Quality of care of patients with diabetes: collation of data from multi-practice audits of diabetes in primary care

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**Background.** GPs are now playing a greater role in the care of patients with diabetes. The challenges described in the Saint Vincent Joint Task Force Report include achievement of a reduction in long-term complications by collecting key clinical information and systematically organizing care of patients with diabetes. The number of practices conducting audit and the number of primary care audit groups conducting multi-practice audits of diabetes have increased since the introduction of audit in 1991.

**Objectives.** We aimed to determine the feasibility of collating data from multi-practice audits of diabetes in primary care and to describe the pattern of care for diabetes patients in primary care.

**Methods.** A confidential postal questionnaire was sent to all medical audit advisory groups that had completed a multi-practice audit of diabetic care. The main outcome measures studied were prevalence and treatment of known diabetes and annual compliance with key process measures.

**Results.** Data could be collated for 17 of the 25 audit groups that supplied data representing information from 495 practices with 38 288 diabetic patients. Seven audit groups supplied data from a population denominator comprising 1 475 512 patients giving a prevalence of 1.46% (range 1.1–1.7%), 50.7% (range 32.5–69.0%) were managed by general practice only, 19.1% (7.6–39.7%) by hospital care only and 30.2% (11.0–49.5%) by shared care. Annual mean compliance for process measures showed wide variations: glycated haemoglobin or fructosamine checked for 72.5% (range 25.3–89.3%), fundi checked for 67.5% (57.8–86.6%), urine checked for 65.8% (27.5–80.0%), blood pressure checked for 87.6% (76.9–96.5%), smoking checked for 71.45 (21.9–86.0%), feet checked for 67.7% (40.0–90.8%) and BMI checked for 52.5% (26.4–68.2%).

**Conclusion.** This study shows the feasibility of collating audit data and the potential of this approach for describing patterns of care and highlighting general and local deficiencies. Information about levels of performance in large numbers of patients can be used to set standards or norms against which individual practitioners can compare their own activity. Comparison of the health needs of local populations with national data could be used to inform commissioning services. However, audits should employ uniform evidence-based criteria so as to facilitate collation and allow comparison.

**Keywords.** Diabetes, multi-practice audit, primary care audit groups, process of care.

**Introduction**

Diabetes poses special problems for primary care because adverse outcomes may only occur after many years. GPs are now playing a greater role in the care of their patients with diabetes, a trend which may continue, as practical steps are being taken to develop the framework for a primary-care-led NHS. One report reviewed the literature and concluded that primary care can be as effective as secondary care when judged by commonly used performance measures such as frequency of laboratory tests, frequency of review and measurement of glycated haemoglobin. However, the level of performance in primary care was variable and therefore more evidence is needed about methods and outcomes to ensure the effectiveness of primary care (and also shared care) for diabetic patients.
Diabetes registers are central to the running of an organized diabetes service, although they may be difficult to compile. Regulations for disease management clinics in general practice require practices to report annually to the health authority about the number of diabetic patients on their lists, how many are dependent on insulin and how many have had an annual review. This requires individual practices to maintain their own registers. There have also been calls for the creation of local diabetic registers by aggregating registers of individual practices. Furthermore, it has been suggested that the responsibility for identifying all diabetics in the population is a task for GPs, and that medical audit advisory groups (MAAGs) could develop a role in coordinating the annual identification of patients and evaluation of the care that they receive.

Well-accepted measures of the quality of diabetes care include: annual assessment of eyes, feet and urinary albumin, measurement of blood pressure, assessment of glucose and lipid levels, and enquiry about smoking habits. These are all aspects of care which can be monitored by audit. The number of practices conducting audits and the number of audit groups conducting multi-practice audits have increased since the introduction of audit in 1991. A multi-practice audit has been defined as ‘an audit that involves two or more general practices together undertaking the same audit, agreeing the same standard of care to be achieved, collecting the same data, comparing the results individually or collectively, implementing necessary changes, and later collecting data again to measure the effectiveness of those changes’. In this type of audit, the local audit group designs the project, the participating practices collect the required data, and the audit group collates and feeds back information to practices on a comparative basis. This can encourage a large number of GPs to participate, leading to improvement in care.

Collation of audit data would have many potential uses. It could provide data for assessing health needs, planning and audit. The data might also provide information about the quality of care, and allow comparison of performance between different audit groups or localities. However, the practicality of collection and collation of audit data has not been determined. Therefore, the aims of this study were to determine the feasibility of collecting data from multi-practice audits and to describe the pattern of care of diabetes in primary care.

Methods

Recruitment
A complete list of all 106 primary care audit groups was available during the study period 1995–1996. A list of audit groups which had co-ordinated multi-practice audits of diabetes was constructed using information from a survey of audit groups undertaken in 1994. To ensure that no diabetes audit was overlooked, this was supplemented by a letter and return pro forma sent to the chairs of all those groups which did not report a diabetes audit in the first survey. A total of 74 audit groups were identified as having been involved in diabetes multi-practice audits. However, only 58 audit groups had fully completed one data collection set.

A workshop was held for local audit groups to discuss the practicalities of collating results and to explore issues of confidentiality over the sharing of information with other groups. Subsequently, a set of rules was established to provide groups with assurance about the security of their data. Groups were given unique codes for identification purposes, and it was confirmed that data would be viewed only by members of the project team and not disclosed to any third party without agreement from the group. The feedback report was sent to a single named individual identified by the respective group. The anonymity of data from practices or groups in any subsequent reporting was guaranteed.

The workshop also provided a forum in which to discuss the proposed content of the instrument to collect data. A data-collection form was produced which requested details of diabetic treatment, number of patients included in the audit, numbers of patients in the practices and the process and outcome criteria employed. The instrument was reviewed in the light of comments received at the workshop and by a pilot carried out with six groups. It was then sent to all audit group co-ordinators who had undertaken a multi-practice diabetes audit. Co-ordinators were also asked to provide aggregated audit results by a method of their own choice such as an audit report, computer printout, computer disk or summary sheet designed by us. Data returned to the Centre were reviewed by a member of the project team and transferred to a summary sheet which included the audit criteria that were used in the majority of audits. Information transferred to this sheet was independently checked by a second member of the project team. Non-responders were sent a reminder letter and were asked to complete and return the questionnaire and summary sheet within a further 3 weeks and were also telephoned by KK. To ensure optimum data quality, responding co-ordinators were asked to verify the information on the summary sheet and to provide any missing data, wherever possible. Data from the summary sheets were then processed in a spreadsheet (Excel 5) and a standardized report was produced for each audit group.

Results

Twenty-five out of the 58 groups (43.1%) supplied data from the multi-practice audits of diabetes that they had carried out. Twenty-one groups did not respond, although they agreed on the telephone to supply the data; five groups refused, three had difficulty accessing
data and four did not send results, as their audits were of the structure of care. Data could be collated for only 17 of the 25 groups, representing information from a total of 495 practices with 38288 diabetic people. Data from the remaining eight groups could not be used for various reasons: some were audits of the structure of care or were conducted on specific age groups. For others, data were supplied as bar-chart percentages, rather than the original figures.

The 17 audit groups were located throughout England and Wales, and were responsible for both inner-city and suburban locations. A mean of 29.1 practices per audit group (range between groups = 10–63) had conducted the multipractice audit. Fifteen (88.2%) groups had conducted the audit since 1992 and seven (41.2%) had conducted the audit in 1995. There was no difference between the number of GPs and the number of practices in audit groups whose data were used and those numbers for groups by whom data were not provided or by whom unusable data were provided.

Twelve audit groups, with a total of 310 (62.6%) practices, supplied information about the number of principals per practice (Table 1). The prevalence of diabetes could be ascertained for seven audit groups. There were 21575 patients with diabetes in a total population of 1475512 patients, giving a crude prevalence of diabetes of 1.46% (95% CI 1.44–1.48, range between groups of 1.1–1.7%). Just over half the patients (50.7%, range 32.5–69.0) were under GP care, 19.1% (range 7.6–39.7%) were under hospital care and 30.2% (range 11.0–49.5%) were under shared care. The number of patients receiving different types of treatment are shown in Table 2. The most common process measures investigated in the audits and the level of compliance for each are shown in Table 3. In collating data, it was assumed that even if a procedure had been carried out, if it had not been recorded then the criterion of care was not complied with. Few groups sought information about outcome measures.

Discussion

Although many studies have investigated the management of diabetic patients in primary care, most have involved fewer than 1000 patients. Very few studies have involved the aggregation of data from large-scale surveys. For example, Howitt and colleagues studied the care given to 2574 patients, and Bennett and colleagues studied 3463 patients. Our study is the largest that we have identified, and involved 17 audit groups from different parts of the country, with the total number of diabetics being in excess of 38000.

Feasibility of collating audit data

Just over 40% of audit groups were willing or able to provide details of their audits. Over one-third agreed on the telephone but did not supply any data. Despite concerted efforts to allay fears over confidentiality of audit groups, this evidently remains a concern for some groups. Collation of audit data from a larger number of audit groups could improve the precision of quantitative estimates. Modern information technology should help to provide anonymized data for local, regional and national research and analysis.

Validity of audit data

One reservation is that general practice registers have previously been thought to be inaccurate and we were unable to check the accuracy of registers. Furthermore, we were unable to validate the results of the individual practice audits. The practices in this study were self-selected and may not be typical of all practices; for example, they may have been particularly interested in diabetes. However, practice size was known for nearly two-thirds of practices and this information indicated good representation of partnership size.

Despite these qualifications, the validity of findings about diabetes care in this study reflects those reported in other studies. Collation of multi-practice audit data has been shown to be a valid method for estimating the prevalence and treatment of diabetes. The prevalence of diabetes of 1.46% compares well with that found in other recent studies. The new health promotion arrangements for GPs may have encouraged efforts to improve the accuracy of general practice registers.

Table 1

<table>
<thead>
<tr>
<th>Practice participation in audit of diabetes by size of partnership</th>
<th>No. of practices (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practice size (No. of principals)</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>48 (15.5)</td>
</tr>
<tr>
<td>2–3</td>
<td>91 (29.3)</td>
</tr>
<tr>
<td>4–6</td>
<td>141 (45.5)</td>
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<tr>
<td>≥7</td>
<td>30 (9.7)</td>
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* Size of practices not known for 185 practices.

Table 2

<table>
<thead>
<tr>
<th>Treatment of diabetes</th>
<th>No. of audit groups supplying data</th>
<th>No. of Patients</th>
<th>% (range between groups)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulin</td>
<td>15</td>
<td>9778</td>
<td>27.4 (19.8–32.0)</td>
</tr>
<tr>
<td>Diet alone</td>
<td>11</td>
<td>5610</td>
<td>23.2 (16.5–27.3)</td>
</tr>
<tr>
<td>OHD</td>
<td>11</td>
<td>11731</td>
<td>48.6 (42.9–59.2)</td>
</tr>
</tbody>
</table>
combination of methods to identify patients for inclusion in their audits. This study has reported crude rates, but rates will vary with age, ethnic groups and with deprivation. Our study has shown that just over half of patients received care from their GPs, a figure which is similar to the proportion reported in a recent study. Over 20% received shared care, a level comparable with other studies. The proportion of male and female patients in our study was also not dissimilar to that found in other large scale studies.

Selection of criteria
A previous survey of diabetic care provided by GPs showed that one of the barriers to effective care was lack of time. One strategy to address this problem would be for GPs to concentrate on those aspects of care which research confirms are the most important. Elements of care which evidence confirms are important in the management of diabetic patients include the monitoring of eyes, feet, blood pressure and urine protein. Advice about diet and lifestyle is also indicated. The St Vincent’s declaration demands that these elements of care should be systematically organized and competently performed.

This study shows that there are wide variations in the criteria chosen for audit of diabetes. One factor that clearly needs to be addressed is the choice of criteria, which at present are often not linked to research evidence, even though practical methods for developing criteria are available. Evidence-based criteria would help ensure uniformity of data definitions, and facilitate the collation of data for comparison over time and among facilities. This would identify areas of weakness in health care delivery and encourage improvements in accordance with the St Vincent’s objectives. The final report of the St Vincent Joint Task Force for diabetes care in the UK emphasizes the need for up-to-date and continuing education and support for people with diabetes in a local, comprehensive and organized setting. The Task Force has also raised the question of developing ‘population-based diabetes registers’ to assist in covering the clinical needs of all patients and to help collect key clinical information.

Care of patients with diabetes
The challenges described in the St Vincent Joint Task Force Report include achievement of a reduction in long-term, disabling complications of diabetes. There is also good evidence that many of these complications may be delayed or prevented. Despite the contractual arrangements for health promotion, this study has highlighted a number of deficiencies in care, and wide variations in performance between audit groups. The quality of care for patients with diabetes in this country clearly needs improving. Although it may be impossible to achieve uniform and ideal control in every patient with diabetes, many practices need to take steps to attain higher standards of care.
Information about levels of performance in large numbers of practices may have a role in improving care. For example, information can be used to set standards of care or norms. Targets based on normative data derived from comparable care settings are likely to be more easily attainable. Collation of data from national sources as in our study can be used as a method to develop norms against which individual practitioners can compare their own activity. Peer comparison of audit groups may also be a tool for improving standards of care. It can indicate elements of care for which performance is poor in comparison with other localities. Local providers can then concentrate their efforts on improving these aspects of care. Differences in care between localities may merit investigations to identify reasons for variations and may therefore act as a stimulus for improvement in care. Locally developed guidelines disseminated through practice-based intervention have been shown to improve the management of diabetes as assessed according to these evidence-based criteria. Comparison between audit groups could also act as a stimulus to quality of audits. Collated data can also be used to highlight aspects of care which are particularly poor throughout the country. These can then be addressed in education programmes, or emphasized in guidelines or targeted by other strategies.

Conclusion

This study has shown the feasibility of collating audit data and the potential of this approach for describing the pattern of care and highlighting general and local deficiencies. The method may be applicable to other conditions in addition to diabetes. The wider use of evidence-based criteria would improve the effectiveness of individual audits and also facilitate the collation of data. The comparison of health needs of local populations with national data could be used to support commissioning of services to meet these needs. The data might assist purchasing and providing bodies in defining aspects of care that are less than ideal and in indicating options for service development or quality improvement. The study has also demonstrated wide variations in performance. The quality of care for diabetics should be improved, but the choice of methods for quality improvement needs to be supported by research into aspects of care which are particularly poor throughout the country. Collation of data at practice level would allow identification of reasons for variations in care of patients with diabetes. These can then be addressed.

Acknowledgements

We thank all the audit groups and their practices who provided data. In order to protect confidentiality, the groups are not acknowledged by name. The Lilly Audit Centre is an integral part of the Department of General Practice and Primary Health Care, University of Leicester. It is an independent research unit receiving funds from Lilly Industries and Leicester Health Authority. The principal remit of the Centre is research and development in the field of clinical audit in primary health care and at the interface between primary and secondary care.

References


