feet or with active foot disease. One small MCN said foot screening was quite ad hoc, but the majority of patients had some form of foot screening, and in another small board it was described as 'pretty systematic'. A variance was reported in the Clyde part of greater Glasgow and Clyde.

#### 3.3.1 MCN methods for checking foot data

Two main methods were mentioned as used to check foot screening had taken place. The first was through checking SCI-DC data. A number of MCNs were able to monitor this more often than annually through the SDS reports by pulling the data, identifying practices and feeding back to them on performance problems in this area. The second method was the QOF data,

using the foot screening indicators (peripheral pulse and neuropathy checks stated as carried out in past 15 months)

One MCN presented Clinical Governance quarterly results of foot screening checks to the lead GP. Clinical governance was responsible for audit and implementation of guidelines in another area. An audit of this had not been done. In another area there was no formal monitoring, but they were looking at how to build it in through the LES. In one area, an additional mechanism mentioned was reporting back to practices about their progress by the Well North programme, but Keep Well was not mentioned for this.

#### 3.3.2 Availability of data on foot risk scoring to the MCN

All but one of the MCNs said foot risk scoring data was available to them. Where it was not available it was said it would be later this year (2009). Some who said it was available referred to it being through the SDS, another said although it was available it was not 100% (about 40% in fact). In Glasgow it was reported that the new SCI-DC foot risk score could now be calculated, but was not standardised across Glasgow.

#### 3.3.3 Methods for foot risk scoring

Five MCNs used a paper based system. One was called FACE. Three others used the paper system to populate SCI-DC, in two MCNs input to SCI-DC by podiatrists. In another podiatrists trained practice nurses who carried out the screening. In other areas there was a move toward training nurses to screen and input the data, as nurses rather than podiatrists screened the low risk patients, with only medium risk and above referred to Podiatry. GPs were reluctant to use SCI-DC because of inefficient double entry issues (as discussed later in this report) but in Highland and Orkney (and perhaps elsewhere), GP systems contained algorithms to calculate foot risk from the GPs clinical examination data – in theory using the same risk scoring system as SCI-DC. However scores did not transfer to SCI-DC.

Seven MCNs reported that the on-line SCI-DC risk scoring system was in use to some extent, in three where the professionals' responsibility for this was mentioned it was mainly done by podiatrists.

#### 3.3.4 Methods used by the MCN to ensure a foot risk score undertaken.

The most frequently mentioned method was monitoring the QOF data, mentioned by four interviewees, and two mentioned the LES. Two MCNs mentioned the routine annual check as the way the foot risk score was ensured, three mentioned SCI-DC, but could not force GPs to use it. One was in process of training practice nurses. Others met with the Podiatry service about it, or had no special measures.

#### 3.3.5 MCN uses of the foot risk score information.

The uses of the information, other than to submit it to the national database, and the SDG foot subgroup, were as evidence for service planning and development, priority setting, for example through discovery of care gaps, training gaps, and Tayside sent the individual patient risk scores back to practices. Other MCNs used the data for forms of audit as well, but not at individual patient level.

#### 3.3.6 Use of SCI-DC for foot screening data

This question focused on foot screening event data, and is not centrally concerned with foot risk scores. Seven MCNs gave a more or less unqualified yes to confirm their use of SCI-DC for foot screening, although in one case podiatrists still kept duplicate paper records, and in another SCI-DC was fed through other systems rather than always used direct. Seven other MCNs used or were trying to use SCI-DC, but had technical issues, or differences in approach across the area meaning risk scores were not standardised, or had partial cover only.

### 3.3.7 Locally collected foot screening data in addition to SCI-DC

Eight MCNs reported they had no other foot screening data in addition to SCI-DC. Others referred to GP systems and QOF. Fife said Podiatry services had their own report and used neurothesiometer rather than the monofilament test, and Ayrshire and Arran had the FACE system, with no automatic link to SCI-DC. Other than that, the only thing to mention was that a foot group in Glasgow had looked at ulcer data.

### 3.3.8 Staff known to the MCN with specialist training in foot screening

This question was answered somewhat variably. Where practice nurses and GPs were included, generally one GP per practice and slightly more than one practice nurse per practice were reported, which pushed overall numbers up. In some areas (Glasgow was one) practice nurses and GPs were not mentioned in answer to this question. That may have been because none were trained or because the respondent did not include them for some reason.

The highest number of staff with a specialist training in foot screening was estimated by Lothian, on the basis of numbers who had attended courses, at c.500, while Shetland, a much smaller area, estimated a minimum of three, (one DSN and some practice nurses). Six MCNs could not estimate the numbers, and others used the standard of at least one per practice to give an estimate, or counted only Podiatrists.

### 3.3.9 Service arrangements for foot screening

All MCNs reported there was foot screening in the primary care setting, and Orkney mentioned only primary care. In Orkney foot screening was done mainly by GPs, and the podiatrists were also based in primary care. In other areas both primary and secondary care were involved to varying degrees and

in different ways. For low risk feet, screening was usually part of an annual follow up, or in some cases integrated with eye screening, for medium or higher risk it might be a standalone event if that was the only need. The list below summarises responses, which as there were subtle variations in this important topic, are described for each MCN individually:

- Shetland: screening was predominantly in primary care (always by podiatrists) for all levels of risk, although that model was changing; if they were not seen in primary care they would be seen at the integrated diabetes clinic in the hospital.
- Western Isles: practice nurses, podiatrists and DSNs did screening, in both primary and secondary care, perhaps when Podiatry treatment given, when the Practice Nurse might take the opportunity to do a diabetes review.
- Borders: the setting was largely primary care, and largely done by podiatrists, but some nurses were involved.
- Ayrshire and Arran: carried out where the main other diabetes care for that patient was provided, usually by Podiatry, but may be practice nurses.
- Forth Valley: screening was in the community for those with lower risk feet, done by practice nurses and GPs. Those with medium risk saw a podiatrist in the community, those with high risk had a hospital service as well. The main reason for admission to hospital for people with diabetes here was high foot risk, but there were plans to move to an outpatient-based service.
- Dumfries and Galloway: there was a similar model to Forth Valley, though here all new patients saw a podiatrist for initial assessment, and those with active disease rather than high foot risk were seen in secondary care. (Active foot disease is the level above high risk.)
- Fife: there was a similar model, with some primary care staff carrying out routine screening, and referring to podiatrists for both screening and assessment as appropriate in primary or secondary care.

- Highland: there was a similar model again, with a practice nurse usually screening low risk feet, and podiatrists screening medium to high risk in primary care. In secondary care screening was carried out by all clinic doctors in secondary care, and by podiatrists in secondary care clinics and treatment by a podiatrist.
- Lothian: again, low risk feet were screened by the primary care team, the practice nurse, community podiatrists screened medium risk, and specialist hospital podiatrists screened high risk. Foot and eye screening were not combined, though foot screening might take place when general CV screening was done.
- Tayside: low risk feet were more likely to be screened in primary care by the GP or practice nurse, medium risk, community podiatrist, high or active risk, diabetes specialist podiatrist in hospital. Generally foot screening was combined with CV etc screening (bloods etc).
- Grampian: foot screening took place in acute clinics, was done by GPs and also carried out at integrated retinal and foot annual screening appointments, where nurses were involved. This was a separate event to the annual review.
- Glasgow: Podiatrists, GPs and practice nurses carried out screening.
- Lanarkshire: foot screening was currently mainly done in primary care in the GP surgery or a Podiatry clinic, (rarely hospital) but there were plans to move to integrated eye and foot screening using a mobile van and fixed eye screening sites. Community and specialist podiatrists practice nurses and GPs were the main groups carrying out foot screening.

#### 3.3.10 How general practices ensured foot screening data was recorded in SCI-DC

It was clear from replies that general practices in all MCN areas used their own systems, which (it became clear) did not transmit risk scoring data to SCI-DC, but in most cases did feed through the screening event data on whether peripheral pulse was measured and whether neuropathy was tested for, for the QOF data (see indicators 9 and 10 in Appendix 5). In two MCN

areas, responsibility for putting foot screening risk data into SCI-DC had been taken on by podiatrists, who did most of the screening in the Shetland, and who used a pink form paper system in Fife.

### 3.3.11 Active foot disease

Data on foot risk categories for people with type 2 diabetes only (not including type 1 diabetes) by health board were from SCI-DC and dated 24th April 2009. The health boards were compared using the crude rate of those in each foot risk category. and in those with active foot disease. Shown in Figure 6 is the crude rate by health board for active diabetic foot disease. The denominator population was patients with type 2 diabetes. These differences may be partly explained by differing age profiles between health boards, and recording practice and accuracy.

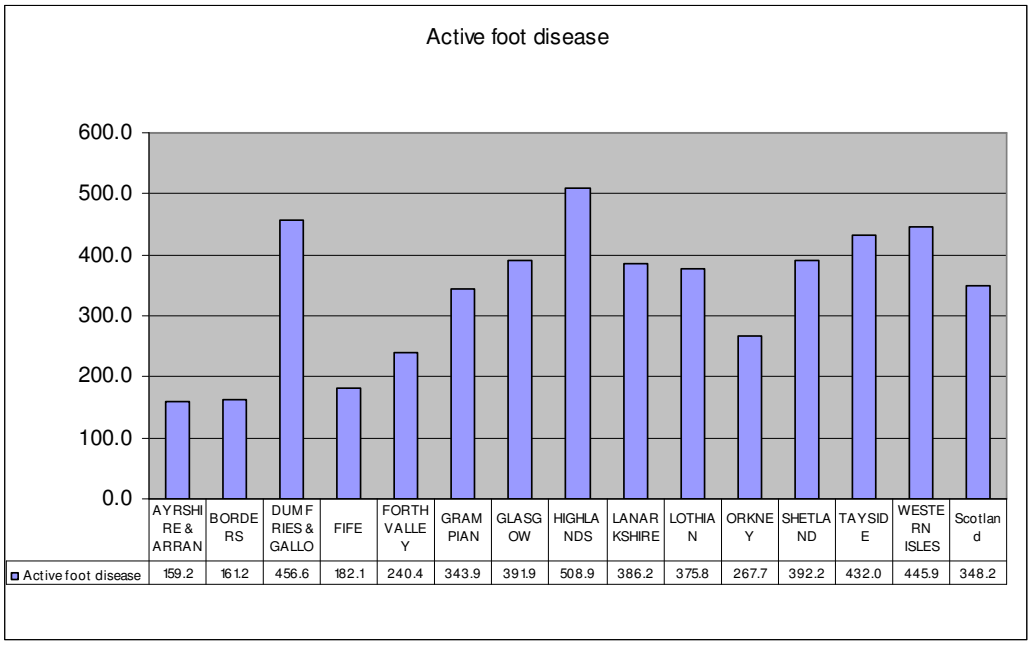


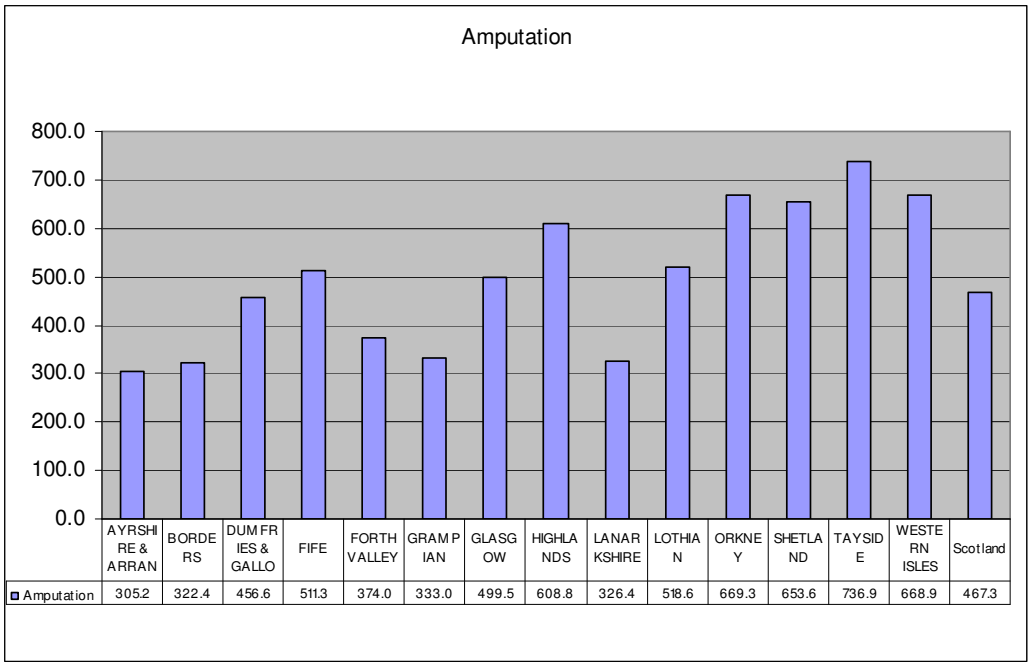

**Figure 6: Active foot disease[b] prevalence per 100,000 population with type 2 diabetes at 24.4.09**

[b]Active foot ulceration or painful neuropathy, which is difficult to control
http://www.datadictionaryadmin.scot.nhs.uk/isddd/13718.html

At the lower levels of risk there is more variation than at the active foot disease level. Scottish rates are given for reference. There is further information on the other risk categories in Appendix 3.

### 3.3.12 Amputation

Data on amputation for people with type 2 diabetes only (not including type 1 diabetes) by health board were requested from SCI-DC and dated 24th April 2009. The prevalence of amputation among patients with type 2 diabetes by health board (any amputation of lower limb, not necessarily diabetes-related) is given in Figure 7 below (based on the SCI-DC data and dated 24.4.09). These variations might be partly explained by differences in the age profile of the population with type 2 diabetes in each health board.

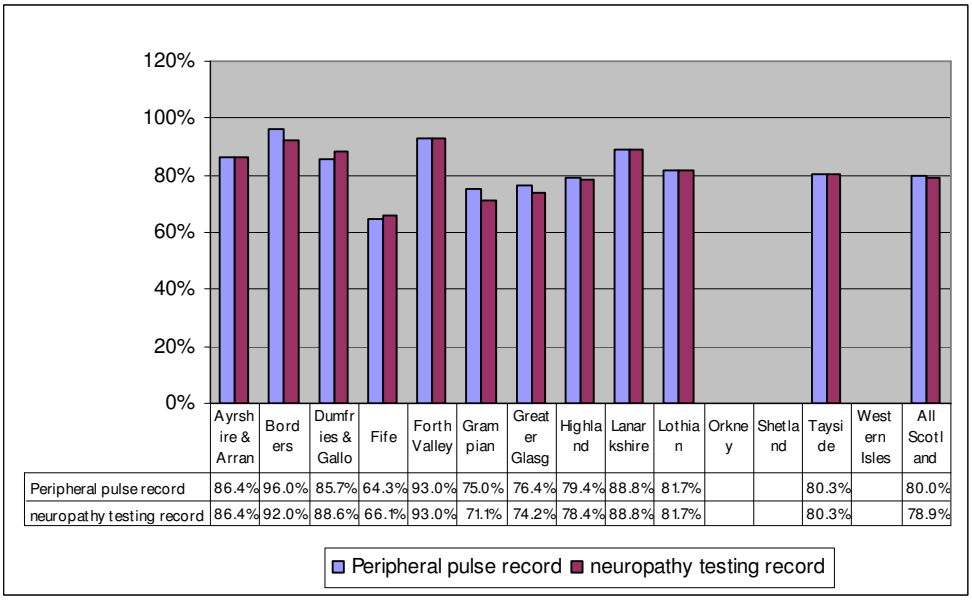



| | AYRSHIRE & ARRAN | BORDERS | DUMFRIES & GALLO | FIFE | FORTH VALLEY | GRAMPIAN | GLASGOW | HIGHLANDS | LANARKSHIRE | LOTHIAN | ORKNEY | SHETLAND | TAYSIDE | WESTERN ISLES | Scotland |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Amputation | 305.2 | 322.4 | 456.6 | 511.3 | 374.0 | 333.0 | 499.5 | 608.8 | 326.4 | 518.6 | 669.3 | 653.6 | 736.9 | 668.9 | 467.3 |

**Figure 7: Amputation prevalence per 100,000 population with type 2 diabetes, at 24.4.09**

Although amputation prevalence appears greater than active foot disease prevalence it may not be legitimate to compare these because the amputation state lasts longer than the active foot disease state. There is also (anecdotally) a move towards earlier amputation in diabetes patients to improve quality of life.

The final element of quantitative information relating to foot screening comes from the QOF, showing the percentage of practices achieving full QOF points for measuring peripheral pulses and neuropathy testing (Figure 8). There was some variation here.




| | Ayrshire & Arran | Borders | Dumfries & Gallo | Fife | Forth Valley | Grampian | Greater Glasg | Highland | Lanarkshire | Lothian | Orkney | Shetland | Tayside | Western Isles | All Scotland |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Peripheral pulse record | 86.4% | 96.0% | 85.7% | 64.3% | 93.0% | 75.0% | 76.4% | 79.4% | 88.8% | 81.7% | | | 80.3% | | 80.0% |
| neuropathy testing record | 86.4% | 92.0% | 88.6% | 66.1% | 93.0% | 71.1% | 74.2% | 78.4% | 88.8% | 81.7% | | | 80.3% | | 78.9% |

**Figure 8 Percent of QOF practices (on nGMS, 17c and 2c contracts combined) with 100% QOF points achievement for foot screening for each Health Board for 2007-08.**

Note: QOF data for practices on 17c and 2c contracts is not always comparable with data for nGMS contracts. This is not an issue for comparison of mainland NHS boards on the basis of all three contract types. However, island boards have small numbers of nGMS practices and larger proportions with non-GMS contracts; hence comparisons using aggregated QOF data are not possible for them in this report, and so their data is left blank on the graph

In the DAP(Q4) six MCNs reported they were or were on target to record foot risk score for at least 75% of people with diabetes. The SDS 2009 (table 63) reported that across Scotland 28.8% of registered people with type 2 diabetes had had a foot risk calculation in the last 15 months[2]

### *3.4 Cardiovascular screening for people with diabetes*

Cardiovascular screening was also in general reported as systematic, and taking place annually as part of the annual check where blood pressure, lipids, weight, renal function, blood glucose testing, BMI measurement and

microalbuminuria testing also took place, though not all were mentioned in each MCN. Two areas with a LES (Highland and Glasgow) mentioned that CV screening was part of the LES. Western Isles mentioned that the Well North programme made CV screening systematic at present. In one area where CV screening was less systematic, the MCN was planning to link to the CHD MCN to look at this.

#### 3.4.1 The mechanisms for cardiovascular risk screening

Mechanisms mentioned for cardiovascular risk screening varied from a risk alert in GP systems and SCI-DC, through 6 monthly or annual review of selected clinical indicators as above, and including in addition smoking and quality of diabetes control. One MCN said SIGN risk measures were in use, and the QOF data was mentioned, with the caveat that this QOF indicator was for CV patients, not specifically for people with diabetes. One MCN mentioned using the SCI-DC risk rating, one used a recognised CV risk tool in GP systems, and one mentioned a risk scoring tool called Q-risk, but said that that was being superseded. A majority of MCNs did not mention a risk scoring mechanism. One said that since all patients with T2DM aged over 40 were likely to have a ten year risk of a cardiovascular event of >20%, they deliberately did not score cardiovascular risk. In Tayside the screening checks were more frequent than annual, if blood pressure and cholesterol were not in target ranges.

Most MCNs stated there were no differences in the risk screening approach across their area. Four MCNs mentioned differences or anomalies in practice across the area, and for two of these this related to the old Argyll and Clyde Health Board area, which was not yet fully integrated for these purposes into Greater Glasgow and Clyde (Clyde) and Highland (Argyll and Bute).

### 3.4.2 MCN methods for checking cardiovascular data

It was less easy to check that cardiovascular risk screening had been carried out, but QOF measured $HbA_{1c}$ and cholesterol screening events and cut off levels for increased risk. QOF was mentioned more often than SCI-DC here, though SCI-DC was used directly in Tayside, and via SCI-DC SDS data in some other places. SCI-DC records events and levels for $HbA_{1c}$, blood pressure, cholesterol and BMI and also records smoking status. The published SDS report (2008) is at health board rather than CHP or practice level, so may be difficult to use to monitor and check implementation in detail within individual MCN areas. Local clinical governance mechanisms were responsible for audit and implementation of guidelines in one area, and it was stated that it would require a specific project to check CV screening especially. That had not been done.

Although these cardiovascular measures may have been taken, the next step of creating a risk score out of them may not have been. There appears to be no easy method for MCNs to check that systematically, as cardiovascular risk scores do not appear in the annual reports. Similarly, (but for technical reasons) foot risk data for creating foot risk scores do not transfer from GP systems to SCI-DC.

### 3.4.3 Cardiovascular screening performance

Most areas achieved 100% of QOF points for having measured BMI in the past 15 months (Figure 9):

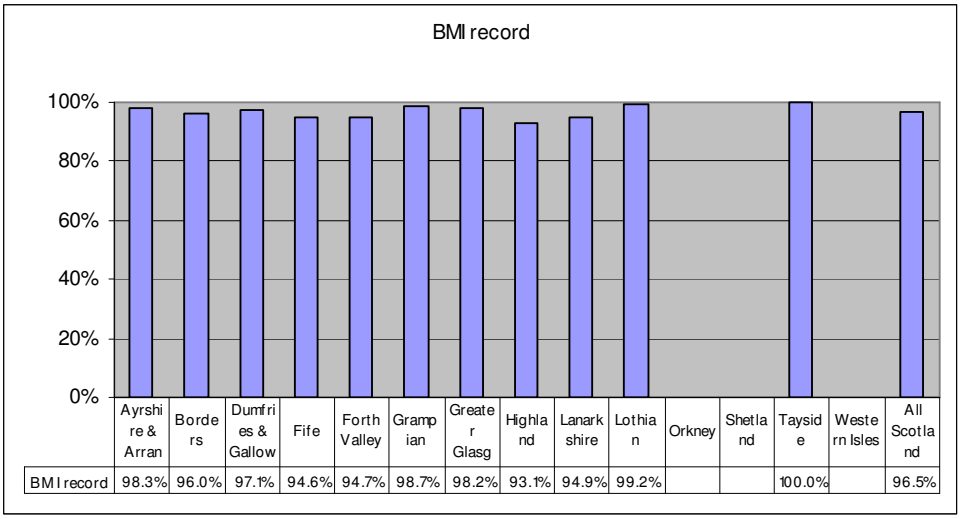



**Figure 9 Percent of QOF practices (on nGMS, 17c and 2c contracts combined) with 100% QOF points achievement for BMI measurement by Health Board, 2007-08.**

Note: QOF data for practices on 17c and 2c contracts is not always comparable with data for nGMS contracts. This is not an issue for comparison of mainland NHS boards on the basis of all three contract types. However, island boards have small numbers of nGMS practices and larger proportions with non-GMS contracts; hence comparisons using aggregated QOF data are not possible for them in this report, and so their data is left blank on the graph

Most MCNs had near 100% achievement of QOF points for measuring BP in the last 15 months and where the last blood pressure (no time frame) was below 145/85 (Figure 10).

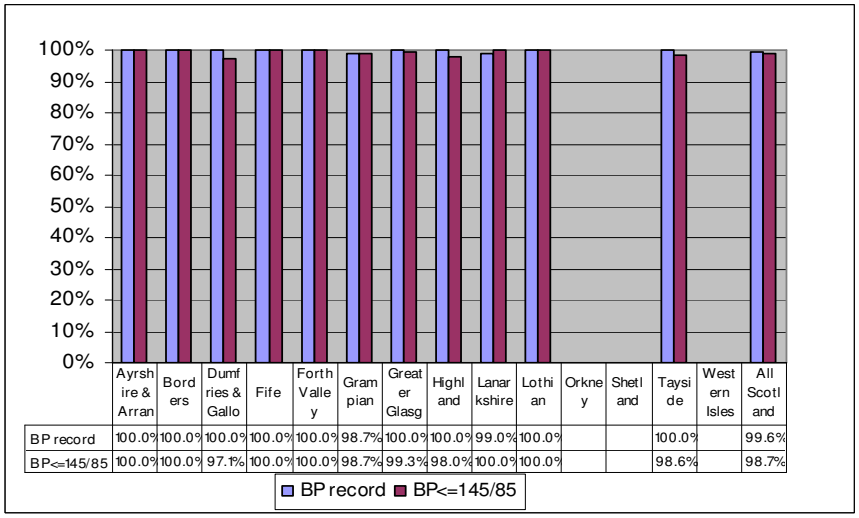
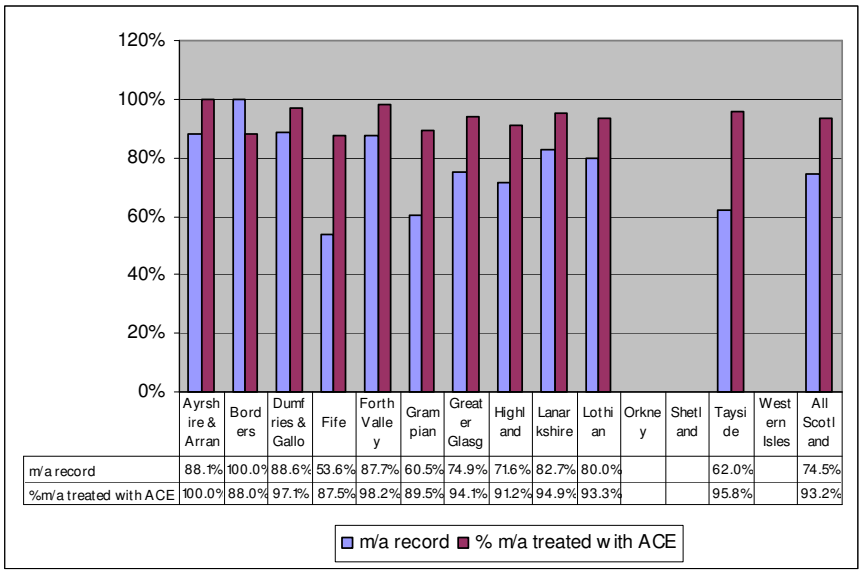



**Figure 10 Percent of QOF practices (on nGMS, 17c and 2c contracts combined) with 100% QOF points achievement for BP measurement and control for each Health Board, 2007-08**

Note: QOF data for practices on 17c and 2c contracts is not always comparable with data for nGMS contracts. This is not an issue for comparison of mainland NHS boards on the basis of all three contract types. However, island boards have small numbers of nGMS practices and larger proportions with non-

GMS contracts; hence comparisons using aggregated QOF data are not possible for them in this report, and so their data is left blank on the graph

There was less than 100% full satisfaction for QOF indicators for microalbuminuria measurement in the last 15 months, though somewhat better for the percentage of those with albuminuria who were treated with ACE inhibitors (but the last figure was not limited to a timeframe), Figure 11.

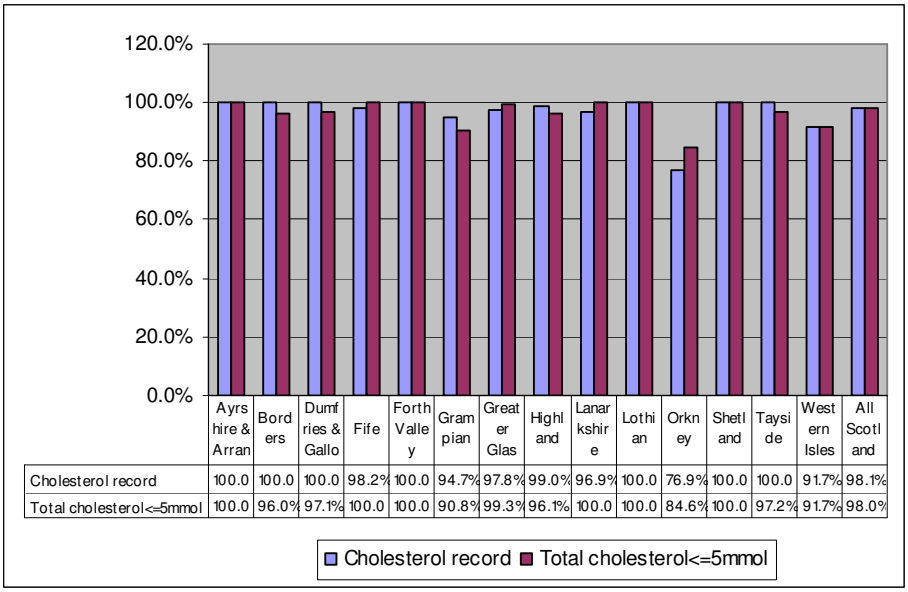



| | Ayrshire & Arran | Borders | Dumfries & Gallo | Fife | Forth Valley | Grampian | Greater Glasg | Highland | Lanarkshire | Lothian | Orkney | Shetland | Tayside | Western Isles | All Scotland |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| m/a record | 88.1% | 100.0% | 88.6% | 53.6% | 87.7% | 60.5% | 74.9% | 71.6% | 82.7% | 80.0% | | | 62.0% | | 74.5% |
| %m/a treated with ACE | 100.0% | 88.0% | 97.1% | 87.5% | 98.2% | 89.5% | 94.1% | 91.2% | 94.9% | 93.3% | | | 95.8% | | 93.2% |

**Figure 11 Percent of QOF practices (on nGMS, 17c and 2c contracts combined) with 100% QOF points achievement for microalbuminuria recording and control for each Health Board, 2007-08**

Note: QOF data for practices on 17c and 2c contracts is not always comparable with data for nGMS contracts. This is not an issue for comparison of mainland NHS boards on the basis of all three contract types. However, island boards have small numbers of nGMS practices and larger proportions with non-GMS contracts; hence comparisons using aggregated QOF data are not possible for them in this report, and so their data is left blank on the graph

Cholesterol testing was the final cardiovascular screening indicator, and here full achievement of QOF points was generally close to 100% (Figure 12).




| | Ayrshire & Arran | Borders | Dumfries & Gallo | Fife | Forth Valley | Grampian | Greater Glas | Highland | Lanarkshire | Lothian | Orkney | Shetland | Tayside | Western Isles | All Scotland |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cholesterol record | 100.0 | 100.0 | 100.0 | 98.2% | 100.0 | 94.7% | 97.8% | 99.0% | 96.9% | 100.0 | 76.9% | 100.0 | 100.0 | 91.7% | 98.1% |
| Total cholesterol<=5mmol | 100.0 | 96.0% | 97.1% | 100.0 | 100.0 | 90.8% | 99.3% | 96.1% | 100.0 | 100.0 | 84.6% | 100.0 | 97.2% | 91.7% | 98.0% |

**Figure 12 Percent of QOF practices (on nGMS, 17c and 2c contracts combined) with 100% QOF points achievement for Cholesterol recording and control for each Health Board, 2007-08**

Note: QOF data for practices on 17c and 2c contracts is not always comparable with data for nGMS contracts. This is not an issue for comparison of mainland NHS boards on the basis of all three contract types. However, island boards have small numbers of nGMS practices and larger proportions with non-GMS contracts; hence comparisons using aggregated QOF data are not possible for them in this report, and so their data is left blank on the graph

The DAP(Q4) indicators included one on improving the quality and completeness of BMI and smoking status data to over 80% of patients. That was recorded as completed or on target for 12 MCNs . The SDS 2009 reported that:

- BMI had been calculated within the past 15 months for 89.7% of registered patients, (and 90% of Type 2) (tables 10 and 11) and 86.7.% of type 2 (61.6% of type 1) had a BMI of >=25kg/$m^2$ (tables 13 and 15)
- 93.9% of registered patients had had their blood pressure recorded in the past 15 months, (table 23) and in 74.6% of type 2 and 79% of type 1, systolic reading was below 140mmHg, (tables 24a and 25a)
- Total cholesterol had been recorded in 86.5% of registered patients in the last 15 months, and was <=5.0mmol/l in 71.6% of those recorded

- 18.8% of registered patients with type 2 diabetes were current smokers (24.6% of those with type 1)

### *3.5 Renal services*

This section on renal replacement therapy (RRT) is included as it is relevant to a minority of type 2's at a more advanced stage of the condition, and owing to the greater prevalence of type 2 compared to type 1 the absolute numbers of type 2 requiring dialysis are greater than the absolute numbers of type 1 requiring it.

The survival report for Scotland from the European Renal Association[14] shows that two year survival rates for diabetic patients on dialysis (adjusted for age and sex) worsened in Europe as a whole (from 68.8% (95% CI 68.1%-69.5%) for the 1997-2001 cohort to 64.3% (95% CI 63.9%-64.7%) for the 2000-2004 cohort) but only marginally deteriorated in Scotland (58.8% down to 58.7%). Survival was lower in Scotland than for Europe at both two years (above) and five years (1997-2001 cohort, Scotland, 20.6%, Europe, 34.5%). For these estimates 95% confidence intervals for Scotland and Europe did not overlap for either cohort, suggesting that the differences were unlikely to be due to chance. Generally Scottish patients with diabetes have the lowest longer term survival of all Scottish primary renal diagnostic groups (Figure 13). This is likely to be due to vascular disease.

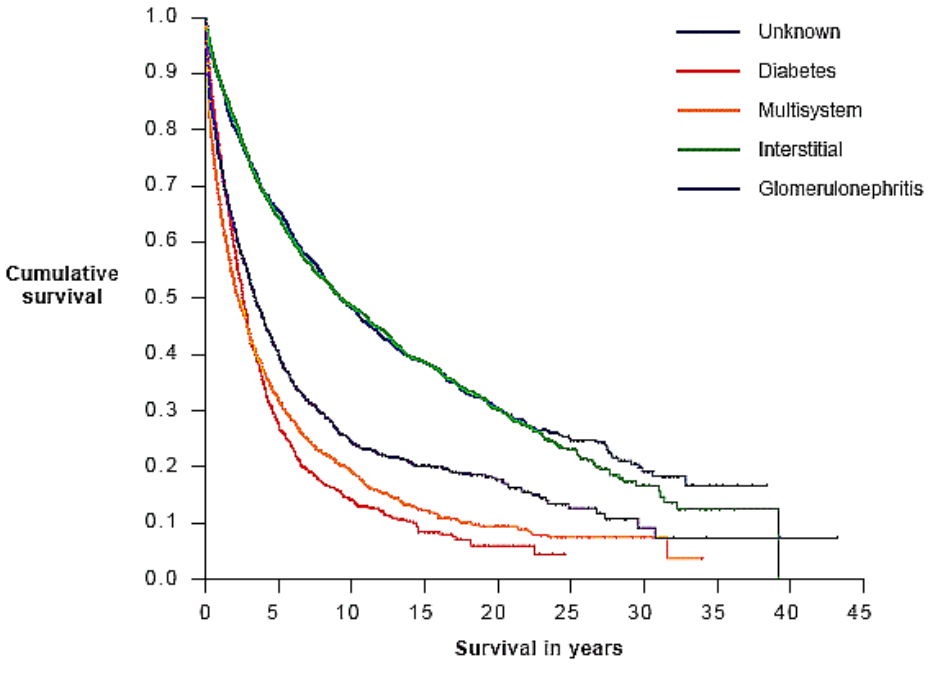


**Figure 13 Survival of patients by primary renal diagnosis group in Scotland for patients starting RRT between 1960 and 31/12/2004.[6]**

The graph shows survival differs greatly by primary renal diagnostic group. Table 2 below survival numbers and medians.[6]

**Table 2 Numbers and median survival for renal diagnostic groups for Scotland: starting RRT between 1960 and 31/12/2004.[6]**

| Diagnosis Group | Number starting RRT | Number dead by 31/12/2004 | Median survival (years) | 95% CI for median survival | |
|---|---|---|---|---|---|
| Unknown | 1834 | 1187 | 3.4 | 3.1 | 3.7 |
| Diabetes | 1453 | 1033 | 2.6 | 2.4 | 2.7 |
| Multisystem | 2309 | 1679 | 2.2 | 2.0 | 2.5 |
| Interstitial | 2525 | 1331 | 9.3 | 8.3 | 10.2 |
| Glomerulone phritis | 1902 | 1004 | 9.2 | 8.3 | 10.1 |
| **All diagnoses** | **10023** | **6234** | **4.5** | **4.3** | **4.7** |

The difference in survival outcome between these groups in Scotland is reflected in differences in treatment process. For example, people with diabetic nephropathy (DN) who need kidney dialysis are more likely to need central venous catheter (CV) access which causes a greater risk of bacteraemia and is associated with higher mortality than arteriovenous fistula, (AV) which is the preferred form of access for dialysis (Figure 14).

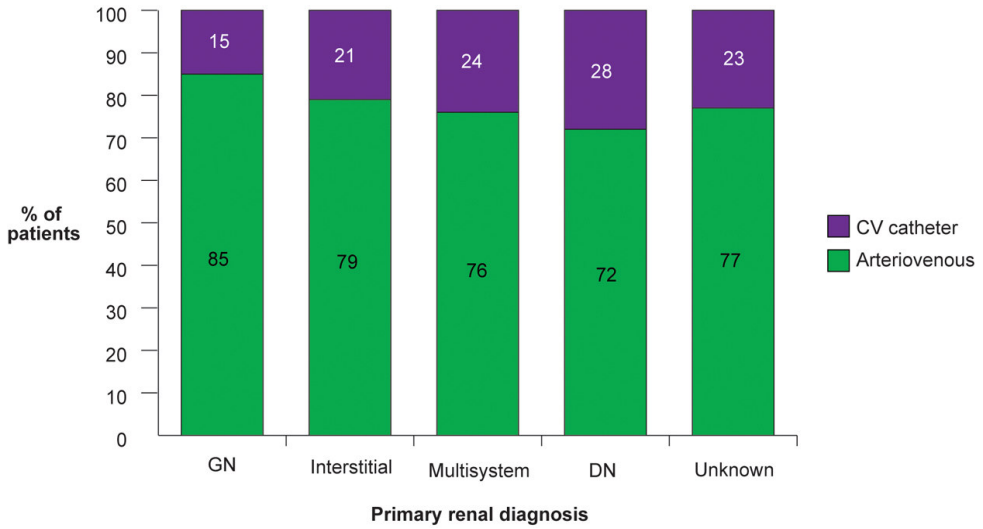



**Figure 14 Percentage of patients with arteriovenous and central venous vascular access for haemodialysis by primary renal diagnosis in April 2006 (figures for Scotland as a whole). Note: CV: central venous. GN: glomerulonephritis. DN: diabetic nephropathy.[6]**

By April 2007 the percentage on CV had increased from that shown above: 97 (34.5%) Scottish diabetes patients on haemodialysis were on CV and the rest (184) were on AV. Table 3 gives the numbers[6].

**Table 3 Number of patients with arteriovenous and central venous vascular access for haemodialysis by primary renal diagnosis in April 2006[6]**

| Vascular access | Glomerulonephritis | Interstitial | Multisystem | Diabetes | Unknown |
|---|---|---|---|---|---|
| Arteriovenous | 214 | 298 | 212 | 150 | 217 |
| CV catheter | 38 | 79 | 68 | 58 | 65 |

The percentage of haemodialysis patients on Peritoneal Renal Dialysis (PRD) who had diabetes varied by health board (Figure 15).

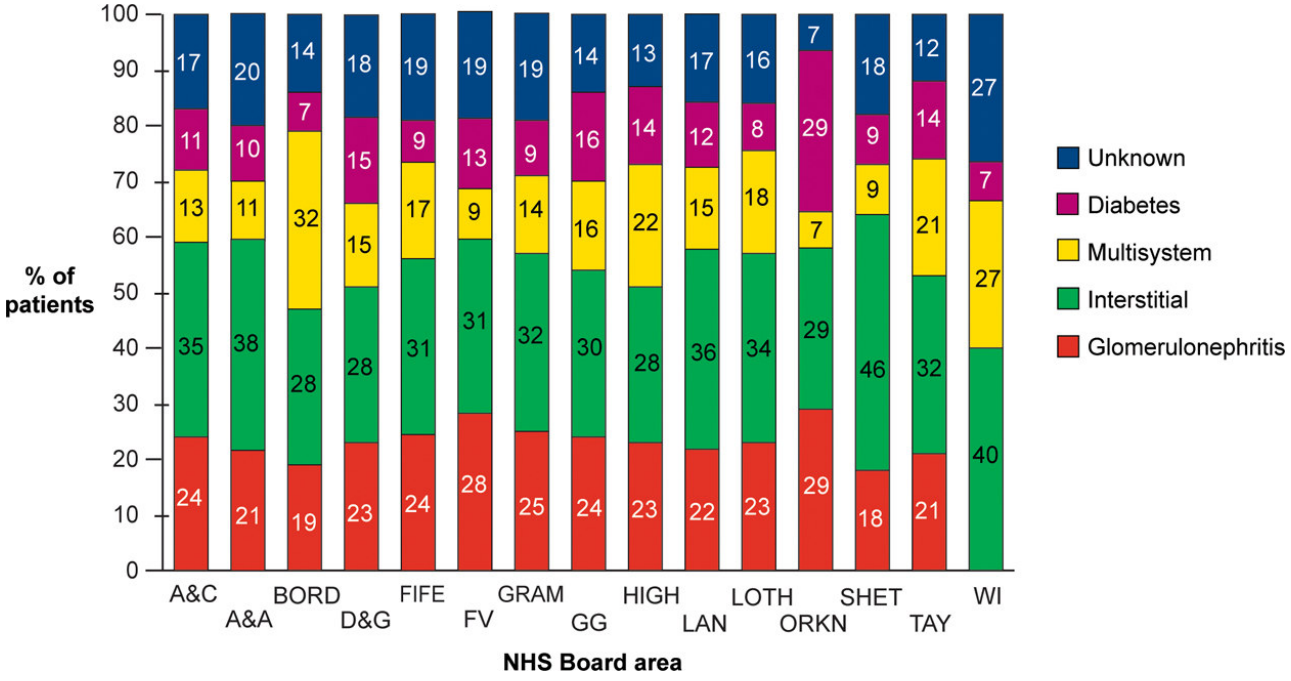



**Figure 15 Patients' Diagnostic group and their NHS Board area of residence: Prevalent patients on 31 December 2004[6]**

The obvious outlier here was Orkney, where 29% of these dialysis patients had diabetes.

Numbers relating to these percentages are shown in Table 4[6]

**Table 4 Prevalence of patients receiving RRT on 31 December 2004 by NHS Board area of residence[6]**

| NHS Board | Population on 30 June 2004 | RRT population | Prevalence per 100 000 population |
|---|---|---|---|
| A&C | 415 658 | 305 | 73 |
| A&A | 367 590 | 280 | 76 |
| BORD | 109 270 | 57 | 52 |
| D&G | 147 930 | 105 | 71 |
| FIFE | 354 519 | 222 | 63 |
| FV | 281 764 | 181 | 64 |
| GG | 867 083 | 693 | 80 |
| GRAM | 524 020 | 369 | 70 |
| HIGH | 211 340 | 172 | 81 |
| LAN | 556 114 | 408 | 73 |
| LOTH | 787 504 | 495 | 63 |
| ORKN | 19 500 | 14 | 72 |
| SHET | 21 940 | 11 | 50 |
| TAY | 387 908 | 308 | 79 |
| WI | 26 260 | 15 | 57 |
| Missing | | 5 | |

Finally, the percentage achieving full QOF points for having carried out an eGFR or serum creatinine test on their patients varied somewhat (Figure 16).

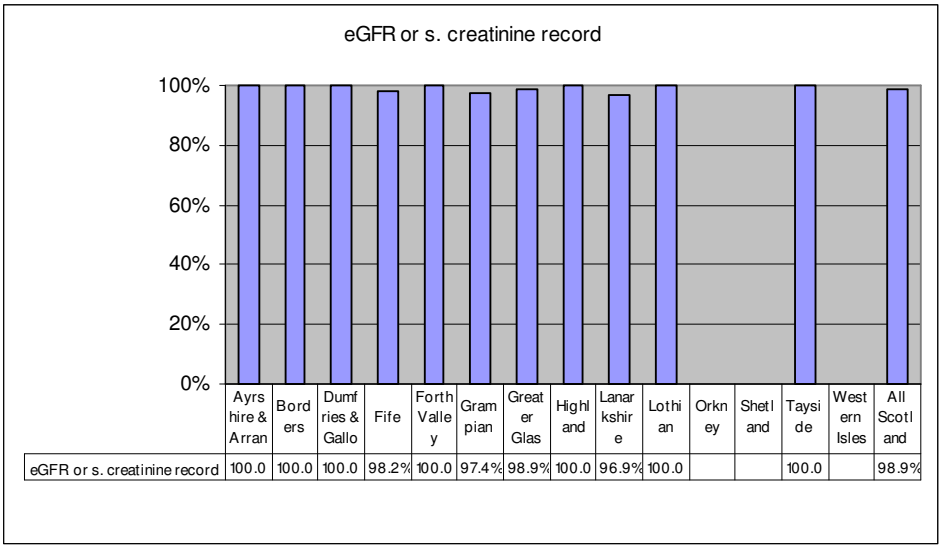



**Figure 16 Percent of QOF practices (on nGMS, 17c and 2c contracts combined) with 100% QOF points achievement for eGFR or creatinine recording in the previous 15 months for each Health Board, 2007-08**

Note: QOF data for practices on 17c and 2c contracts is not always comparable with data for nGMS contracts. This is not an issue for comparison of mainland NHS boards on the basis of all three contract types. However, island boards have small numbers of nGMS practices and larger proportions with non-GMS contracts; hence comparisons using aggregated QOF data are not possible for them in this report, and so their data is left blank on the graph

The DAP(Q4) target relating to this was that over 80% of patients should have a recent record of eGFR, and it was reported there that in December 2007 nine MCNs were on target to or had achieved and three had some slippage.

Approximately 30% of patients with type 1 diabetes and 20% of people with type 2 diabetes develop diabetic nephropathy.[15] It is recommended that identification of chronic kidney disease in a patient with diabetes should result in treatment aimed at slowing progression of renal disease, cardiovascular risk factor management and the identification and treatment of renal specific complications.[15]

A collaborative project linking the Scottish Renal Registry and the National Diabetes Register is underway[15]. Its aims are to determine:

1. the prevalence and incidence of chronic kidney disease in people with diabetes in Scotland.
2. survival and causes of death in people with diabetes on renal replacement therapy
3. factors which are associated with decline in renal function in patients with diabetes and kidney disease
4. if chronic kidney disease guidelines are being followed

### *3.6 Structured Patient Education (SPE)*

#### 3.6.1 SPE Provision and access for new and existing patients

Ten areas had some form of structured education on offer for new patients. In three of those it was partially implemented, but DESMOND (Diabetes Education and Self Management for Ongoing and Newly Diagnosed) was being rolled out. In three areas SPE was confirmed to be offered to all new patients. In one of these the package was DESMOND (offered to all new

patients), in the second it was X-Pert, and in the third an education topic checklist approach was used.

In four of the ten areas the SPE was a locally developed package, an example of which was the Tayside Diabetes Education Programme. Western Isles MCN commented that DESMOND was unsuitable for remote and rural areas owing to the difficulties in getting groups together, and this MCN was testing other approaches though community television and on-line multimedia education packages.

Four areas said at interview that SPE was not available to new patients, although one of these would refer patients who lived close to a neighbouring area for the SPE provided there, and one was looking at the X-Pert and Educare packages.

For existing patients the availability of SPE was much more limited. Although the reasons for that were not asked for, from the responses in other areas it is safe to say this was because of resource constraints. Patients were not all offered it, though they could usually self refer, or their GP or another member of the primary care team might offer it if appropriate for an individual. Access for new patients was sometimes offered by the MCN (via practices) on the basis of new patient registrations data from SCI-DC, but more often access was through the care provider's referral.

The DAP(Q4) indicators state that four MCNs were on target to or achieving offering SPE to all newly diagnosed patients with type 2 diabetes, and six had or were on target to produce a diabetes education strategy informed by a training needs analysis.

### 3.6.2 Percentage of new and existing patients accessing SPE.

The answers here were varied, mainly owing to the complicating factor of partial roll outs and the distinction between the percentage offered SPE and the percentage who took it up.

Between 50% and 100% of new patients were offered SPE where it was available. Take up varied from 25-30% overall, to 80% or 90% of those offered, but there was of course some variation within areas where there was partial roll out. Some found this figure unquantifiable or said it was too early to say.

Much smaller percentages of existing patients were thought to either be offered or take up access to SPE. The maximum estimated take up was 15% in Shetland, and the two other MCNs that gave a percentage figure suggested less than 10% and less than 5% respectively.

### 3.6.3 Types of education available if SPE not available

One to one education with a health professional such as GPs, practice nurses, DSNs and (less often) dietitians was mentioned specifically in seven responses. The distribution of materials such as leaflets, or DVDs and education through websites was another method, mentioned three times. Local support groups could use Diabetes UK materials, and these and patient conferences had an educational function, perhaps hosting talks from health care professionals on aspects of diabetes care. In two MCNs (Fife and Glasgow) a group technique called conversation maps was mentioned. This was a more general patient directed group intervention, for example for people on oral therapies, and available more generally than some specialist courses for those starting insulin and using insulin pumps. In two MCNs there

was no other education as SPE was available. Other education included supermarket tours and one day carbohydrate counting courses (Lothian).

### *3.7 Staffing for type 1 and type 2 diabetes services*

#### 3.7.1 Numbers of GPs and Practice Nurses involved in diabetes care

Some interviewees were able to state the number of GPs and Practice Nurses that had received training in diabetes care (T1 and T2). Others estimated numbers based on a minimum of one GP and one Practice Nurse trained per practice, and a few were able to state the number of practices or the total number of GPs only. Hence numerical generalisation is not appropriate. However, the following estimates were given (Table 5).

**Table 5 Numbers of GPs and Practice Nurses by MCN area**

| **MCN** | ***GP and Practice Nurse numbers*** |
|---|---|
| Western Isles | *16 GPs, 16 Practice Nurses* |
| Shetland | *30 GPs, 40 Practice Nurses (all of these staff)* |
| Orkney | *14 GPs, 14 Practice Nurses (total 26 GPs, 14 practices)* |
| Lothian | *121 GPs, 121 Practice Nurses in 128 practices* |
| Lanarkshire | *98 GPs, c.150 Practice Nurses in 98 practices* |
| Highland* | *90-100 GPs, 90-100 Practice Nurses in c100-105 practices.* |
| Glasgow | *650 (all GPs), c.300 Practice Nurses* |
| Grampian GPs | *GPs not known (but 86 General Practices), c.100 Practice Nurses* |
| Forth Valley | *57 GPs (min). 57 Practice Nurses (min. if 1 per practice)* |
| Fife | *57 GPs (min), 57+ Practice Nurses (if 1 per practice)* |
| Dumfries and Galloway | *115 GPs (all GPs), 40+ Practice Nurses in a total of 35 Practices* |
| Borders | *94 GPs, (total GPs) c.40 Practice Nurses in total* |
| Ayrshire and Arran | *62 GPs, 67 Practice Nurses, with in total, c. 200 staff with a formal Diabetes qualification.* |
| *Tayside* | *364 GPs (total GPs), number of Practice Nurses not known* |

*including Argyll and Bute (Note 'all GPs' = all GPs involved in Diabetes, 'Total GPs' = total number of GPs not known how many involved in diabetes.)

#### 3.7.2 Diabetes Specialist Nurses

The following table gives the whole time equivalent (WTE) number of DSNs in post by Health Board. It should be noted that all the information in this section refers to both types of diabetes.

**Table 6 WTE of DSNs in post by Health Board (Source ISD)**

| MCN | *Interview estimated WTE (March/April 2009)* |
|---|---|
| NHS Borders | *2.2* |
| NHS Fife | *12.23 (+1 in June)* |
| NHS Lothian | *18.7* |
| NHS Highland (including Argyll and Bute) | *6.2* |
| NHS Grampian | *10.4* |
| NHS Orkney | *1* |
| NHS Tayside | *8.76* |
| NHS Western Isles | *1 (community) + hospital (n/k)* |
| NHS Shetland | *0.8* |
| NHS Ayrshire & Arran | *8* |
| NHS Greater Glasgow & Clyde | *31.5* |
| NHS Lanarkshire | *10.3 (+7 due to start)* |
| NHS Forth Valley | *n/k* |
| NHS Dumfries & Galloway | *5 (+1 due to start in June)* |
| ***Scotland*** | ***Aggregation inappropriate*** |

Interviewees were asked to break down these figures between hospital inpatients, hospital outpatients and the community. It was not possible to do that consistently, but the results are presented in Table 7 below to show where figures could not be separated, by combining them in one cell.

**Table 7 WTE of DSNs in post by Health Board and care setting (source: telephone interviews)**

| MCN | Hospital inpatients and day patients | Hospital outpatients | Community patients |
|---|---|---|---|
| NHS Borders | 2.2 | | |
| NHS Fife | 2 | 6.23 | 4 (+1 in June) |
| NHS Lothian | 2.8 | 13.4 | 2.5 |
| NHS Highland | 1.2 | 5 | |
| NHS Grampian | 3.8 | | 6.6 |
| NHS Orkney | 1 | | |
| NHS Tayside | 1 (+2 ad hoc) | 7.76 | 0 |
| NHS Western Isles | d/k | 1 | |
| NHS Shetland | 0.8 | | |
| NHS Ayrshire & Arran | 5 | | 3 |
| NHS Greater Glasgow & Clyde | 15 | | 16.5 |
| NHS Lanarkshire | 7.6 | | 2.7 (+7 to start) |
| NHS Forth Valley | d/k | d/k | d/k |
| NHS Dumfries & Galloway | 2 (+1 to start) | | 3 |

### 3.7.3 Diabetes Specialist Podiatrists

Estimates for the WTEs of Specialist Podiatrists and Generalist Podiatrists and the proportion of the latter's time spent on Diabetes are shown in Table 8.

**Table 8 WTEs of Specialist Podiatrists and Generalist Podiatrists and the proportion of the latter's time spent on diabetes (source: telephone interviews)**

| | WTEs/ numbers of Diabetes Specialist Podiatrists* | WTE of Generalist Podiatrists* | Proportion of Generalist Podiatry time spent on Diabetes |
|---|---|---|---|
| NHS Borders | 1 | 16-18 | can't split |
| NHS Fife | 7 | 28.5 | 30% |
| NHS Lothian | 6 | 68.54 | 30% |
| NHS Highland | 1 | ?30 | d/k |
| NHS Grampian | 5.8 | 25 | 25% |
| NHS Orkney | 0.05 | 4-6 | 0.1 WTE |
| NHS Tayside | 3.3 | 46 | c33% |
| NHS Western Isles | 0.2 | 5.6 | can't split |
| NHS Shetland | 0 | 5 | 10% |
| NHS Ayrshire & Arran | 6 | 35 | 25.7% |
| NHS Greater Glasgow & Clyde | 20 | d/k | d/k |
| NHS Lanarkshire | 3 comm. + 4 hosp. | Not answered | Not answered |
| NHS Forth Valley | 3 acute, 15 community people | 15 (people) | 40-50% |
| NHS Dumfries & Galloway | 4 people | d/k | d/k |

* if figure refers to people 'people' is stated, otherwise figures are for WTE

In Forth Valley the caseload profile was reported to have moved significantly toward diabetic foot care in the past few years.

### 3.7.4 Dietitians

Table 9 gives similar information for Dietitians.

**Table 9 WTEs of Specialist Dietitians and Generalist Dietitians and the proportion of the latter's time spent on diabetes (source: telephone interviews)**

| | WTEs/ numbers of Diabetes Specialist Dietitians | WTE of Generalist Dietitians | Proportion of Generalist Dietitian time spent on Diabetes |
|---|---|---|---|
| NHS Borders | 1 | d/k | d/k |
| NHS Fife | 6.3 (inc gestational) +0.4 WTE for paediatrics (diabetes) | 0 (all specialise) | 90% of dietetic interventions were for people with a primary diagnosis of diabetes |
| NHS Lothian | 8.81 | 36.85 | d/k |
| NHS Highland | 1 | d/k | d/k |
| NHS Grampian | 4.3 | d/k | 2.1 WTE spent on Diabetes |
| NHS Orkney | 0.5 | 4 (people) | d/k |
| NHS Tayside | 3 | d/k | 20% |
| NHS Western Isles | 0.66 | 3.32 | d/k |
| NHS Shetland | 0 | 2 | 5% |
| NHS Ayrshire & Arran | 2.5 | 36 | 25-30% |
| NHS Greater Glasgow & Clyde | 8 | d/k | d/k |
| NHS Lanarkshire | 4 WTE (Comm) + 3 part-time posts in Hospital | Not answered | Not answered |
| NHS Forth Valley | 2.2 wte | 15.38 wte | 0.6 wte (c.0.4%) |
| NHS Dumfries & Galloway | 3 | d/k | d/k |

*for Specialist Dietitians if figure refers to people 'people' is stated, otherwise figures are for WTE. d/k: don't know

### 3.7.5 Sessions per week for diabetes from medical staff

Because of job planning arrangements it was difficult to identify sessions allocated for diabetes from medical staff, and so no information is reported here.

### 3.7.6 Psychology staff with responsibility for people with diabetes.

Perhaps the key role for psychologists in diabetes is helping improve self care /behaviour change in patients who do not have mental health problems. Developing management strategies for mental health problems such as anxiety and depression whilst important probably comes secondary to that.

There is an increased rate of psychological problems among people with diabetes. For example, the prevalence of depression in people with diabetes

is around 20%[16] and the lifetime prevalence of anxiety is about 40%[17], both of which are much greater than that seen in the general population. Both depressive symptoms (not necessarily to the extent that a diagnosis of clinical depression would be made) and anxiety are associated with poorer diabetes control[18;19]. So, clearly psychological issues are important in their own right, but also because they can affect negatively the ability of people with diabetes to self-care.

Type 1 and type 2 diabetes are not distinguished by type of diabetes in psychology treatment data. Adults and children are distinguished, however the vast majority of children with diabetes have type 1, and are therefore not part of the population of interest for this HNA update.

*Key points from 2006 report:*

The staffing figures from the 2006 review of psychology provision[5] are still relevant, since there has been little change (see update below for changes). These figures were based on a national survey of MCNs and of Heads of Psychology Services, so it is unlikely there was substantial unaccounted for resource.

The adult services psychology staffing complement for diabetes in 2006 was 6 sessions per week for the whole of Scotland. The six sessions comprised two in each of three Health Boards: Grampian, Lothian and Forth Valley. Four of these sessions were permanently funded by health boards (Lothian and Forth Valley) whereas two were funded from temporary pharmaceutical monies (Grampian).

Psychologists were part of the diabetes clinical team in Grampian and Forth valley and possibly also in Lothian. The report states it is likely that the Psychology provision is entirely secondary care based, and therefore more concentrated on type 1 than type 2 diabetes. In fact, it appears that the majority of psychology time in adult diabetes services was spent conducting individual psychological therapy to people with substantial mental health

problems who happened to have diabetes. That is, provision was largely a standard mental health service.

*Update on 2006 report*

Since 2006, Grampian has obtained permanent funding for five sessions of senior psychology time from the local health board following a service redesign proposal. The aim of this post is largely to provide training to staff involved in delivering healthcare to adults with diabetes across primary and secondary care. Whether the situation has changed elsewhere also is unclear, but the report authors indicated that they found little evidence of plans to develop psychology provision within diabetes services. Thus, it is most likely that there are about nine sessions of psychology provision to adults with diabetes in Scotland.

A Workforce report on Psychology provision[20] states there were 7.6 Whole Time Equivalent (WTE) Psychology staff for people with 'long term conditions' (which includes diabetes) in Scotland in 2008. The report does not separately analyse diabetes WTE, or long term conditions by health board. This has changed little over recent years. In 2003, there were 7.2 WTE psychologists working in long term conditions both for adults and children. 'Long term conditions' are part of a larger 'Physical health' category, which the report does break down by health board.

**Table 10 Psychology staff for Physical health problems (WTE)**

| | |
|---|---|
| Ayrshire & Arran | *6.9* |
| Borders | *0.4* |
| Dumfries &Galloway | *2* |
| Fife | *4.8* |
| Forth Valley | *2* |
| Grampian | *3.3* |
| Greater Glasgow & Clyde | *23.2* |
| Highland | *0.1* |
| Lanarkshire | *1.7* |
| Lothian | *16.1* |
| Shetland | - |
| State Hospital | - |

| | |
|---|---|
| Tayside | *2.4* |
| *Scotland* | *62.9* |

Table 10 is included because it shows that some health boards have almost no Psychology provision for physical health problems (including diabetes).

#### 3.7.7 Current developments in Scottish Diabetes Psychology services

The Psychology Working Group (PWG; a subcommittee of the SDG) is currently implementing a SDG initiative of pump-priming a number of chartered psychologist posts across Scotland. In total, there will be three 0.5 WTE chartered psychologists employed within adult diabetes services and two 0.25 WTE chartered psychologists employed within transition services. All posts will last three years and there is an obligation on successful MCNs to make substantial efforts toward obtaining permanent funding. This initiative increases by about 400% the amount of psychology provision to people with diabetes in Scotland. The funding is open to all MCNs (nine of which have registered formal interest) and the early signs are that there is a great deal of interest across Scotland. The PWG is designing and implementing the application and selection process, and will be closely involved with the post-appointment processes in order to ensure the success of these posts. For example, it will provide supervision and facilitate professional meetings among appointees and senior diabetes clinicians overseeing the delivery of the project locally, to enable creative use of available experience; knowledge, and skills throughout Scotland.

There will be a degree of flexibility within MCN proposals so that local need can match psychology provision. In general, roles will reflect the recommendations of the PWG. Essentially, these recommendations highlighted the fact that a much more effective and efficient use of limited psychology time is to train and supervise diabetes staff than to see a very small number of people with diabetes (with moderate to severe mental health problems) for extensive one-to-one psychological therapy. This training is likely to help front line staff support adults with diabetes in changes to health-

related behaviour; in recognising common psychological problems such as anxiety and depression, and in designing appropriate care pathways.

There seems to be no other realistic option for the best use of psychology time. As indicated previously the rate of anxiety and depression alone is such that as many as one in five adults with diabetes may have clinically significant psychological problems. That is c40,000 individuals in Scotland, even before we consider the numbers struggling to self-manage their condition. To put this in context, the British Psychological Society indicates that 1.0 WTE chartered psychologist should see up to about 60 new patients per year (some of course will be retained). There is also the important question about what diabetes services are set-up to do. The PWG indicated within its report that the purpose of psychology provision within diabetes services should be to help improve health outcomes; and not to provide an adult mental health service for those with moderate to severe mental health problems, because other specialist NHS services already exist to provide this service. The additional benefit, the PWG argue, of the above model of psychology provision is that it encourages cross-pollination of knowledge and skills. That is, diabetes staff learn about psychology and vice versa, which is very important because it is interventions at the interface of psychology and diabetes that are likely to yield the most benefits to people with diabetes.

### *3.8 Learning and information*

#### 3.8.1 Patient consultation exercises in the past two years

Five MCNs said at interview that a patient consultation exercise had been held in the last two years. One of these said it took the form of the Local Diabetic Service Advisory Group (LDSAG), and a patient forum had recently been set up, another referred to three major stakeholder events which had included patients.

Seven MCNs said a patient consultation exercise had not been held in the last two years, but one of these said that the MCN received feedback from the patient support group, and another said a research project was currently in progress, and that patient satisfaction surveys, patient stories and consulting with the patient group had already been mentioned. Two did not know, one because the manager was new in post, but "diabetes voices" sessions had been held in that area, and gave a preliminary idea of a consultation format.

#### 3.8.2 Issues consulted on

Consultations had covered issues such as the setting up of a Patient-Public Involvement group, and also input from patient representatives to recommendations about a preferred blood glucose meter in Dumfries and Galloway. Patient focus groups on dietetics and foot care changes necessary to cope with rising patient numbers were run by services in Forth Valley. Grampian had consulted on service provision and service redesign, Lanarkshire had asked what patients would want a diabetes service to look like (they wanted more structured education and more community specialist staff). In Lothian there had been a consultation at the patient conference, and a patient satisfaction survey had taken place; there had also been a patient satisfaction survey in Tayside, which consulted patients about work plan priorities and patient information development as well as their experience of care.

#### 3.8.3 Usefulness of the Scottish Diabetes Survey reports

On a scale of very useful – quite useful – not of use, seven MCNs said the SDS reports were very useful and seven said they were quite useful. None said they were not of use.

Two mentioned issues, one saying the reports were quite out of date when received – 12 months behind, and another mentioned there had been some data issues but these were being addressed.

### 3.8.4 Uses made of the SDS reports by interviewees

The reports were used in a number of ways but clear common themes were found. They were used to inform and stimulate policy discussions about service planning priorities, and for targeting of care in the light of the identification of good and less good areas of care and consequent service gaps. However one interviewee stated the QIS reports were better for identifying deficiencies as the levels of performance of diabetes services as measured by the SDS was generally very high, making it difficult to distinguish differences.

Issues found and the supporting evidence could be highlighted to the health board in bids for more resources. One MCN said the service gaps evidence was strengthened through comparisons with other health board areas in a benchmarking sense, to show performance in context.

There was another category of information uses. For example statistics about the prevalence of type 1 and type 2 diabetes, patterns by age, and smoking patterns, had been mapped on to locations within one MCN area. The information was also useful to answer information requests, and for other publications such as annual reports, and the My Diabetes handbook. Another information use was in improving the completeness of data collection as it helped to identify areas where improvements were needed. Finally, for new staff the reports were useful for their own education.

One or two respondents discussed the SCI-DC data more generally under this heading, but these uses were different, for example pulling the data to monitor individual performance in practices, and checking that GPs were using the same HB1Ac levels as measures.

### 3.8.5 Interviewees' impressions of others' uses for the SDS reports

Seven interviewees felt they had little or no knowledge of how the SDS reports were used by others beyond discussion at national MCN and SDS meetings to highlight issues and discrepancies across boards (for example foot risk scores) and by the Scottish government to look at improvements over time as a result of the national framework for Diabetes and for long term service planning and more input for the predicated prevalence increases, and also guideline development. One said the Scottish Government should use the SDS to raise awareness of diabetes.

Seven interviewees mentioned more specific uses, for example, an interviewee who managed all five MCNs in Borders described how it was used at meetings of the lead clinicians of all the local MCNs (Stroke, CHD, Diabetes, Palliative care, and Respiratory conditions). It was used by other MCNs to encourage more investment and to compare with other Boards, perhaps those of a similar size and deprivation level, for example comparing HB1Ac by deprivation quintile.

A group of diabetes MCN managers, the North of Scotland Diabetes Network (Highland, Grampian, Orkney, Shetland) were reported to have used the reports to compare themselves with each other in a regional workshop, and learned from each other as a result. Finally, one MCN mentioned that their own concerns about data quality were replicated in other MCNs.

### 3.8.6 Websites MCN interviewees were aware of in relation to diabetes

The websites mentioned at interview are shown with the address where available in Table 11 below.

**Table 11 Diabetes-related websites used by Diabetes MCN interviewees**

| Site (with address where known) | *Number of mentions* |
|---|---|
| Diabetes UK http://www.diabetes.org.uk/ | *14* |
| SHOW/Scottish Government/ISD/QOF http://www.show.scot.nhs.uk/ http://www.scotland.gov.uk/Topics/Health http://www.isdscotland.org/isd/CCC_FirstPage.jsp http://www.isdscotland.org/isd/3305.html | *9 MCNs mentioned at least one of these* |
| ScotPHO http://www.scotpho.org.uk/home/home.asp | *7* |
| Diabetes in Scotland / SDG http://www.diabetesinscotland.org.uk/ | *7* |
| SIGN http://www.sign.ac.uk/ | *6* |
| My Diabetes My Way http://www.mydiabetesmyway.scot.nhs.uk/ | *5* |
| Own website | *3* |
| NICE http://www.nice.org.uk/ | *3* |
| QIS http://www.nhshealthquality.org/nhsqis/CCC_FirstPage.jsp | *3* |
| DRS http://www.ndrs.scot.nhs.uk/ | *2* |
| ScotPHN http://www.healthscotland.com/resources/networks/scotphn/about.aspx | *2* |
| Health Scotland http://www.healthscotland.com/ | *2* |
| Better Together http://www.bettertogetherscotland.com/bettertogetherscotland/CCC_FirstPage.jsp | *1* |
| Glasgow Heart stroke and Diabetes http://hsd.nhsggc.org.uk/content/ | *1* |
| A Suffolk site (patient related) http://www.diabetesuffolk.com/ | *1* |
| Google http://www.google.co.uk/ | *1* |
| Entre pub Med http://www.healthcare.com/tag/entre-pubmed/ | *1* |
| e-journals (see NHS e-library) | *1* |
| GROS http://www.gro-scotland.gov.uk/ | *1* |
| DoH (England) http://www.dh.gov.uk/en/index.htm | *1* |
| BMA http://www.bma.org.uk/ | *1* |
| Long Term Conditions http://www.ltcas.org.uk/index.php?id=23 | *1* |
| NHS e-library http://www.elib.scot.nhs.uk/portal/elib/pages/index.aspx | *1* |
| Other MCNs sites see http://www.diabetesinscotland.org.uk/mcn.aspx | *1* |
| QAS (quality assurance) (site not accessible at time of check) | *1* |
| Australian website 'Reality Check' for young adults with type 1 diabetes http://www.realitycheck.org.au/home.htm | *1* |
| British Dietetic Association http://www.bda.uk.com/ | *1* |
| NHS Education for Scotland (Diabetes Portal) (site not accessible at time of check) | *1* |
| Diabetesinfo.tv http://www.diabetesinfo.tv/ | *1* |
| *Diabetes Stories http://www.diabetes-stories.com/* | *1* |

### 3.8.7 Typical Uses of Diabetes Websites Used by MCN managers

Websites were used for reference, (to check facts), for decision support, for input to reports for the MCN, reports to the senior management team of the health board, to highlight local issues, and to present information to patient focus groups. Some sites (e.g. Diabetes UK) were used for upcoming events information. SIGN and QIS were used for updates in progress and for downloading guidelines, and evidence sites were used to keep updated on the evidence for action. Those new in post used websites to set a personal context and background orientation. ScotPHO was used for its summary of the SDS information, past years' comparisons of SDS information were looked at to compare respondents local areas to others and to the Scotland level to assess where where improvements to diabetes process and outcome in local areas had been made and where not. Other MCNs' websites were used to find out about practice elsewhere, and what patient and other documentation they used. My Diabetes My Way and Diabetes in Scotland were used for patient information, the DRS was used for protocols and checked for updates, and the DoH for clinical standards. The Scottish government site was used for updates on policy and strategy. One MCN mentioned using its own website as a means of cascading information. A general use was to add to the information base for thinking about service gaps and service development, and another general use was to find out about new innovations.

### 3.8.8 Changes to the current dataset thought necessary by interviewees

Suggestions by interviewees covered a number of themes, in particular the IT system itself and the interventions, especially clinical specialties covered by type 2 diabetes information systems.

Scottish Care Information – Diabetes Collaboration (SCI-DC) is a national diabetes IT project which aims to deliver effective information technology solutions to diabetes services in NHS Scotland.[c] Better links between

[c] http://www.scotland.gov.uk/Publications/2003/01/16290/17641

systems, especially GP systems and SCI-DC were highlighted by interviewees, with the related topic of making the data extraction from SCI-DC more robust, and improving the clarity and implementation of definitions, (eye screening and $HbA_{1c}$ recording were two cases in point, with loose mapping of codes a big concern). Other areas concerning data included the need to split type 1 and type 2 outcomes by treatment, to improve ethnicity recording and links to deprivation measures, and to develop a better process around qualitative data capture, to capture patient experience and the process of care.

As far as interventions in clinical specialties were concerned, recording data about Structured Education Programmes undergone within SCI-DC was emphasised, and a number of clinical areas were suggested for inclusion. These were:

- Dietetic information,
- The medication patients were on, especially insulin and oral medication
- Psychological support details

A more general point made concerned the use of a different approach to health improvement based on IHI (Institute for Healthcare Improvement) methodology, as promoted by NHS QIS in Cardiology, where individual clinicians look at a minimum of data on their own cases but do so more regularly than an annual audit – e.g. monthly.

#### 3.8.9 Improvements seen as needed on current data collection methods

Improvements were identified in three categories:

- Connections between systems,
    - Linkage
    - Back population
- Data collection and entry

- General issues

These issues were all linked. Connections between systems were the most discussed. Automated data collection was desirable to avoid double data entry. The linkages especially mentioned covered:

- the foot risk scores transmission to SCI-DC from GP systems. A number of systems were involved, the main ones being GPASS and EMIS,
- an ability for separate foot risk software to communicate with SCI-DC,
- renal registry data being linked to SCI-DC,

As most GPs prefer to use their own systems rather than SCI-DC, foot risk scores are often missing from SCI-DC, but may be held at practice level. The SDS 2009 report contains foot risk data.

Back population

- Back population to SCI-DC of hospital laboratory data was needed to give real time blood results, although this was better in hospital, where SCI-DC clinical was used.
- Foot screening event data (and risk scores) needed to back populate to GP systems after entry in SCI-DC, because they needed this data in their systems to obtain payment, but did not have the resource to enter data in two systems.
- The link from SCI-DC to the DRS was mentioned in Orkney – it had broken that week. A link from DRS to SCI-DC was mentioned in answer to data quality issues (below), and here it was suggested that health professionals should be able to use any system for data entry

Data collection and data entry was also an important issue. There were views that:

- data collection should be a by-product of clinical care, and

- more clinicians should do live data entry to SCI-DC, with access to the system shared with other relevant disciplines (e.g. Paediatrics, Cardiology and cardiovascular specialties).
- but data protection issues still blocked good care in some instances, and some practices did not want SCI-DC because of patient confidentiality issues.

More general issues included:

- a perception that an incentive to GPs would be needed to encourage them to look at the SDS reports,
- SCI-DC would be improved by a facility to allow benchmarking against other MCNs outside the yearly cycle,
- The principle should be to record once and then collate,
- More resources were needed for data collection.

#### 3.8.10 Issues mentioned about data quality

Issues identified by interviewees about data quality included:
The completeness of the data, an issue which had roots in improvements needed to data collection methods, (see relevant section); missing data owing for example to failed feeds to SCI-DC in Argyll and Bute; retinal screening data loss owing to system architecture in Shetland; incomplete laboratory, foot screening, and foot risk data owing to data entry problems; and system cross-talk issues, that is to say, the ability to seamlessly transfer data between different computer programmes.

Data validity was reported as a problem, especially for the DRS, but it was also a general issue owing to a need for more consistent coding and definitions, for example in GP systems. Validation systems, training in validation, checks on staff and monitoring of data accuracy were all mentioned as part of a general theme about the need to quality assure coding. Anomalies between local and national data were mentioned, and more clarity around

definitions of type1 and type 2 diabetes was wanted. However, the general picture was said to be of improving validity and completeness.

One further issue was on the timing of reports: a change from a 15 month to a 12 month reporting period was said to have been notified too late to take corrective action.

## *3.9 Current problems and future developments*

### 3.9.1 Problems in provision of quality care to people with type 2 diabetes

The main issue shared by MCN interviewees was the difficulty of 'doing more with less': the increasing prevalence of all types of diabetes (up 8% year on year according to one interviewee and corroborated by the SDS) was not matched by increasing resources for care.

Related to this, one area mentioned a slow response to the need to shift the balance of care toward primary care and self-care. There was a need for resources to deliver relevant training to primary care staff to enable them to care for more type 2 patients and to deliver structured patient education. Resourcing general practice to provide more type 2 care in a historical contractual context of shared care was another big issue.

Particular other educational issues for staff included:

- Identifying people with type 2 diabetes
- Improving professionals' knowledge in comparison to patients knowledge

Other specific issues raised included, in small island areas, service cover problems when single handed practitioners went on holiday or were ill, lack of consultant cover (no lead clinician) and lack of access to clinical psychology services.

Professionals' resistance to further improvements when they feel the service they are providing is already good was mentioned by two boards including a large city board, and a central belt board. There were also more local problems, such as the size and geographical diversity in Highland, the merger of two boards, and elsewhere the lack of an MCN manager.

#### 3.9.2 New service developments planned by MCNs

Nine MCNs mentioned education, four of these included staff education and training (excluding MCNs where staff were being trained to provide SPE). An educational needs assessment of staff was planned in Ayrshire and Arran, related as appropriate to their level of diabetes care involvement. Nurse training included secondment for nurses and ward based education in Borders. Foot screening training and 'diabetes on a page' training (meaning core concepts were summarised in very brief written form for handy reference) were planned for care homes in Lothian. An education and skill deficit, especially about new therapies, had been shown by a Fife health needs assessment (HNA).

Patient education was mentioned by eight of the nine MCNs mentioning education. Some were putting a business case together; others were continuing an already started roll-out, perhaps training more DESMOND educators (another eight clinical professionals were being trained in Glasgow for example). In Glasgow patients had been involved in choosing the SPE package. Others such as Lothian were considering implementing structured education for existing as well as new patients.

Other patient education themes included patient education for ethnic minorities (Fife) transition education and nursing for paediatrics (Fife, Grampian), and a library project with folders about type 2 diabetes placed in local libraries (Glasgow).

An integrated diabetes service was a stated aim in Grampian, Lanarkshire and Shetland. For Shetland the aim was to allow people with complex care needs to be seen in one place by the whole team. Further shifting the balance of care was mentioned in Highlands in the specific context of insulin treatment, and Grampian intended to model the requirements for providing insulin pumps. Service pressures to bring insulin pump provision up to NICE standards were mentioned in Forth Valley. The DAP(Q4) reported that seven MCNs hador were on target to produce an insulin strategy.

Two MCNs were planning service reviews, one of the Podiatry service and one of foot screening and patient education with a view to selecting an SPE more suited to a remote and rural area. Forth Valley mentioned a pressure to shift the balance of foot care toward a more outpatient basis.

New DSNs were being recruited in Fife and Grampian, and new dietitian posts, exercise classes and psychologist capacity were planned in Grampian.

On the information front, there were plans to increase the use of SCI-DC in clinics in Grampian, and to improve website access and to develop a diabetes handbook incorporating a hand held record in Glasgow. In Orkney a telelink service was being piloted to allow video consultation with a consultant on the mainland. (This was also being used for multidisciplinary staff meeting with the consultant in Aberdeen). That theme continued in the Western Isles, where the first 'Obligate Network' contract was under negotiation with Greater Glasgow and Clyde NHS who would under this agreement provide consultant cover and 24/7 access to expert advice for Western Isles professionals.

For further support, a patient buddy service was being set up in Glasgow.

## *3.10 Comparisons of levels of control of diabetes between health boards*

### 3.10.1 Quality and Outcomes Framework (QOF)

The QOF is part of the new General Medical Services (nGMS) contract introduced in 2004 and provides a set of indicators of quality of care which can be used to compare health boards. For diabetes the QOF consists of 22 indicators, and has been collected for the past four years since the introduction of the new GMS contract in April 2004. The diabetes indicators descriptions are given in Appendix 5. Some indicators have been dropped and some have changed over these years. QOF points are awarded based on the achievement levels for each indicator.

Health boards were compared on QOF using only the 2007-08 QOF data. Table 1 shows the comparisons by health board for each indicator. There were 1030 general practices in Scotland. The data relates to 1005 which participated in the QOF. Because the QOF is used as a performance measure for general practices, and is related to financial agreements, data is relatively complete. There are three types of contract: 17C, 2C and the new General Medical services (nGMS). The number of contracts by type in 2007-2008 and the percentage of all the diabetes indicators which reached a 100% achievement level are shown in Table 12. Across all contract types 100% achievement of QOF points was 93.2%.

**Table 12 Practice contract types and QOF points for diabetes indicator achievement**

| Contract type | Number of contracts | *% with full achievement of points for all indicators* |
|---|---|---|
| 17C | 77 | *94.1%* |
| 2C | 32 | *74.4%* |
| *nGMS* | *896* | *93.8%* |

All practices were then included in a comparison of 100% satisfaction levels for each indicator separately. To include all practices was considered a more ecological approach better reflecting actual service provision to patients rather than selecting only the nGMS practices.

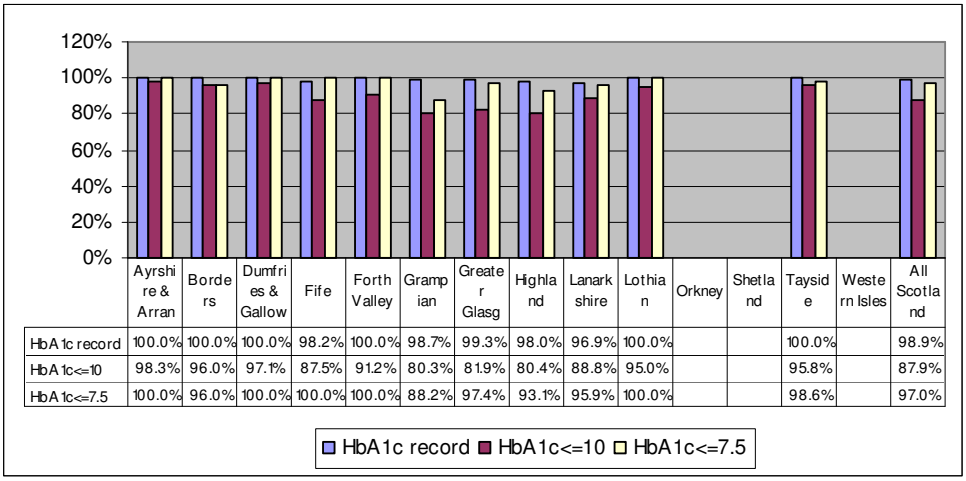
**Table 13 Percentage of all QOF practices with 100% achievement of each QOF diabetes indicator. N for all diabetes indicators for all QOF Practices = 16,080**

| Indicator code | Percentage with 100% achievement for QOF points |
|---|---|
| DM02 | 96.8% |
| DM05 | 98.9% |
| DM07 | 88.7% |
| DM09 | 80.4% |
| DM10 | 79.4% |
| DM11 | 99.6% |
| DM12 | 98.7% |
| DM13 | 75.0% |
| DM15 | 93.2% |
| DM16 | 98.4% |
| DM17 | 98.0% |
| DM18 | 93.4% |
| DM19 | 100.0% |
| DM20 | 97.0% |
| DM21 | 94.8% |
| DM22 | 98.9% |
| All Scotland | 93.2% |

The 100% achievement levels reported in Table 12 and Table 13 above are based on 100% achievement of the points awarded for each indicator. However, points are awarded on a varying basis between indicators meaning they cannot be used to compare between similar indicators. For example a higher percentage of patients must have an $HbA_{1c}$ below 10% (c.90% of patients) to satisfy that indicator than needed below 7.5% (c. 40% percent of patients) for that indicator. This is why DM20 is better achieved than DM7 in table 18 above, despite being a less rigorous <=10.00 cut off than DM7's <=7.5.

One way to compare health boards' satisfaction of need by outcomes is through the $HbA_{1c}$ level (a measure of control of blood glucose) which indicates the level of diabetic control achieved. The QOF point achievement on this is compared between health boards in Figure 17 below, which reflects that the standard requirement for 100% points for control at <=7.5% is lower than that for control at <=10%

Figure 17 below shows the percentage achieving 100% of available QOF points for the three $HbA_{1c}$ measures.




| | Ayrshire & Arran | Borders | Dumfries & Gallow | Fife | Forth Valley | Grampian | Greater Glasg | Highland | Lanarkshire | Lothian | Orkney | Shetland | Tayside | Western Isles | All Scotland |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HbA1c record | 100.0% | 100.0% | 100.0% | 98.2% | 100.0% | 98.7% | 99.3% | 98.0% | 96.9% | 100.0% | | | 100.0% | | 98.9% |
| HbA1c<=10 | 98.3% | 96.0% | 97.1% | 87.5% | 91.2% | 80.3% | 81.9% | 80.4% | 88.8% | 95.0% | | | 95.8% | | 87.9% |
| HbA1c<=7.5 | 100.0% | 96.0% | 100.0% | 100.0% | 100.0% | 88.2% | 97.4% | 93.1% | 95.9% | 100.0% | | | 98.6% | | 97.0% |

Figure 17 Percent of QOF practices (on nGMS, 17c and 2c contracts combined) with 100% QOF points achievement for $HbA_{1c}$ recording and control for each Health Board, 2007-08
Note: QOF data for practices on 17c and 2c contracts is not always comparable with data for nGMS contracts. This is not an issue for comparison of mainland NHS boards on the basis of all three contract types. However, island boards have small numbers of nGMS practices and larger proportions with non-GMS contracts; hence comparisons using aggregated QOF data are not possible for them in this report, and so their data is left blank on the graph

As expected, average unweighted percentages showed indicators 12, (blood pressure below 145/85mmHg) and 20 ($HbA_{1c}$<=7.5%) and perhaps 17 (total cholesterol <=5mmol/l) are lower than others. Health boards varied and no board was consistently the lowest scoring on every indicator.

The SDS 2009 reported that 89.9% of registered patients with type 2 diabetes (and 87.1% of type 1) had had an $HbA_{1c}$ test in the past 15 months, and for 63.8% of registered type 2 patients the most recent $HbA_{1c}$ measurement was <=7.5%.

The SDS 2009 presents $HbA_{1c}$ data by health board for type 2 diabetes in its table 19, which is partly reproduced in Table 14 below to show the proportion reaching a target of 7.5%.

**Table 14 Most recent $HbA_{1c}$, Percent of those recorded that were <7.5% for type 2 patients (from SDS 2009)**

| **NHS Board** | **$HbA_{1c}$ < 7.5%** | | **Total recorded** | *Not recorded* |
|---|---|---|---|---|
| Ayrshire & Arran | 9,655 | 66.6% | 14,497 | *1256* |
| Borders | 2,724 | 63.0% | 4,324 | *206* |
| Dumfries & Galloway | 3,936 | 65.9% | 5976 | *477* |
| Fife | 9,386 | 69.3% | 13536 | *1182* |
| Forth Valley | 6,771 | 63.5% | 10666 | *877* |
| Grampian | 10,722 | 59.4% | 18043 | *1317* |
| Greater Glasgow & Clyde | 23,756 | 61.2% | 38817 | *7528* |
| Highland | 6,296 | 60.2% | 10465 | *1005* |
| Lanarkshire | 13,551 | 64.8% | 20903 | *1891* |
| Lothian | 16,139 | 66.8% | 24168 | *3338* |
| Orkney | 474 | 66.3% | 715 | *61* |
| Shetland | 512 | 70.8% | 723 | *69* |
| Tayside | 9,805 | 64% | 15310 | *973* |
| Western Isles | 553 | 61% | 907 | *32* |
| ***Scotland*** | ***114,280*** | ***63.8%*** | ***179050*** | ***20212*** |

# Appendices

# Appendix 1

# Equity audit of diabetes services in Lothian

## *By Sarah Wild (Edinburgh University) and Sheila Wilson (Lothian Health Board)*

## 1 Introduction

Diabetes is a long term and progressive condition with many potential complications and is increasing in prevalence, in Scotland and worldwide.

In January 2007 there were 196,000 people with diabetes in Scotland, of whom 28,109 were in Lothian. About 3.6% of the Lothian population has diabetes.

Diabetes does not affect all groups equally. People from certain black and minority ethnic groups are up to six times more likely to have diabetes[21]. The rate of complications is higher in people from lower socioeconomic groups and people from black and minority ethnic groups and deprived communities are less likely to have BMI and smoking status recorded, or to have records for $HbA_{1c}$, retinal screening, neuropathy or blood pressure[21]. People in lower socioeconomic groups are more likely to be overweight and to be smokers[21].

The Scottish Diabetes Framework Action Plan includes the requirement for Diabetes MCNs to:

- '*Improve access to services for people with diabetes from disadvantaged groups and disadvantaged areas*'; and:
- '*To identify disadvantaged groups such as asylum seekers, those with learning difficulties, the homeless, travellers, as well as those who may be*

*disadvantaged because of the long distances they need to travel to access services, or as a result of poor transport links'.*

The Lothian Diabetes Managed Clinical Network aims to achieve equitable provision of high quality care for all people with diabetes. This paper reports on the findings of an equity audit of diabetes services in Lothian.

## 2 Equity audit

Equity audit is a process that systematically

- Reviews inequities in health for a defined population
- Takes forward agreed actions to reduce those inequities
- Monitors the impact of the interventions.

The ultimate aim of equity audit is to ensure that resources and services are **fairly,** rather than **equally**, distributed.

A sub group of the MCN was set up in May 2007 to do an equity audit of diabetes services. We carried out an audit to investigate inequalities in access, quality and outcome in diabetes services in Lothian**.**
A needs assessment of diabetes services for black and minority ethnic people had already been completed in 2006 and recommendations are being progressed through the LDSAG Minority Ethnic Sub-group. This report considers quantitative data on black and minority ethnic people available from the diabetes register, which complements the earlier study.

The focus for the audit was on diabetes prevalence, services and outcomes for the following specific population groups:

- People from disadvantaged areas/ in low income groups
- Women and men
- People of different ages
- People in minority ethnic groups
- People with learning disabilities
- Gypsy/Travellers

- Refugees and asylum seekers
- Homeless people

# 3 Methods

The group used a combination of methods to gather information both about inequalities in outcomes and treatment for people with diabetes, and about access to services for the different groups identified.

## *3.1 Literature review*

A literature review was conducted to explore whether people with diabetes in disadvantaged groups experience worse care and/or poorer outcomes in relation to their condition. Papers reviewed were limited to the UK and within the last 10 years.

Databases searched were Medline, Embase, and Cinhal with keywords as follows:

Diabetes Inequalities in care
Diabetes Access to care Outcomes
Diabetes Socioeconomic differences
Diabetes Access Low income groups
Evaluation Structured patient education
Smoking Quit rates Disadvantage
Smoking cessation Deprivation

## *3.2 Analysis of diabetes register data*

Data were extracted from the Lothian Scottish Clinical Information – Diabetes Collaboration (SCI DC) diabetes register in October 2007 for 29,032 Lothian residents whose information was stored on SCI DC at this time. Scottish Index of Multiple Deprivation (SIMD) score and Health Board quintile were assigned on the basis of postcode. Name, CHI number and address were removed to

anonymise the data. Population data, based on GP registration data by age, sex, SIMD quintile for 2005, were used as the population denominator.

Implausible data values were recoded as missing (23 people with body mass index (BMI)<15 kg/$m^2$, 14 people with BMI>80kg/$m^2$). Obesity was defined as BMI of $\geq$30kg/$m^2$; hypertension was defined as systolic BP$\geq$ 140 mmHg; hypercholesterolaemia was defined as total cholesterol $\geq$5mmol/l; and poor glycaemic control was defined as $HbA_{1c}\geq$7.5%. Descriptive tables and statistics were used to investigate differences in data quality, prevalence of diabetes, completeness of data and prevalence of various risk factors by age, sex, SIMD quintile and ethnic group. Prevalence data presented by deprivation category are age and sex standardised but crude data on completeness and distribution of cardiovascular risk factors are given.

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***3.3 Smoking cessation data***

Initial analysis indicated higher smoking prevalence amongst low-income groups. It was therefore agreed that it would be useful to review smoking cessation services, in particular to explore differential quit rates.

The national ISD smoking cessation database compiles and analyses data on smoking cessation rates for Scotland. Data were extracted from this on Lothian residents setting a quit date in 2006 (01/01/06 – 31/12/06), and the quit rate at one month follow up. It was not possible to obtain these figures by SIMD quintile, but data were obtained by employment type (paid employment/unemployed/retired/permanently sick/homemaker).

***3.4 Interviews with key informants***

Informal interviews/meetings were held with a number of people with experience and knowledge relating to the identified groups. These followed a basic schedule of questions, with specific queries followed up at a later date as appropriate.

Respondents included

Travellers - Health Visitor based in West Lothian with a specific remit for working with travellers, council liaison worker, gypsy traveller liaison worker with Save the Children

Refugees - Project Co-ordinator for the Minority Ethnic Health Inclusion Project, and MEHIP link workers; NHS Lothian Health Inequalities Manager for Edinburgh, East and Mid Lothian CHPs, the Scottish Refugee Centre and a Health Visitor who had been involved two years previously in running a clinic for women and children at the Refugee Centre in Edinburgh

Homeless people- practice nurse from the Edinburgh Homeless Practice

People with learning disabilities – Co-ordinator for Community Learning Disability Teams (CLDTs) in Lothian, dietitian member of a CLDT

Some individuals were contacted on specific issues or queries; for those from whom more general information was sought, the following broad questions were asked:

- *Can you give me an overview of your role in relation to gypsy travellers/ people with learning disabilities/ homeless people/refugees?*
- *What in your experience are the main health issues for members of this group?*
- *Are you aware of diabetes as a significant health issue for people in this group?*
- *In your view are there particular difficulties for this group in accessing health care - generally, and in relation to diabetes care?*
- *If so, what are the barriers that people face?*

### *3.5 Practice infrastructure*

The diabetes MCN had just completed a survey of provision of mini-clinics, GP/nurse training and patient education across Lothian general practices. We proposed to use these data to explore whether there was any difference in practice infrastructure by deprivation.

# 4 Results

## *4.1 Literature Review Findings*

Key points are summarised below.

**Deprivation and diabetes outcomes**

It is well documented that morbidity and mortality from diabetes are greater in deprived and disadvantaged groups; prevalence is also higher. A study of Whitehall civil servants in the 1960s and 70s concluded that the higher mortality rate was due to increased levels of smoking and high blood pressure amongst low-income groups.[22] A study in Tayside found that the link between material deprivation and diabetes strengthened over time, because people with diabetes did not migrate out of deprived areas.[23]

**Quality of care for disadvantaged groups**

In terms of care delivered the picture is less clear-cut. Some studies find that routine monitoring is poorer for women, those in low-income groups and black and minority ethnic people[24] whereas others find little difference. A cross sectional survey of 237 UK practices in 2004 found that patients from deprived areas were less likely to have BMI, smoking status, $HbA_{1c}$ or blood pressure recorded, to have $HbA_{1c}$ value less than 7.5%, to have had retinal screening, or to have been tested for neuropathy or microalbuminuria. Patients from areas of high ethnicity and women were also less likely to have many measures recorded.[24]

In a different study the same author found that patients over 75 years old were less likely to have cholesterol recorded or blood pressure well controlled.[25]

One Scottish study found no link between low socioeconomic status and poor glycaemic and blood pressure control. This paper linked poorer outcomes to higher rates of smoking in this group.[26]

A number of papers find a link between deprivation and achievement of quality indicators for general practices, both in England and Scotland. One

study suggested that in England exception reporting is correlated with deprivation, and that practices in areas of deprivation may have difficulty in achieving diabetes indicators, and have to work harder to do so.[27]

The impact of deprivation on achievement of indicators and quality of care delivered appears to be most pronounced in smaller practices, which tend to be less well resourced and less likely to be involved in clinical effectiveness programmes.[28;29] Effective team working, as reported by staff, also had a measurable influence.[30] A Nottingham based study found that control was poorer for patients from practises in areas of deprivation, and where diabetes annual reviews were undertaken by nurses alone.[31]

One study reported that deprivation impacts in different ways upon the type of care which people access - hospital versus primary care – so that a variety of approaches are necessary in tackling access issues.[32]

**Access for specific population groups**

Some studies investigated differences in access between population groups. One study identifies particular barriers for women in accessing care, for example, fear of going out alone.[33] Another found that people aged over 70 or under 20 are less likely to access routine diabetes care.[34]

An English study on the health of travellers found marked inequalities in health in comparison with the rest of the population, particularly in much higher rates of self-reported anxiety, in chest pain and respiratory disease, and child mortality. There was less inequality observed in rates of diabetes, stroke and cancers. The prevalence of smoking is high. Travellers value stoicism in the face of chronic ill health and are often fatalistic, with low expectations of medical services. Traveller communities also reported experience of prejudice and discrimination when trying to access heath care.[35]

**Diabetes education and self-management**

Much of the literature on diabetes education, particularly in relation to deprivation, is from the United States or Germany. There is growing evidence on different approaches to diabetes education, with some reporting positive benefits for patients.[36-38] However, it may not be possible to generalise these results to groups of people who may face other barriers to care.

A US based review of initiatives designed explicitly to improve outcomes for people with diabetes in socially disadvantaged groups found that positive interventions tend to be targeted, multifaceted and tailored for culture and health literacy.[39]

Several US studies investigated self-management by income or educational level. One demonstrated a link between self-management and adherence to complex health regimes with years of schooling, resulting in poorer health for the less well educated.[40] Another study found that agreement between patients and physicians on treatment goals was generally poor. Patients with more education, greater belief in the efficacy of their treatment and who shared in decision making were more likely to agree with clinicians on treatment goals, and had improved self management.[41] A study of Mexican American adults with diabetes found that clinicians were focussed on glucose control, while people with diabetes were focussed on integrating the condition into their daily lives, which they assessed according to how well they felt and how able they were to carry on with normal daily activities. This different focus sometimes resulted in conflict with clinicians and abandonment of treatment.[42]

**Smoking**

In English studies people from deprived communities access smoking cessation services but are less successful in stopping long-term than people from more affluent groups.[43] A Scottish based study found positive results when GPs took a proactive role in prescribing NRT in a deprived area, and a Sure Start project was successful in supporting women to stop smoking, using a one-to-one approach.[44;45]

**Summary**

In conclusion diabetes prevalence is higher in deprived and disadvantaged groups, and outcomes are poorer. Some studies find that recording of routine measures is worse in deprived areas and for certain groups. It is not clear how much of the difference in outcome can be explained by differences in quality of care. There is an indication that structured patient education works best for motivated and educated individuals. Better results may be obtained for education that is tailored for culture and health literacy.

## *4.2 Findings from diabetes register data*

- **Age, sex and socio-economic status**

There were 28244 people with type 1 or type 2 diabetes with information available on age, sex and SIMD score. The average age was 62 years (61 years for men and 64 years for women) and 54% of people on the register were male. On average, men were 3 years younger at diagnosis of diabetes than women (55.6 vs. 52.6 years respectively). The average age at diagnosis for all quintiles of socio-economic status was 54 years (with no sex differences) but average age of people currently on the register was 5 years higher in the most affluent than the most deprived quintile of socio-economic status (63 vs. 58 years). Average duration of diabetes was longer in the most affluent than the most deprived quintile of socio-economic status (9.2 vs. 7.7 years)

**Ethnicity data**

Ethnicity was recorded as unknown for 14,184 (48%) people. Among people whose ethnicity was recorded 95.5% were white, 3.5% (n=542) were South Asian, 0.5% (n=73) were Chinese and 0.3% (n=49) were black. The proportion of men was 54% in whites, 58% in South Asians, 53% in black and 51% in Chinese populations. Average age in years was 63 in whites, 58 in South Asians, 56 in black and 60 in Chinese populations. Distribution by socio-economic status within each ethnic group is shown in Figure 12 (note the numbers of people in some sub-groups is very small). Recent population

data by age, sex, ethnicity and socio-economic status are not available so it is not possible to estimate prevalence of diabetes by ethnicity.

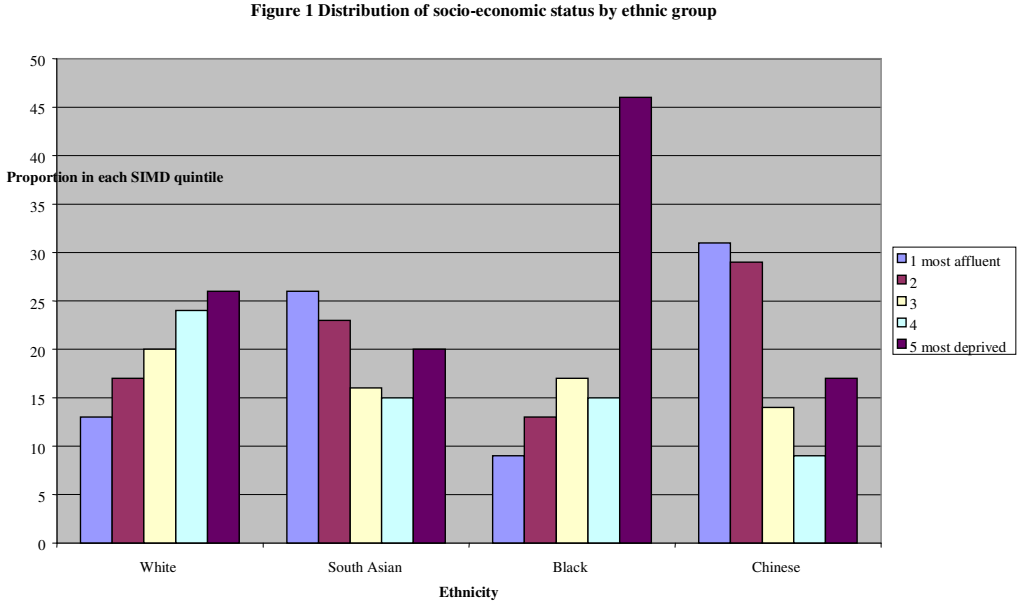


**Figure 1 Distribution of socio-economic status by ethnic group**

- **Prevalence of diabetes (see Table 1 and Figures 2-5)**

Prevalence was higher in males than females and increased with age to a peak at 40-49 years of age for type 1 diabetes and 70-79 years of age for type 2 diabetes. There are no consistent patterns in age and sex standardised type 1 diabetes prevalence by deprivation but the prevalence of type 2 diabetes is more than twice as high in the most deprived quintile as in the most affluent quintile.

**Table 1: Numbers of people with diabetes and prevalence by type, age and sex**

| | Type 1 | | | | Type 2 | | | |
|---|---|---|---|---|---|---|---|---|
| | Boys/ men | | Girls/women | | Boys/ men | | Girls/women | |
| Age group (years) | n | Prev % | n | Prev % | n | Prev % | n | Prev % |
| 0-9 | 32 | 0.07 | 31 | 0.08 | * | 0.00 | * | 0.00 |
| 10-19 | 215 | 0.44 | 213 | 0.46 | * | 0.01 | * | 0.01 |
| 20-29 | 322 | 0.53 | 245 | 0.38 | 49 | 0.08 | 44 | 0.07 |
| 30-39 | 436 | 0.74 | 326 | 0.52 | 331 | 0.56 | 244 | 0.39 |
| 40-49 | 522 | 0.90 | 326 | 0.53 | 1343 | 2.32 | 904 | 1.46 |
| 50-59 | 396 | 0.82 | 260 | 0.52 | 2860 | 5.90 | 1874 | 3.72 |
| 60-69 | 197 | 0.58 | 170 | 0.45 | 3932 | 11.59 | 2902 | 7.67 |
| 70-79 | 120 | 0.52 | 109 | 0.36 | 3463 | 15.07 | 3234 | 10.61 |
| 80-89 | 24 | 0.26 | 35 | 0.20 | 1180 | 12.73 | 1687 | 9.70 |
| 90+ | 0 | 0.00 | 5 | 0.13 | 91 | 7.74 | 247 | 6.53 |

Figure 2 Prevalence of type 1 diabetes per 1000 population Lothian 2007

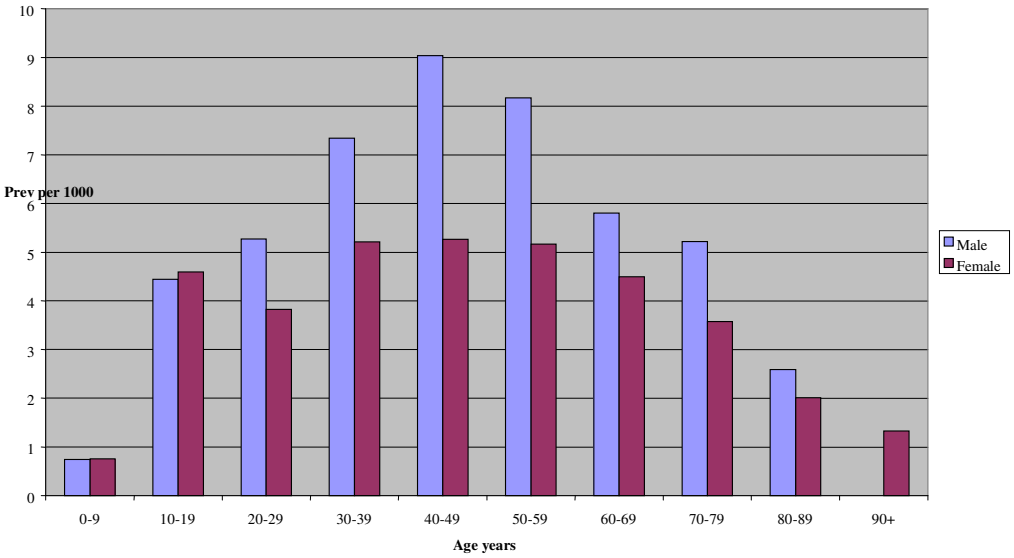


**Figure 2 Prevalence of type 1 diabetes per 1000 population Lothian 2007**

Figure 3 Prevalence of type 2 diabetes in Lothian 2007

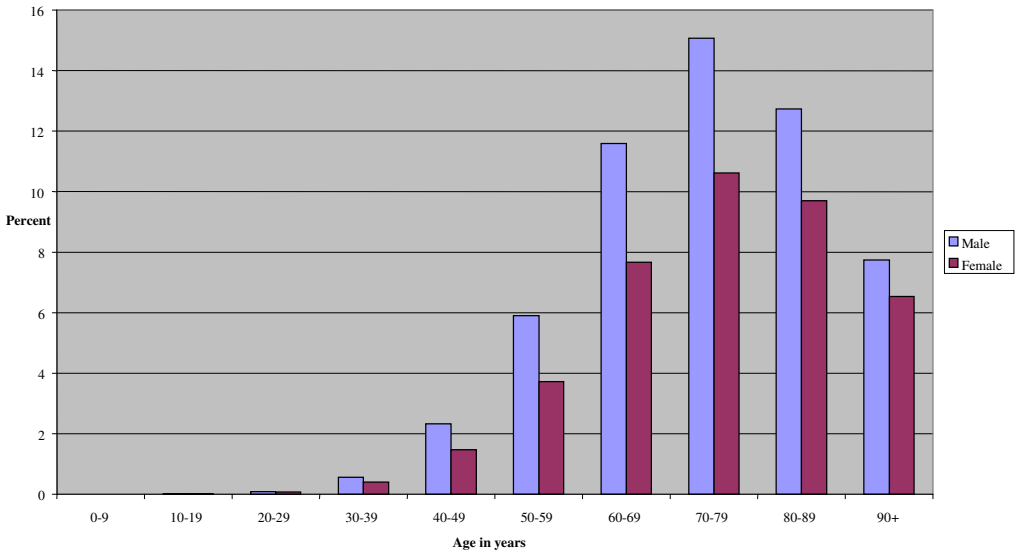


**Figure 3 Prevalence of type 2 diabetes in Lothian**

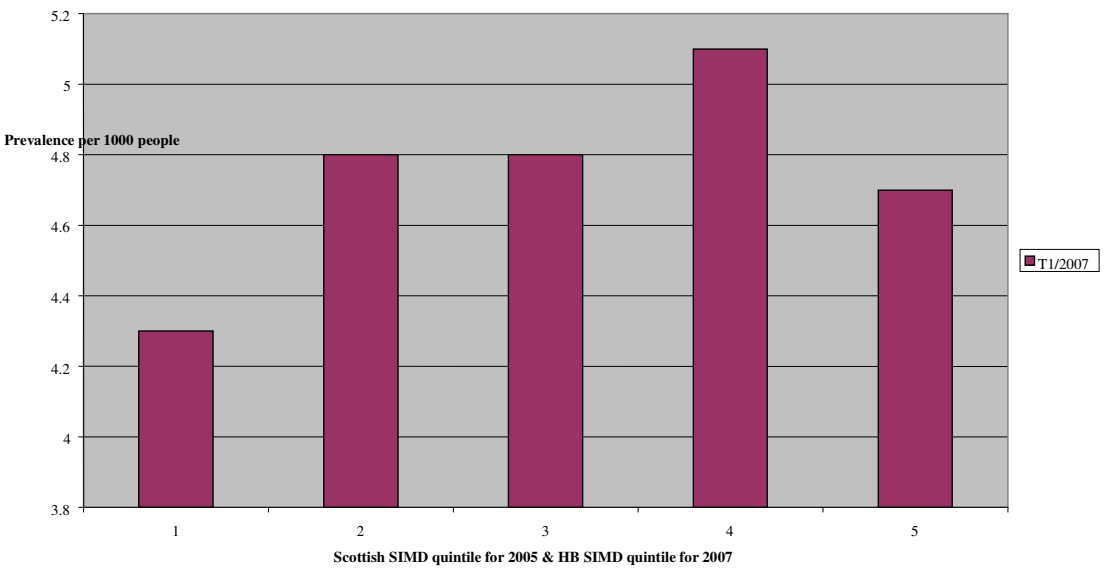


**Figure 4 Age and sex standardised prevalence of type 1 diabetes by socio economic status in Lothian 2007**

Figures 5 Age ad sex standardised prevalence of type 2 diabetes by socio-economic status in Lothian 2007

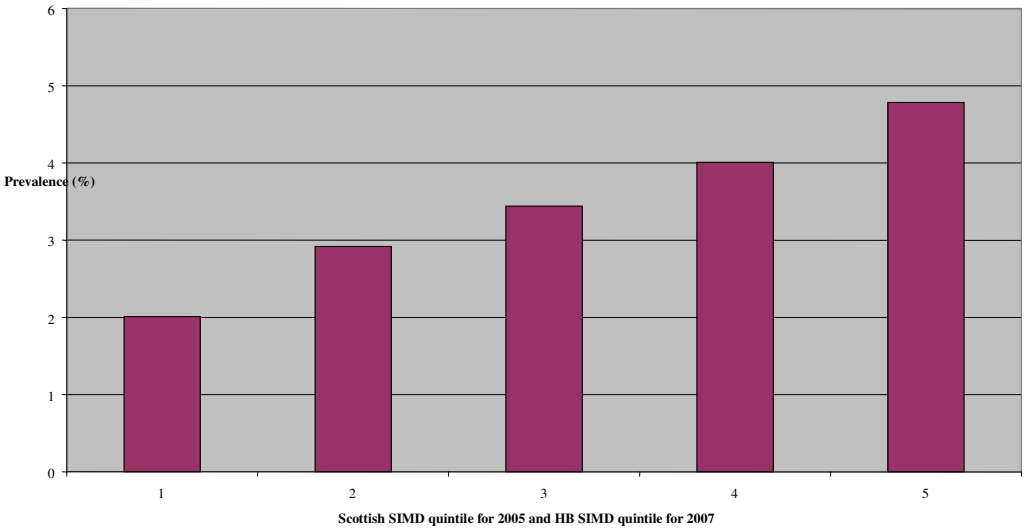


**Figure 5 Age and sex standardised prevalence of type 2 diabetes by socioeconomic status in Lothian 2007**

**Completeness of cardiovascular risk factor data**

Data for all risk factors were less complete for the most deprived than the most affluent quintile of the population

**Table 2: Completeness of data on diabetes register, by SIMD**

| | Scottish SIMD quintile | | | | |
|---|---|---|---|---|---|
| | 1 (least deprived) | 2 | 3 | 4 | 5 (most deprived) |
| Number of people | 7004 | 5050 | 5086 | 7054 | 4371 |
| Smoking<br>(n and % missing) | 873<br>(12) | 683<br>(14) | 653<br>(13) | 927<br>(13) | 692<br>(16) |
| BMI<br>(n and % missing) | 880<br>(13) | 658<br>(13) | 665<br>(13) | 1073<br>(15) | 772<br>(18) |
| Blood pressure<br>(n and % missing) | 621<br>(9) | 482<br>(10) | 456<br>(9) | 704<br>(10) | 534<br>(12) |
| Cholesterol<br>(n and % missing) | 779<br>(11) | 628<br>(12) | 597<br>(12) | 917<br>(13) | 682<br>(16) |
| $HbA_{1c}$<br>(n and % missing) | 615<br>(9) | 508<br>(10) | 497<br>(10) | 756<br>(11) | 593<br>(14) |

### *Cardiovascular disease risk factor prevalence*

**Obesity**

Women had higher average BMI than men (31.6kg/m2 vs. 30.3kg/m2) and a higher proportion of women than men were obese (68% vs. 63%). In both men and women 50-59 year olds had the highest prevalence of obesity by age (57% of men, 65% of women) (see Figure 6).

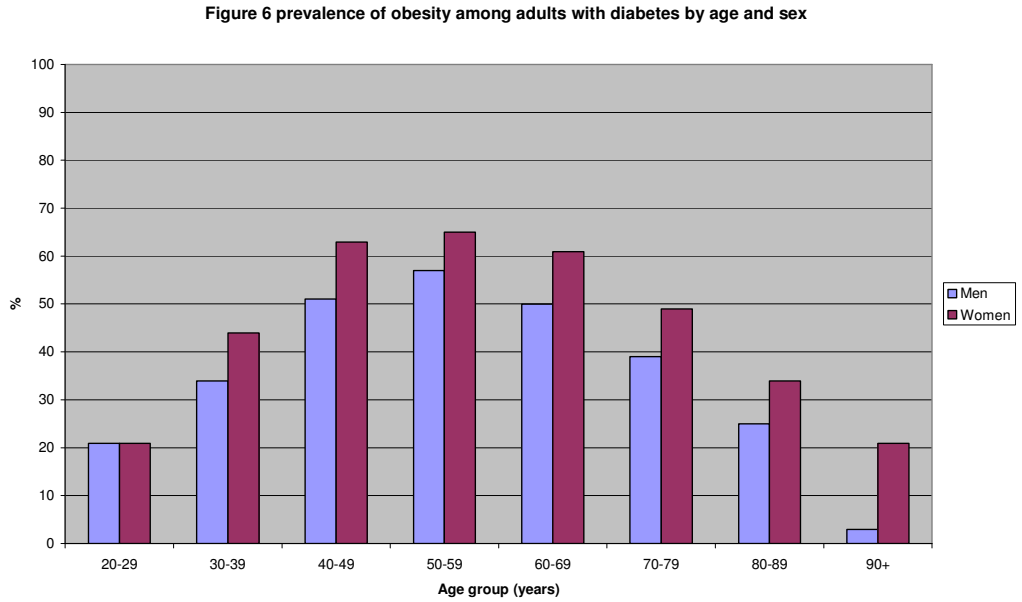


**Figure 6 Prevalence of obesity among adults with diabetes by age and sex**

**Smoking**

Men were more likely to be current smokers than women (24% vs. 20%). The proportion of current smokers was highest in the 40-49 year age group at 28% and was lowest among adults (over 19 years of age) in the 90+ age group at 4.5% (see Figure 7).

Figure 7 prevalence of smoking among adults with diabetes by age and sex

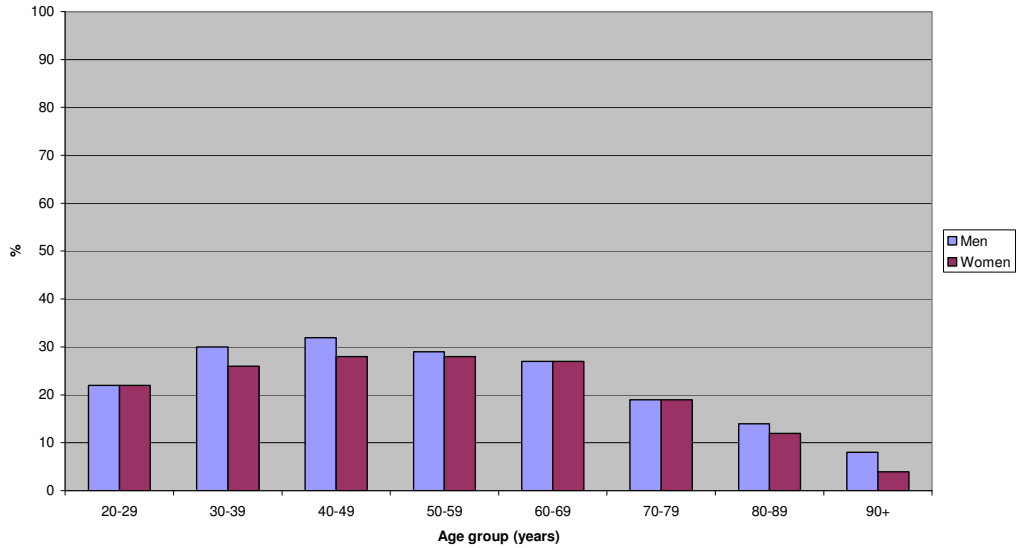


**Figure 7 Prevalence of smoking among adults with diabetes by age and sex**

Prevalence of obesity and smoking increased with increasing deprivation (see Figure 8). After adjusting for age and sex the most deprived quintile were 2.0 and 2.9 times more likely than the most affluent quintile to be obese or to smoke respectively.

Figure 8 Prevalence of smoking and obesity by deprivation quintile among people on Lothian diabetes register 2007

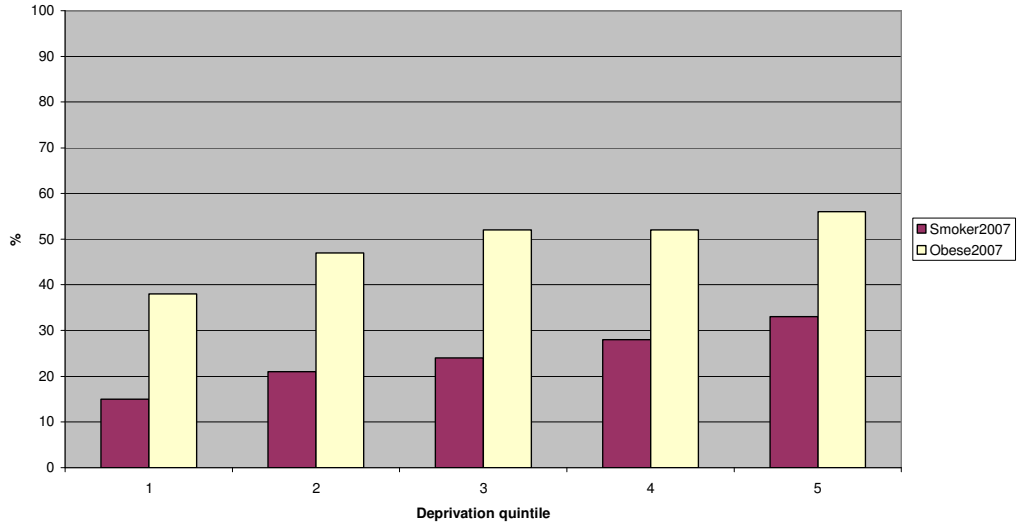


**Figure 8 Prevalence of smoking by deprivation quintile among people on Lothian diabetes register**

**Hypertension**

The proportion of men and women with hypertension was similar (69% of men and 70% of women). The age group with the highest prevalence of hypertension was 80-89 year olds (82%) (See Figure 9).

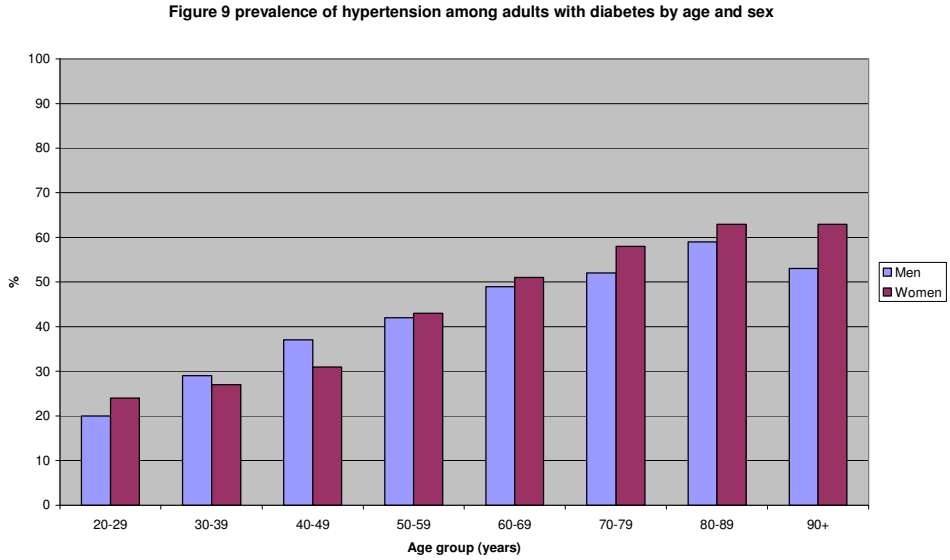


**Figure 9 Prevalence of hypertension among adults with diabetes by age and sex**

**Poor glycaemic control**

The proportion of men and women with poor glycaemic control was similar (46% of men and 45% of women). The data also shows that glycaemic control improves with age. (see Figure 10).

Figure 10 Prevalence of poor glycaemic control (HbA1c>7.5%) among adults with diabetes by age and sex

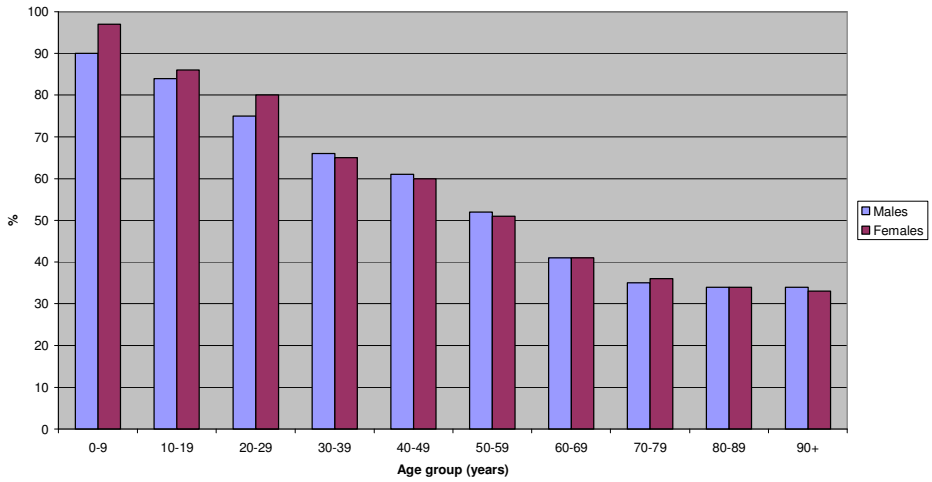


**Figure 10 Prevalence of poor glycaemic control ($HbA_{1c}$>7.5%) among adults with diabetes by age and sex**

### Hypercholesterolaemia

Women were more likely than men to have a total cholesterol level above 5mmol/l (30% vs. 22%). The age group with the highest prevalence of hypercholesterolaemia was 30-39 year olds (45%) (see Figure 11).

Figure 11 Prevalence of hypercholesterolaemia (total cholesterol>5mmol/l) among adults with diabetes by age and sex

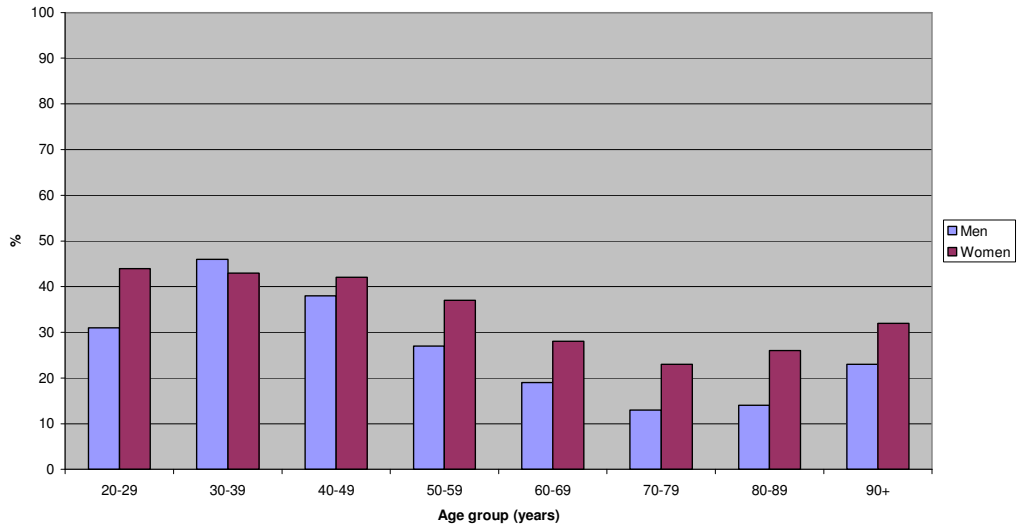


**Figure 11 Prevalence of hypercholesterolaemia (total cholesterol >5mmol/l) among adults with diabetes by age and sex**

Prevalence of hypertension, poor glycaemic control and hypercholesterolaemia were similar by socio-economic status (see Figure 12).

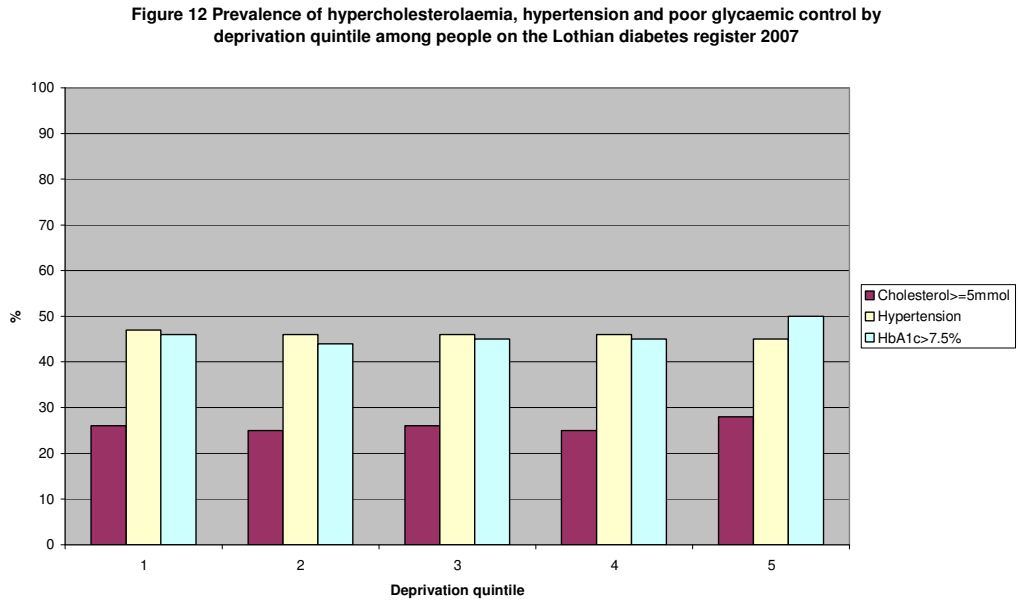


**Figure 12 Prevalence of hypercholesterolaemia, hypertension and poor glycaemic control by deprivation quintile among people on the Lothian diabetes register 2007**

- **Risk factor prevalence by ethnic group**

Figure 13 shows risk factor prevalence by ethnic group. It shows that:

- Smoking was more prevalent in white than other ethnic group (22% in white, 9% in south Asian, 10% in black and 16% in Chinese populations).
- The highest prevalence of hypercholesterolaemia was in black populations (38%), intermediate in whites and Chinese (26% and 24% respectively) and the lowest was in south Asian populations (21%)
- The proportion of people with high blood pressure was highest in black populations (46%) and 41%, 32% and 31% in white, south Asian and Chinese populations respectively.
- The highest prevalence of poor glycaemic control was in black and South Asian populations (67% and 63% respectively), intermediate in whites (45%) and the lowest was in Chinese populations (40%)

- Obesity was more prevalent in white than other ethnic group (65% in white, 52% in south Asian, 57% in black and 27% in Chinese populations).

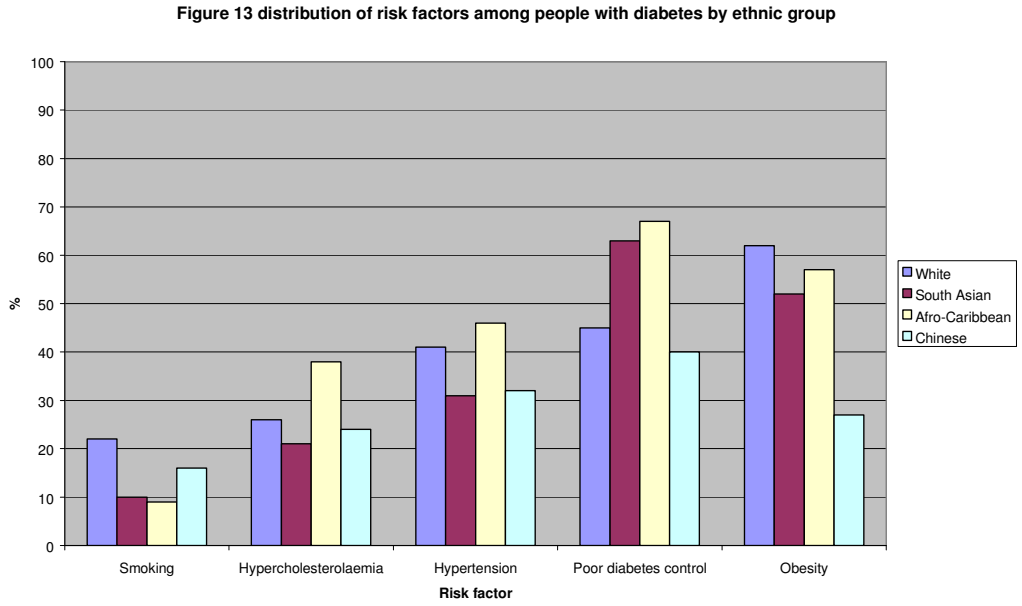


**Figure 13 Distribution of risk factors among people with diabetes by ethnic group**

### *4.3 Smoking cessation data*

In 2006 in Lothian, 3879 people attended smoking cessation services and set quit dates. Of these, 34% had successfully quit at one-month follow-up.

The table below shows that people who were unemployed had a lower quit rate than other groups. (These figures show all people in these categories who set quit dates. Data are not available to show only people with diabetes.)

**Table 3: Number of people setting quit date, and number who had successfully quit at one month follow up. People attending smoking cessation services, Lothian, 2006.**

| | Total number setting quit date | Total number successfully quit at 1 month follow-up | *%* |
|---|---|---|---|
| In paid employment | 1641 | 607 | ***36%*** |
| Unemployed | 544 | 125 | ***23%*** |
| Retired | 540 | 252 | ***47%*** |
| Permanently sick or disabled | 224 | 72 | ***32%*** |
| *Homemaker, parent or carer* | *191* | *67* | ***35%*** |

Source: ISD smoking cessation database.

### *4.4 Findings from Key Informant Interviews*

In addition to the literature review information was sought from key agencies and individuals working with the identified groups.

**Travellers**

There are three official sites for travellers in Lothian, in Bathgate, Dalkeith and Duddingston.

In West Lothian there are likely to be about 120 travellers at any given time. During the summer months there are more roadside encampments, in winter many travellers stay in a private site or let. Recently the number of travellers has increased because many more are coming up from England and Wales.

Those working with travellers locally emphasise the importance of relationships with individual health workers – it takes time to build trust, but once established travelling families respond by returning to the same worker for advice and support, even from long distances. Many travellers are not registered with a GP, or may register as a temporary resident in one practice but never visit again. Individuals tend not to prioritise registering with a GP

unless motivated by immediate necessity i.e. illness. A major challenge for those working with this community is therefore continuity and the need for rapid access to services, not least because families can sometimes move on quite suddenly, before any treatment is started. A system of hand held records is being implemented currently to improve communication.

One professional highlighted that some staff working with gypsy travellers also lacked awareness of available services, especially those accessible by self-referral. Smoking and poor diet are common.

Diabetes itself was not identified as a particular issue. Those few travellers with diabetes who were known were thought to be accessing services reasonably well and their condition was thought to be well controlled.

**Refugees and asylum seekers**

A **refugee** is someone who has left her or his country of origin and is afraid of persecution on return. In the UK it is convention to refer to someone who has made an application and is waiting for a decision to live here as an **asylum seeker**; by definition there is therefore no such thing as an illegal asylum seeker. If leave to remain is refused but that individual continues to stay in the country she/he does then become an illegal resident.

Accurate numbers are difficult to obtain. Information from the Refugee Centre in Edinburgh indicates that there are 65 people in Lothian in receipt of NASS (National Asylum Support Services). In August there were 370 recognised refugees registered with Job Centre Plus; however not all refugees are registered – some are working and individuals are not obliged to disclose their

status. There is no way to way to monitor the number of asylum seekers who leave Edinburgh to live elsewhere, once granted leave to remain, or vice versa.

The Refugee Centre previously hosted nurse/HV led clinics, primarily aimed at mothers and children, but there is currently no clinical provision. There is one session per week provided by MEHIP (Minority Ethnic Health Inclusion Project) workers, aiming to link individuals with health services.

Figures from MEHIP indicate that between January and June 2007 about 30-40 individuals were seen at these sessions (about 15 Chinese, 1 Kurd, the rest mostly from South Asian countries). Most of these people were young, seen more than once and none presented with diabetes. The main health issues concerned children and/or pregnancy, or queries about accessing services.

There is no routine screening for refugees entering the country, except for TB, at point of entry into the UK.

**Homeless people**

There are currently 7 homeless people on the diabetes register in Lothian. Opportunistic screening is key for this group, and there is a need for very flexible services. The adverse effects of other factors such as drug and alcohol use, and poor and unstable living conditions, are also important issues. As with travellers and refugees, the health care professionals who are working with the homeless may benefit from additional support and information in relation to diabetes care.

**People with learning disabilities**

The number of people in Lothian with learning disabilities is difficult to quantify.
There are approximately 1700 -2000 people registered with the Community Learning Disability Teams (CLDTs) across Lothian. General practises have been required to develop learning disability registers but these data are thought to be unlikely to be complete at the present time.

Individuals with learning disabilities who don't need significant help to live independently may be difficult to identify and not on any specific register. Those amongst this group who are most at risk and hardest to reach are likely to be those who have no carer.

Mental health, epilepsy and respiratory disease are all significant health issues for people with learning disabilities. The prevalence of overweight/obesity is high, except for those with severe learning disabilities who are often underweight. Reasons for this are to do with poor diet, lack of exercise and certain metabolic conditions in some cases.
Individuals are likely to have little choice or control over what they eat, or if they do, may lack the skills or information to help them make healthy choices. A sedentary lifestyle is common and compounds the problems of poor eating habits, with few opportunities available for encouraging this group to participate in physical activity. It was suggested that there was likely to be a high level of undiagnosed diabetes amongst people with learning disabilities, given these factors.

People with learning disabilities who are known to have diabetes have their care managed in a variety of ways, and members of the Community Learning Disability Team may or may not be involved in this aspect.

One of the issues identified was the difficulty of ensuring that carers of people with learning disability who have diabetes understand the need for them to

have an appropriate diet. CLDTs deliver training to care staff, although this is hampered by the high turnover amongst these staff. It may be possible to build in some education about diet.

### *4.5 Practice Infrastructure*

The MCN survey showed that all GP practices in Lothian provide dedicated diabetes care, although this may be delivered in different formats (structured clinic or dedicated appointments, for example). It was therefore not considered appropriate to present the data by practice and average SIMD score, as originally intended, since deprivation does not appear to impact on this aspect of service provision.

### *4.6 Summary findings*

The picture in Lothian, not surprisingly, is similar to findings from elsewhere in relation to inequalities and diabetes. We found that prevalence of diabetes is higher in low-income groups, and people in the most deprived quintiles are more likely to be smokers and to be overweight

However we found some important differences. The survey found no differences in the diabetes infrastructure in general practices by deprivation. In contrast to findings from elsewhere, in Lothian there appears to be little difference in control of $HbA_{1c}$, blood pressure and cholesterol across deprivation quintiles.

Accurate data about diabetes prevalence and outcomes is very difficult to obtain for groups such as travellers, refugees and homeless people. However it is clear that these groups have a particular pattern of health service use, which differs from the general population. Specific barriers to accessing

services include a need for easy availability, low awareness of what is available, fear of prejudice and lack of trust. The most effective way of reaching groups such as travellers and refugees is through the health care - and other- professionals who are already working with and have established good relationships with these client groups

# 5 Discussion

The lack of a deprivation gradient in glycaemic control, hypercholesterolaemia and hypertension suggests people in deprived areas in Lothian are accessing diabetes services and receiving high quality care.

As data completeness was lower in the most deprived groups, we considered the possibility that this was masking a true deprivation gradient in glycaemic control, hypertension and cholesterol. We ran a sensitivity analysis in which we assumed that all the cases with missing data were over the threshold for each of these. This again confirmed there was no gradient by deprivation, although the gradient for BMI and obesity persisted.

These factors can be managed by medication, and are perhaps therefore more easily influenced by health care. It remains more of a challenge to address the higher rates of obesity and smoking among people in deprived areas. These are not surprising given the higher general prevalence of obesity and smoking in the population in deprived communities. These factors cannot be controlled by medication alone, but require patients to change behaviour. Our data do not show the proportion of people who have quit smoking or lost weight since diagnosis, it may be that health professionals are managing to motivate people with diabetes to address these risks. Discussion with GPs indicates that diet, smoking and physical activity are topics that are routinely raised with newly diagnosed patients; however, some people may need more

sustained input in order to effect long-term changes than it is possible or appropriate to offer in a primary care setting.

Support for health professionals working in deprived areas, and specifically training in health behaviour change, could help to address some of these issues.

It is not clear whether specific structured education and lifestyle programmes for people with diabetes, such as DESMOND and DOLI, are appropriately tailored or easily accessible for people in disadvantaged and hard-to-reach groups. They are also not yet available across the whole of Lothian. Structured diabetes education targeted at specific groups or in areas of deprivation would make it more possible to tailor content and delivery.

There are some groups for whom factors such as sporadic levels of contact with health professionals, poor written or spoken English, and mobile or unsettled lifestyle, may combine to make the delivery of effective diabetes education especially problematic. In these cases staff training in health literacy, which aims to maximise the effective transmission of key health messages in easily understandable ways, may be of benefit. Similarly, services may need to be flexible in order to include populations who find it difficult to access services with regular appointment schedules.

There is a clearly designated smoking cessation service in Lothian, and GPs refer patients to it. There are also a number of community groups and/or health projects that offer physical activity sessions for little or no cost – of which some practices will be aware – but these are not universally available.

Counterweight, a primary care based programme to help people lose weight, is currently only available through the 14 Edinburgh practices participating in the Keep Well initiative. Training has now been extended to a small number of other practices and the programme is likely to be extended further, but it is not yet clear in what format.

The data show some differences between women and men. Prevalence of type 2 diabetes is greater in men but women are more likely to be obese and have higher cholesterol, although other risk factors are similar. The greater number of women with high cholesterol may be explained by the fact that our data considered total cholesterol, but women typically have higher HDL cholesterol and therefore lower total:HDL cholesterol ratios. As this would indicate lower cardiovascular risk it is possible that men with diabetes are appropriately treated more aggressively for high cholesterol than women. However if more women than men are obese then perhaps one clear indication from these findings is once again the need for a targeted approach in providing effective support on lifestyle and behaviour change.

As expected, there were also differences by age. Prevalence of diabetes is greatest in 50-59 year age group, and then drops; the most likely explanation is that diabetes reduces life expectancy. The rates of high cholesterol and poor glycaemic control fell with age, probably because of a survival effect. On the other hand, hypertension rises with age as is seen in the general population.

In relation to other minority groups, the data shows that South Asians seem to have poorer glycaemic control than the white population, although they are not more likely to have hypertension or hypercholesterolaemia and are less likely to smoke. Although they were not more likely to be overweight using the general population threshold of BMI 25, a more appropriate threshold for South Asians is BMI 23 which suggests that there may still be a greater need for weight management in this group. Local qualitative research has highlighted beliefs that lead some South Asian patients to adjust their medication,[46] and this may contribute to the poorer glycaemic control seen in this group. There have been some local initiatives seeking to improve care for South Asian patients with diabetes and it may be useful to review whether these result in better long term outcomes. The numbers of patients in the Chinese and Black groups are too small to draw meaningful conclusions about any observed differences in control.

Health care professionals reported that a significant number of people with learning disabilities are overweight, and this is compounded by poor diet and lack of opportunities for physical activity. There appears to be a need for information and support for carers of people with learning disabilities who have diabetes, to help improve control of risk factors such as poor diet and low levels of physical activity. It is suggested that some further exploration is required regarding the best way to provide this, and that further data collection is carried out in order to gain a more complete picture of diabetes prevalence in this group.

It is clear that the best way to deliver diabetes services to people who are homeless, gypsy travellers and refugees or asylum seekers is to work with the professionals who are already working with these groups. These professionals may need appropriate support, through provision of information and/or specific training, to ensure patients receive appropriate diabetes care. There are also other professionals working with the target groups, who would benefit from increased knowledge and information about relevant health services, and who could play an important role in linking hard-to-reach groups with available services.

It is not only health professionals who can contribute to improving diabetes care; those working in other sectors, such as voluntary organisations, may have an important role to play, not least of all in disseminating information to their specific client groups about relevant health services and how to access them. They may also provide invaluable information for NHS workers in effective and acceptable ways of reaching particular groups.

Within the NHS the CH(C)Ps have been allocated a key role in the management of long term conditions, with the shift in delivery of care towards community based services as outlined in the Primary Care Modernisation Strategy. The findings in this report should be disseminated to the general managers and the leads for management of long terms conditions

# 6 Recommendations

In conclusion, the group's recommendations include both interventions that can be immediately implemented, and proposals to further explore some particular issues, with a view to making an impact on some of the more challenging areas.

The following recommendations are made:

**Socioeconomic deprivation**

- Proposed Health Behaviour Change training should be targeted initially at practice nurses in deprived areas, given that smoking and obesity are key risk factors in diabetes and prevalence is highest in socioeconomically deprived areas
- Training should be developed on diabetes care and lifestyle issues, specifically focused on how primary care professionals can support patients, and the impact on achievement of QOF indicators. This will be taken forward through the MCN, in conjunction with colleagues working in related areas (e.g.: Counterweight, Healthy Weight Strategy, and the Health Promotion Service.)
- A proposal should be developed to extend Health Literacy training, with a specific focus on diabetes and targeted at appropriate health care professionals.
- Work should be done to explore how to adapt diabetes education such as DESMOND and DOLI to ensure they are appropriate for disadvantaged groups.
- Inequality issues should be highlighted in the Lothian Healthy Weight Strategy which is currently being developed.

**Specific vulnerable groups**

- Data collection on learning disabilities and diabetes prevalence should be completed, and training needs for different groups of staff working with people with learning disabilities, in relation to diabetes care and management, should be explored with CLDT staff.
- A system should be developed for ensuring that key professionals working with gypsy travellers, homeless people, refugees and people with learning disabilities are informed on a regular basis about relevant health services availability and access, and relevant training.
- Flexibility in delivery of services should be extended where possible, for example, walk in appointments at mobile retinopathy screening sessions for people who find it harder to access routine appointments.
- There should be an assessment of the impact of specific initiatives/clinics for South Asian patients on control and improvement of their diabetes.

**Monitoring**

- This report should be circulated to groups and individuals within the NHS who have a key role or interest in the management of long term conditions.
- Progress on all these actions will be regularly reviewed at six monthly intervals, and the quantitative data analysis repeated in two years.

March 2008
NHS Lothian Directorate of Public Health and Health Policy

## *Appendix 2 Renal units in Scotland*[d]

| | General Renal Op Clinic | Low Clearance Clinic | Hospital Haemodialysis | Home Haemodialysis | Peritoneal Dialysis | Transplantation | | Kidney Transplant | | Renal Replacement Therapy for ARF * | Holiday or visitor Haemodialysis | Last Updated |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Kidney | Multi-organ | Assessment | Follow up | | | |
| **Aberdeen Royal Infirmary** | ✓ | ✓ | ✓ | ✓ | ✓ | X | X | ✓ | ✓ | ✓ | ✓ | |
| **Satellites** | | | | | | | | | | | | |
| Dr Gray's Hospital, Elgin | ✓ | ✓ | ✓ | X | X | X | X | X | ✓ | X | ✓ | 02/10/08 |
| Peterhead Community Hospital | X | X | ✓ | X | X | X | X | X | X | X | ✓ | 06/10/08 |
| Campbell Hospital, Portsoy | X | ✓ | ✓ | X | X | X | X | X | X | X | ✓ | 02/10/08 |
| Inverurie Dailysis Unit | X | X | ✓ | X | X | X | X | X | X | X | ✓ | 02/10/08 |
| Orkney Unit, Balfour Hospital | X | X | ✓ | X | X | X | X | X | X | X | ✓ | 02/10/08 |
| Gilbert Bain Hospital, Shetland | ✓ | ✓ | ✓ | ✓ | X | X | X | X | ✓ | X | ✓ | 02/10/08 |
| **Crosshouse Hospital, Kilmarnock** | ✓ | ✓ | ✓ | ✓ | ✓ | X | X | X | ✓ | ✓ | ✓ | 07/12/06 |
| **Ayr Hospital** | ✓ | X | X | X | X | X | X | X | X | X | X | |
| **Ayrshire Central Hospital, Irvine** | ✓ | X | X | X | X | X | X | X | X | X | X | |
| **Heathfield Hospital, Ayr** | ✓ | X | X | X | X | X | X | X | X | X | X | |
| **Dumfries and Galloway Royal Infirmary** | ✓ | ✓ | ✓ | ✓ | ✓ | X | X | ✓ | ✓ | ✓ | ✓ | 07/12/06 |
| **Satellite** | | | | | | | | | | | | |
| Garrick Hospital, Stranraer | ✓ | X | ✓ | X | X | X | X | X | ✓ | X | ✓ | 02/10/08 |

[d] http://www.srr.scot.nhs.uk/Renal_Units/Clinics.htm Note: the table at this address is interactive, the blue ticks contain further information

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Glasgow Royal Infirmary** | ✓ | ✓ | ✓ | X | ✓ | X | X | ✓ | X | ✓ | ✓ | **04/04/06** |
| **Satellites** | | | | | | | | | | | | |
| Falkirk & District Royal Infirmary | ✓ | X | ✓ | X | X | X | X | ✓ | X | X | ✓ | 07/12/06 |
| Stobhill Hospital, Glasgow | ✓ | ✓ | ✓ | ✓ | X | X | X | ✓ | X | ✓ | ✓ | **07/12/06** |
| **Stirling Royal Infirmary** | ✓ | X | X | X | X | X | X | ✓ | X | ✓ | X | **25/07/05** |
| **Monklands Hospitall, Airdrie** | ✓ | ✓ | ✓ | X | ✓ | X | X | ✓ | ✓ | ✓ | ✓ | **07/12/06** |
| **Ninewells Hospital, Dundee..** | ✓ | ✓ | ✓ | ✓ | ✓ | X | X | ✓ | | ✓ | ✓ | 02/10/08 |
| **Perth Royal Infirmary** | ✓ | ✓ | ✓ | X | X | X | X | X | X | X | X | 02/10/08 |
| *** Queen Margaret's Hospital, Dunfermline** | ✓ | ✓ | ✓ | ✓ | ✓ | X | X | ✓ | ✓ | ✓ | ✓ | 07/12/06 |
| **Satellite ..** | | | | | | | | | | | | |
| Victoria Hospital, Kirkcaldy | ✓ | ✓ | ✓ | X | X | X | X | X | X | X | ✓ | 07/12/06 |
| **Raigmore Hospital, Inverness** . | ✓ | ✓ | ✓ | ✓ | ✓ | X | X | X | ✓ | ✓ | X | 07/12/06 |
| **Satellite.** | | | | | | | | | | | | |
| Belford Hospital | ✓ | ✓ | ✓ | X | X | X | X | X | ✓ | X | ✓ | 02/10/08 |
| Caithness General Hospital, Wick | ✓ | ✓ | ✓ | X | X | X | X | X | ✓ | X | ✓ | 02/10/08 |
| Western Isles Hospital | ✓ | ✓ | ✓ | X | X | X | X | X | ✓ | X | ✓ | 02/10/08 |
| *** Royal Hospital for Sick Children, Glasgow** | ✓ | ✓ | ✓ | X | ✓ | ✓ | X | ✓ | ✓ | ✓ | ✓ | 07/12/06 |
| *** Royal Infirmary of Edinburgh (New Royal)** | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | X | 02/10/08 |
| **Satellite** | | | | | | | | | | | | |
| **Western General Hospital, Edinburgh** | ✓ | ✓ | ✓ | X | X | X | X | X | X | X | ✓ | 02/10/08 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Borders General Hospital, Melrose** | ✓ | ✓ | ✓ | ✓ | ✓ | X | X | X | X | X | X | 02/10/08 |
| **St Johns Livingston** | ✓ | ✓ | ✓ | X | ✓ | X | X | X | ✓ | X | X | 07/12/06 |
| **Western Infirmary Glasgow** | ✓ | ✓ | ✓ | | ✓ | ✓ | X | ✓ | ✓ | ✓ | ✓ | 02/10/08 |
| **Satellite** | | | | | | | | | | . | | |
| Gartnavel General, Glasgow | | | ✓ | | | X | X | | | | ✓ | 02/10/08 |
| Inverclyde Royal, Greenock | ✓ | ✓ | ✓ | X | X | X | X | X | ✓ | X | ✓ | 02/10/08 |
| Vale of Leven District General Hospital | ✓ | ✓ | ✓ | X | X | X | X | X | X | X | ✓ | 02/10/08 |
| Royal Alexander Hospital, Paisley | ✓ http://www.srr.scot.nhs.uk/Renal_Units/Clinics.htm - top | | | | | | | | | | | 02/10/08 |

* = Annual review clinic
* = The table shows: adolescent transfers in conjunction with staff from WIG
* = Annual review clinic

Table A1.1 Renal Units in Scotland

# *Appendix 3 Foot disease risk score and amputations*

| Health Board | T2D pop number in each foot risk score | | | | |
|---|---|---|---|---|---|
| | Active | High | Med | Low | Unknown |
| AYRSHIRE & ARRAN | 24 | 27 | 60 | 443 | 14517 |
| BORDERS | 7 | 74 | 193 | 646 | 3422 |
| DUMFRIES & GALLOWAY | 28 | 124 | 488 | 910 | 4582 |
| FIFE | 26 | 253 | 468 | 1187 | 12342 |
| FORTH VALLEY | 27 | 207 | 530 | 1241 | 9225 |
| GRAMPIAN | 63 | 15 | 33 | 362 | 17848 |
| GLASGOW | 175 | 887 | 3405 | 9589 | 30593 |
| HIGHLANDS | 56 | 381 | 767 | 3089 | 6712 |
| LANARKSHIRE | 84 | 389 | 1368 | 3170 | 16740 |
| LOTHIAN | 100 | 599 | 1182 | 3049 | 21678 |
| ORKNEY | 2 | 26 | 114 | 58 | 547 |
| SHETLAND | 3 | 20 | 70 | 305 | 367 |
| TAYSIDE | 68 | 687 | 1494 | 5806 | 7687 |
| WESTERN ISLES | 4 | 13 | 24 | 11 | 845 |
| Scotland | 667 | 3702 | 10196 | 29866 | 147105 |

Table A 2.1 population with type 2 diabetes in each foot risk category (data extract from SCI-DC 24.4.2009)

| Health Board | Amputation rate per 100 t2D pop | Amputation (number) |
|---|---|---|
| AYRSHIRE & ARRAN | 305 | 46 |
| BORDERS | 322 | 14 |
| DUMFRIES & GALLOWAY | 457 | 28 |
| FIFE | 511 | 73 |
| FORTH VALLEY | 374 | 42 |
| GRAMPIAN | 333 | 61 |
| GLASGOW | 500 | 223 |
| HIGHLANDS | 609 | 67 |
| LANARKSHIRE | 326 | 71 |
| LOTHIAN | 519 | 138 |
| ORKNEY | 669 | 5 |
| SHETLAND | 654 | 5 |
| TAYSIDE | 737 | 116 |
| WESTERN ISLES | 669 | 6 |
| Scotland | 467 | 895 |

Table A2.2 amputation rates per 100,000 population with type 2 diabetes (data extract from SCI-DC 24.4.2009)

| Health Board | T2D pop (N) | Crude rates in each foot risk score per 100,000 diabetic population | | | | |
|---|---|---|---|---|---|---|
| | | Active | High | Med | Low | Unknown |
| AYRSHIRE & ARRAN | 15071 | 159 | 179 | 398 | 2939 | 96324 |
| BORDERS | 4342 | 161 | 1704 | 4445 | 14878 | 78812 |
| DUMFRIES & GALLOWAY | 6132 | 457 | 2022 | 7958 | 14840 | 74723 |
| FIFE | 14276 | 182 | 1772 | 3278 | 8315 | 86453 |
| FORTH VALLEY | 11230 | 240 | 1843 | 4720 | 11051 | 82146 |
| GRAMPIAN | 18321 | 344 | 82 | 180 | 1976 | 97418 |
| GLASGOW | 44649 | 392 | 1987 | 7626 | 21476 | 68519 |
| HIGHLANDS | 11005 | 509 | 3462 | 6970 | 28069 | 60991 |
| LANARKSHIRE | 21751 | 386 | 1788 | 6289 | 14574 | 76962 |
| LOTHIAN | 26608 | 376 | 2251 | 4442 | 11459 | 81472 |
| ORKNEY | 747 | 268 | 3481 | 15261 | 7764 | 73226 |
| SHETLAND | 765 | 392 | 2614 | 9150 | 39869 | 47974 |
| TAYSIDE | 15742 | 432 | 4364 | 9491 | 36882 | 48831 |
| WESTERN ISLES | 897 | 446 | 1449 | 2676 | 1226 | 94203 |
| Scotland | 191536 | 348 | 1933 | 5323 | 15593 | 76803 |

Table A2.3 Rates of foot risk categories per 100,000 population with type 2 diabetes (data extract from SCI-DC 24.4.2009)

# *Appendix 4 Optometrist referral rates and numbers*

| Health Board | Seen by optometrist (rates per 100,000 T2 diabetic pop.) | Seen by optometrist (number) |
|---|---|---|
| AYRSHIRE & ARRAN | 942 | 142 |
| BORDERS | 806 | 35 |
| DUMFRIES & GALLOWAY | 65 | 4 |
| FIFE | 7 | 1 |
| FORTH VALLEY | 18 | 2 |
| GRAMPIAN | 82 | 15 |
| GLASGOW | 1048 | 468 |
| HIGHLANDS | 1118 | 123 |
| LANARKSHIRE | 78 | 17 |
| LOTHIAN | 1203 | 320 |
| ORKNEY | 134 | 1 |
| SHETLAND | 0 | 0 |
| TAYSIDE | 45 | 7 |
| WESTERN ISLES | 334 | 3 |
| Scotland | 594 | 1138 |

Table A3.1 rates of Optometrist referrals per 100,000 of the type 2 diabetic population (data extract from SCI-DC 24.4.2009)

# *Appendix 5 QOF diabetes indicators*

| | |
|---|---|
| DM 1 | The practice can produce a register of all patients with diabetes mellitus |
| **DM 2** | **The percentage of patients with diabetes whose notes record BMI in the previous 15 months** |
| DM 3 | The percentage of patients with diabetes in whom there is a record of smoking status in the previous 15 months except those who have never smoked where smoking status should be recorded once |
| DM 4 | The percentage of patients with diabetes who smoke and whose notes contain a record that smoking cessation advice has been offered in the last 15 months |
| **DM 5** | **The percentage of patients with diabetes who have a record of $HbA_{1c}$ or equivalent in the previous 15 months** |
| DM 6 | The percentage of patients with diabetes in whom the last $HbA_{1c}$ is 7.4 or less (or equivalent test / reference range depending on local laboratory) in last 15 months |
| **DM 7** | **The percentage of patients with diabetes in whom the last $HbA_{1c}$ is 10 or less (or equivalent test/reference range depending on local laboratory) in the previous 15 months** |
| DM 8 | The percentage of patients with diabetes who have a record of retinal screening in the previous 15 months |
| **DM 9** | **The percentage of patients with diabetes with a record of the presence or absence of peripheral pulses in the previous 15 months** |
| **DM 10** | **The percentage of patients with diabetes with a record of neuropathy testing in the previous 15 months** |
| **DM 11** | **The percentage of patients with diabetes who have a record of the blood pressure in the previous 15 months** |
| **DM 12** | **The percentage of patients with diabetes in whom the last blood pressure is 145/85 or less** |
| **DM 13** | **The percentage of patients with diabetes who have a record of micro-albuminuria testing in the previous 15 months (exception reporting for patients with proteinuria)** |
| DM 14 | The percentage of patients with diabetes who have a record of serum creatinine testing in the previous 15 months |
| **DM 15** | **The percentage of patients with diabetes with proteinuria or micro-albuminuria who are treated with ACE inhibitors (or A2 antagonists)** |
| **DM 16** | **The percentage of patients with diabetes who have a record of total cholesterol in the previous 15 months** |
| **DM 17** | **The percentage of patients with diabetes whose last measured total cholesterol within the previous 15 months is 5mmol/l or less** |
| **DM 18** | **The percentage of patients with diabetes who have had influenza immunisation in the preceding 1 September to 31 March** |
| **DM 19** | **The practice can produce a register of all patients aged 17 years and over with diabetes mellitus, which specifies whether the patient has Type 1 or Type 2 diabetes** |
| **DM 20** | **The percentage of patients with diabetes in whom the last $HbA_{1c}$ is 7.5 or less (or equivalent test/reference range depending on local laboratory) in the previous 15 months** |
| **DM 21** | **The percentage of patients with diabetes who have a record of retinal screening in the previous 15 months** |
| **DM 22** | **The percentage of patients with diabetes who have a record of estimated glomerular filtration rate (eGFR) or serum creatinine testing in the previous 15 months** |

Table A4.1 QOF indicator definitions for Diabetes

Some indicators have been dropped and some have changed over the years. Those current for 2007-08 (the latest year of data) are shown in bold above, and those not in current use are greyed out.

# *Appendix 6 DRS data*

| ***Key Performance Statistics By Board 31/03/2009*** | ***Ayrshire & Arran*** | | ***Borders*** | | ***Dumfries & Galloway*** | | ***Forth Valley*** | | ***NHS Fife*** | | ***NHS Grampian*** | | ***Greater Glasgow and Clyde*** | | ***NHS Highland*** | | ***Lanarkshire*** | | ***Lothian*** | | ***Orkney*** | | ***Shetland*** | | ***Tayside*** | | ***Western Isles*** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **These statistics are for people in the Board of Residence** | **Reported Numbers** | **%** | **Reported Numbers** | **%** | **Reported Numbers** | **%** | **Reported Numbers** | **%** | **Reported Numbers** | **%** | **Reported Numbers** | **%** | **Reported Numbers** | **%** | **Reported Numbers** | **%** | **Reported Numbers** | **%** | **Reported Numbers** | **%** | **Reported Numbers** | **%** | **Reported Numbers** | **%** | **Reported Numbers** | **%** | **Reported Numbers** | **%** |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Start Date | 01/04/2008 | | 01/04/2008 | | 01/04/2008 | | 01/04/2008 | | 01/04/2008 | | 01/04/2008 | | 01/04/2008 | | 01/04/2008 | | 01/04/2008 | | 01/04/2008 | | 01/04/2008 | | 01/04/2008 | | 01/04/2008 | | 01/04/2008 | |
| Reporting Date | 31/03/2009 | | 31/03/2009 | | 31/03/2009 | | 31/03/2009 | | 31/03/2009 | | 31/03/2009 | | 31/03/2009 | | 31/03/2009 | | 31/03/2009 | | 31/03/2009 | | 31/03/2009 | | 31/03/2009 | | 31/03/2009 | | 31/03/2009 | |
| Total Diabetic Population aged 12 and over | 17111.0 | | 4921.0 | | 7045.0 | | 12130.0 | | 15509.0 | | 21475.0 | | 50636.0 | | 12630.0 | | 24803.0 | | 30493.0 | | 860.0 | | 878.0 | | 17450.0 | | 1073.0 | |
| Overall prevalence of diabetes | 4.7 | | 4.4 | | 0.0 | | 0.0 | | 0.0 | | 0.0 | | 0.0 | | 0.0 | | 0.0 | | 0.0 | | 0.0 | | 0.0 | | 0.0 | | 0.0 | |
| Total number of people who are permanently suspended | 287.0 | 0.0 | 153.0 | 0.0 | 252.0 | 0.0 | 310.0 | 0.0 | 417.0 | 0.0 | 1135.0 | 0.1 | 900.0 | 0.0 | 389.0 | 0.0 | 916.0 | 0.0 | 1390.0 | 0.0 | 44.0 | 0.1 | 34.0 | 0.0 | 561.0 | 0.0 | 45.0 | 0.0 |
| Total number of people who are temporarily suspended | 1460.0 | 0.1 | 889.0 | 0.2 | 710.0 | 0.1 | 1466.0 | 0.1 | 1849.0 | 0.1 | 764.0 | 0.0 | 3558.0 | 0.1 | 1466.0 | 0.1 | 2536.0 | 0.1 | 3928.0 | 0.1 | 172.0 | 0.2 | 63.0 | 0.1 | 2946.0 | 0.2 | 97.0 | 0.1 |
| Total Number of people invited to screening in 08/09 | 14429.0 | 0.9 | 3950.0 | 1.0 | 6430.0 | 1.1 | 11356.0 | 1.1 | 13669.0 | 1.0 | 21827.0 | 1.1 | 45307.0 | 1.0 | 9299.0 | 0.9 | 21145.0 | 1.0 | 24037.0 | 1.0 | 702.0 | 1.1 | 739.0 | 0.8 | 14220.0 | 1.0 | 905.0 | 0.8 |
| Total Number of the currently eligible population successfully screened in year 08/09 | 12826.0 | 0.8 | 3223.0 | 0.8 | 5731.0 | 0.9 | 9114.0 | 0.9 | 11110.0 | 0.8 | 20850.0 | 1.1 | 36185.0 | 0.8 | 7306.0 | 0.7 | 15978.0 | 0.7 | 20430.0 | 0.8 | 602.0 | 0.9 | 749.0 | 1.0 | 11513.0 | 0.8 | 695.0 | 0.7 |
| Total number of people who have been examined slit lamp in year 08/09 | 1911.0 | 0.1 | 352.0 | 0.1 | 186.0 | 0.0 | 2316.0 | 0.3 | 1142.0 | 0.1 | 1323.0 | 0.1 | 1798.0 | 0.0 | 551.0 | 0.1 | 464.0 | 0.0 | 4150.0 | 0.2 | 22.0 | 0.0 | 41.0 | 0.1 | 393.0 | 0.0 | 73.0 | 0.1 |
| Number of referrals to Ophthalmology on account of retinopathy in year 08/09 | 613.0 | 0.0 | 141.0 | 0.0 | 215.0 | 0.0 | 320.0 | 0.0 | 276.0 | 0.0 | 645.0 | 0.0 | 1328.0 | 0.0 | 288.0 | 0.0 | 346.0 | 0.0 | 985.0 | 0.0 | 24.0 | 0.0 | 38.0 | 0.1 | 282.0 | 0.0 | 38.0 | 0.1 |
| Number of people overdue for recall for Photographic screening | 0.0 | 0.0 | 96.0 | 0.0 | 75.0 | 0.0 | 12.0 | 0.0 | 180.0 | 0.0 | 57.0 | 0.0 | 310.0 | 0.0 | 609.0 | 0.1 | 125.0 | 0.0 | 1742.0 | 0.1 | 4.0 | 0.0 | 0.0 | 0.0 | 42.0 | 0.0 | 0.0 | 0.0 |
| Number of people overdue for recall for Slit lamp examinations | 0.0 | 0.0 | 74.0 | 0.0 | 10.0 | 0.0 | 3.0 | 0.0 | 164.0 | 0.0 | 62.0 | 0.0 | 546.0 | 0.0 | 311.0 | 0.0 | 45.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 26.0 | 0.0 | 0.0 | 0.0 |

# *Appendix 7 QOF data*

Number of practices with 100% satisfaction by health board and indicator

| Sum of 100% flag | IND | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Health Board | DM02 | DM05 | DM07 | DM09 | DM10 | DM11 | DM12 | DM13 | DM15 | DM16 | DM17 | DM18 | DM19 | DM20 | DM21 | DM22 | Grand Total |
| Ayrshire & Arran | 58 | 59 | 58 | 51 | 51 | 59 | 59 | 52 | 59 | 59 | 59 | 58 | 59 | 59 | 59 | 59 | 918 |
| Borders | 24 | 25 | 24 | 24 | 23 | 25 | 25 | 25 | 22 | 25 | 24 | 24 | 25 | 24 | 25 | 25 | 389 |
| Dumfries & Galloway | 34 | 35 | 34 | 30 | 31 | 35 | 34 | 31 | 34 | 35 | 34 | 33 | 35 | 35 | 35 | 35 | 540 |
| Fife | 53 | 55 | 49 | 36 | 37 | 56 | 56 | 30 | 49 | 55 | 56 | 51 | 56 | 56 | 49 | 55 | 799 |
| Forth Valley | 54 | 57 | 52 | 53 | 53 | 57 | 57 | 50 | 56 | 57 | 57 | 55 | 57 | 57 | 55 | 57 | 884 |
| Grampian | 75 | 75 | 61 | 57 | 54 | 75 | 75 | 46 | 68 | 72 | 69 | 62 | 76 | 67 | 57 | 74 | 1063 |
| Greater Glasgow & Clyde | 266 | 269 | 222 | 207 | 201 | 271 | 269 | 203 | 255 | 265 | 269 | 260 | 271 | 264 | 271 | 268 | 4031 |
| Highland | 95 | 100 | 82 | 81 | 80 | 102 | 100 | 73 | 93 | 101 | 98 | 92 | 102 | 95 | 102 | 102 | 1498 |
| Lanarkshire | 93 | 95 | 87 | 87 | 87 | 97 | 98 | 81 | 93 | 95 | 98 | 93 | 98 | 94 | 92 | 95 | 1483 |
| Lothian | 119 | 120 | 114 | 98 | 98 | 120 | 120 | 96 | 112 | 120 | 120 | 109 | 120 | 120 | 118 | 120 | 1824 |
| Orkney | 8 | 12 | 12 | 6 | 5 | 12 | 9 | 5 | 9 | 10 | 11 | 9 | 13 | 13 | 7 | 12 | 153 |
| Shetland | 9 | 10 | 10 | 9 | 8 | 10 | 10 | 5 | 8 | 10 | 10 | 9 | 10 | 10 | 10 | 10 | 148 |
| Tayside | 71 | 71 | 68 | 57 | 57 | 71 | 70 | 44 | 68 | 71 | 69 | 69 | 71 | 70 | 59 | 71 | 1057 |
| Western Isles | 11 | 11 | 10 | 8 | 8 | 11 | 10 | 8 | 11 | 11 | 11 | 10 | 12 | 11 | 10 | 11 | 164 |
| Grand Total | 970 | 994 | 883 | 804 | 793 | 1001 | 992 | 749 | 937 | 986 | 985 | 934 | 1005 | 975 | 949 | 994 | 14951 |

Total number of practices for each indicator for each HB

| Count of Health Board | IND | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Health Board | DM02 | DM05 | DM07 | DM09 | DM10 | DM11 | DM12 | DM13 | DM15 | DM16 | DM17 | DM18 | DM19 | DM20 | DM21 | DM22 | Grand Total |
| Ayrshire & Arran | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 59 | 944 |
| Borders | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 400 |
| Dumfries & Galloway | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 560 |
| Fife | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 896 |
| Forth Valley | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 912 |
| Grampian | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 1216 |
| Greater Glasgow & Clyde | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 271 | 4336 |
| Highland | 102 | 102 | 102 | 102 | 102 | 102 | 102 | 102 | 102 | 102 | 102 | 102 | 102 | 102 | 102 | 102 | 1632 |
| Lanarkshire | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 1568 |
| Lothian | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 1920 |
| Orkney | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 208 |
| Shetland | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 160 |
| Tayside | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 1136 |
| Western Isles | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 192 |
| Grand Total | 1005 | 1005 | 1005 | 1005 | 1005 | 1005 | 1005 | 1005 | 1005 | 1005 | 1005 | 1005 | 1005 | 1005 | 1005 | 1005 | 16080 |

Percent of QOF practices with 100% satisfaction for each indicator and each HB

| | DM02 | DM05 | DM07 | DM09 | DM10 | DM11 | DM12 | DM13 | DM15 | DM16 | DM17 | DM18 | DM19 | DM20 | DM21 | DM22 | All Indicators |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ayrshire & Arran | 98.3% | 100.0% | 98.3% | 86.4% | 86.4% | 100.0% | 100.0% | 88.1% | 100.0% | 100.0% | 100.0% | 98.3% | 100.0% | 100.0% | 100.0% | 100.0% | 97.2% |
| Borders | 96.0% | 100.0% | 96.0% | 96.0% | 92.0% | 100.0% | 100.0% | 100.0% | 88.0% | 100.0% | 96.0% | 96.0% | 100.0% | 96.0% | 100.0% | 100.0% | 97.3% |
| Dumfries & Galloway | 97.1% | 100.0% | 97.1% | 85.7% | 88.6% | 100.0% | 97.1% | 88.6% | 97.1% | 100.0% | 97.1% | 94.3% | 100.0% | 100.0% | 100.0% | 100.0% | 96.4% |
| Fife | 94.6% | 98.2% | 87.5% | 64.3% | 66.1% | 100.0% | 100.0% | 53.6% | 87.5% | 98.2% | 100.0% | 91.1% | 100.0% | 100.0% | 87.5% | 98.2% | 89.2% |
| Forth Valley | 94.7% | 100.0% | 91.2% | 93.0% | 93.0% | 100.0% | 100.0% | 87.7% | 98.2% | 100.0% | 100.0% | 96.5% | 100.0% | 100.0% | 96.5% | 100.0% | 96.9% |
| Grampian | 98.7% | 98.7% | 80.3% | 75.0% | 71.1% | 98.7% | 98.7% | 60.5% | 89.5% | 94.7% | 90.8% | 81.6% | 100.0% | 88.2% | 75.0% | 97.4% | 87.4% |
| Greater Glasgow & Clyde | 98.2% | 99.3% | 81.9% | 76.4% | 74.2% | 100.0% | 99.3% | 74.9% | 94.1% | 97.8% | 99.3% | 95.9% | 100.0% | 97.4% | 100.0% | 98.9% | 93.0% |
| Highland | 93.1% | 98.0% | 80.4% | 79.4% | 78.4% | 100.0% | 98.0% | 71.6% | 91.2% | 99.0% | 96.1% | 90.2% | 100.0% | 93.1% | 100.0% | 100.0% | 91.8% |
| Lanarkshire | 94.9% | 96.9% | 88.8% | 88.8% | 88.8% | 99.0% | 100.0% | 82.7% | 94.9% | 96.9% | 100.0% | 94.9% | 100.0% | 95.9% | 93.9% | 96.9% | 94.6% |
| Lothian | 99.2% | 100.0% | 95.0% | 81.7% | 81.7% | 100.0% | 100.0% | 80.0% | 93.3% | 100.0% | 100.0% | 90.8% | 100.0% | 100.0% | 98.3% | 100.0% | 95.0% |
| Orkney | 61.5% | 92.3% | 92.3% | 46.2% | 38.5% | 92.3% | 69.2% | 38.5% | 69.2% | 76.9% | 84.6% | 69.2% | 100.0% | 100.0% | 53.8% | 92.3% | 73.6% |
| Shetland | 90.0% | 100.0% | 100.0% | 90.0% | 80.0% | 100.0% | 100.0% | 50.0% | 80.0% | 100.0% | 100.0% | 90.0% | 100.0% | 100.0% | 100.0% | 100.0% | 92.5% |
| Tayside | 100.0% | 100.0% | 95.8% | 80.3% | 80.3% | 100.0% | 98.6% | 62.0% | 95.8% | 100.0% | 97.2% | 97.2% | 100.0% | 98.6% | 83.1% | 100.0% | 93.0% |
| Western Isles | 91.7% | 91.7% | 83.3% | 66.7% | 66.7% | 91.7% | 83.3% | 66.7% | 91.7% | 91.7% | 91.7% | 83.3% | 100.0% | 91.7% | 83.3% | 91.7% | 85.4% |
| All Scotland | 96.5% | 98.9% | 87.9% | 80.0% | 78.9% | 99.6% | 98.7% | 74.5% | 93.2% | 98.1% | 98.0% | 92.9% | 100.0% | 97.0% | 94.4% | 98.9% | 93.0% |

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