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How to do it

Develop diabetic care in general practice

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It is generally accepted that the quality of care provided for people with diabetes can be considerably improved, both in general practice and in hospital clinics. Although we concentrate here on general practice, there must be a cooperative arrangement between the generalist and the specialist, each with defined areas of responsibility if a good standard of care is to come about.

The division of responsibility will depend heavily on local factors such as what is available in the diabetic clinic and what skills general practitioners already have or can learn. The needs of different geographic areas will also vary. The final decision on what system of care is used in a practice must rest with the general practitioners since they have the responsibility of ensuring that it works.

What follows is based on our experience in a rural area of mid-Wales, with practices centred on small towns, some with general practitioner hospitals, and served by district hospitals some of which are up to 40 miles away.

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Staged approach to improving care

Tackling the problem head on is a daunting prospect, and we found that a staged approach minimised the potential trauma. The stages were as follows: (*a*) Produce a register of all known patients with diabetes in the practice. (*b*) Do a baseline survey of the current state of care of these patients. (*c*) Then identify areas where improvement is necessary and agree a practice protocol for diabetic care. (*d*) Implement a system of recall and clinical review for diabetic patients. (*e*) At regular intervals thereafter repeat the initial survey of care to identify any problem areas and evaluate the exercise.

In a busy practice the elements of this plan that are most likely to be omitted are the baseline and follow up surveys because of the amount of work entailed. Diabetic care in the practice is likely to improve without them, but it will not be possible to quantify the improvement or identify those areas in which problems remain.

Producing a register

Producing a register of diabetic patients in the practice will require little of the doctors' time. The receptionists and practice staff are asked to record all patients who receive repeat prescriptions for insulin, hypoglycaemic drugs, or testing sticks. Everybody in the practice tries to remember which patients have diabetes; the local diabetic clinic can be asked for a list of patients from the practice who attend, though this information may not be available. If there is sufficient demand, however, it should become available.

For each diabetic patient identified a small card is made out, recording the patient's name, address, sex, general practitioner's name, type of treatment, and the date the patient was last seen. The cards are stored in alphabetical order using a card index, and patients' notes are tagged with a coloured sticker. This process

of collecting patients needs to continue for at least three months, by which time the number identified should approach 1% of the practice population. The register should, however, be kept "open" indefinitely. In our experience the initial 1% may increase to 2% by three years.

Baseline survey

One doctor at least has to become more involved when the baseline survey is carried out. The practice must agree a set of data to be collected, which may include some demographic and epidemiological items. We used the following items: (*a*) Sex, date of birth (or age), age at diagnosis, and type of treatment for each patient. (*b*) Date last seen by general practitioner for diabetic care; date last seen in consultant clinic for diabetic care. (*c*) The date previous to the survey date that the following criteria were recorded in the notes: weight; blood pressure; concentrations of blood glucose, glycated haemoglobin, and blood urea or creatinine; visual acuity. (*d*) The date previous to the survey date that the feet and eyes were examined and fundoscopy results categorised as normal, background change, maculopathy, proliferative retinopathy, or other non-diabetic disease such as cataract.

Unless you are familiar with computers the easiest way of recording this information is in tabular form with a line for each patient and columns for the data.

This mass of information must then be analysed. This potentially alarming stage can be quite simple. The numbers of diabetics who take insulin, oral agents, and are being treated with diet alone are compared with the total number of patients in the practice to give a rough prevalence (or ascertainment rate) for the separate groups and overall. The sex distribution and the mean age at the survey date and at diagnosis can also be calculated. The numbers of patients in each group and overall seen by their general practitioner within six months, 12 months, over 12 months, and never are counted to give an estimate of the frequency of contact with the general practitioner. A similar assessment of contact with consultants is made using time intervals of 12 months, 24 months, over 24 months, and never.

For weight and blood glucose concentration the percentages recorded within six months are calculated. For blood pressure, glycated haemoglobin, visual acuity, fundoscopy, and foot examination the percentages recorded within 12 months are calculated, and for urea or creatinine concentration the percentage within five years is calculated. The means and standard deviations for each group can be analysed to give an estimate of overall control of diabetes and the percentage in each category for eye examination results calculated.

Discussing results, agreeing a practice protocol

Collecting data is made much simpler if the patients' notes are organised in chronological order, and these should include results from consultant clinic letters. If there is a suitably trained or enthusiastic member of the practice staff much of the collection and analysis of data can be delegated. The information then needs to be typed up and circulated round the practice, preferably to attached nursing staff as well, who may have an important role later on. The local consultant in diabetes might be interested in seeing a copy, provided the results are not too embarrassing.

Holding a practice meeting might be the best way to decide what to do in the light of the results. In our case the results were not good, nor were they in any of the seven other practices that reached this stage. Although three quarters of the patients were being seen by their general practitioner at less than six monthly intervals, routine recording of basic data was not being done.

Because of this most of the practices concerned have developed a recall and review system for their diabetic patients. At this stage it seems reasonable to suggest a framework around which a practice protocol could be produced.

Expected quality of care

This protocol, arrived at by discussion between general practitioners and the consultant, sets the basic standard for both general practitioner and hospital care in terms of clinical measurement. The division of responsibility for specific items will need defining for each practice depending on available skills. Which types of patients will be looked after by general practitioners also needs defining but should include most of those who are not taking insulin and many insulin takers who have uncomplicated disease.

When the patient is first seen a general history should be taken and an examination carried out and all data for the yearly assessment (see below) measured. In addition, the patient's height should be measured and ideal body weight or body mass index calculated, and blood urea or creatinine concentration measured to assess renal function. Follow up visits should be made at six month intervals and no longer.

The six monthly assessment should include at least a measurement of weight, urine analysis for protein and ketones, blood glucose concentration (preferably after an interval since food was last taken), and details of treatment and time of the next visit.

The yearly assessment should include all the data for the six monthly assessment, and blood pressure, glycated haemoglobin concentration, visual acuity (corrected if necessary), fundoscopy with dilated pupils (preferably in a darkened room), and a check on skin condition, peripheral pulses, and reflexes especially in the legs.

Every five years renal function should be assessed by checking blood urea or creatinine concentrations.

Devising a system of recall

By now the practice should have agreed the frequency and content of consultations. There must be enough flexibility in the system for variations from the norm for some patients. For example, those whose diabetes has recently been diagnosed and those in whom control is poor will need to consult more often. The next requirement is a system for regularly recalling the patients or at least recording when they were last seen.

The simplest way of doing this is to use the pre-existing card index of diabetic patients. The cards that were originally filed in alphabetical order are divided into six equal groups, assuming a maximum recall interval of six months. If, for instance, the recall system is to start in January the cards are then filed under the calendar months January to June, leaving July to December free. The group who are to be seen in January are sent for, and when they attend their cards are refiled in whatever month the doctor decides they should next be seen. The cards for those who do not attend can be refiled for further appointments in February or March. The recall index takes about a year to sort itself out, but by then roughly equal numbers of patients should be coming in each month. The cards of those who are excluded from the recall system can be filed separately. An alternative way of starting the recall system is to send for patients in their month of birth, though this is more suited to a yearly than a six monthly review.

If you have a computer there should be a recall facility in all software packages for general practice,

though these are usually incapable of storing numerical data unless previously encoded. It is advisable to have a manual backup as relatively minor typographical errors may "lose" a patient in a computer database, and interruptions of electrical supply or malfunctions in hardware may lose them all.

We then use a separate card to record the patients' visits. There are several available, some from pharmaceutical companies. We modelled ours on the antenatal cooperation card, putting the additional information collected at the first visit on the front cover. Inside are columns for weight, urine analysis, blood glucose and glycated haemoglobin concentrations, two larger spaces for less frequent tests such as eye and foot examination, and space for details of management. In a final column the interval to the next visit is recorded. Folded in half, this card fits into a Lloyd George envelope, though we keep them separately. The card should be kept simple, otherwise there is a danger that it will not be completely filled in. The card can be given to the patient and used by both general practitioners and the hospital clinic for patients who attend both. This would require discussion with the consultants concerned. If the practice produces its own card the local branch of the British Diabetic Association might help with the cost.

Review process

One fear expressed by several practices was that the workload might be greater. For the doctors this would mean more consultation time. But this can be minimised by the participation of attached nursing staff. Nurses are generally better trained in the repetitive tasks of measuring height, blood pressure, etc, than doctors and are more reliable at recording them. Many patients may find it easier to see a nurse as the first contact for problems with their diabetes, and the nurse is well placed to provide patient education, which is essential. The doctor should do more complex clinical tests, assess the basic information collected by the nurse, and decide on necessary changes in management. The doctor can also arrange referrals to paramedical services such as dietitians, chiropodists, ophthalmic opticians (with whom it may be possible to arrange yearly eye examinations), and consultant clinics. Needless to say, direct referral from general practice to all these services must be available. This is especially true of dietitians as most of the patients who do not take insulin will be cared for in general practice, and many of these should need only dietary advice to achieve adequate control of their diabetes. In addition, the general practitioner bears overall clinical responsibility for the patient and must coordinate and manage the whole system.

Patients may be seen in various ways. Partners may see their own patients, or one doctor may see all the diabetics, perhaps in clinics held weekly or monthly. If the practice has an appointment system patients may be given concurrent appointments with the nurse and doctor. Whatever method is chosen it must fit in with other practice routines and will vary from practice to practice. Our system depends heavily on an enthusiastic nurse, who sees patients first, weighs them, measures blood glucose concentrations, blood pressure, and visual acuity, checks their feet, takes blood for glycated haemoglobin, and dilates the pupils (thus ensuring the fundi are examined) before patients are seen by their own doctor. She also gives advice on prevention and organises patient education. The essential feature is that protected time of some sort is given to the patient.

It is essential to train nursing staff for this type of work. Although formal training may be available for hospital based diabetes liaison sisters, this may not be suitable for nurses in primary care. We found that making arrangements with the local consultant unit was adequate. It may also be advisable for one of the doctors to attend a refresher course.

Each practice will develop a different pattern of care depending on the facilities available in their area, and the above picture is only given as an example. For those working in health centres where ophthalmic opticians also attend there is a good opportunity for arranging yearly eye examinations using the diabetic register, though this may change with the advent of charges for eye checks. We do not have this facility, and eye surveillance is a problem area for us, though as we examine fundi more regularly we inevitably get better at it. With practice all doctors should be capable of deciding whether a fundus is normal or abnormal; if an abnormality is seen or suspected there must be rapid access to a specialist opinion. This is one area in which specialist departments can help by organising refresher courses for general practitioners.

Whatever system is devised it is useful to know whether it is working, which requires a regular audit. This can be a repeat of the baseline survey, and a sensible interval is every two years. At this point it is helpful to have a suitable computer system.

How well does it work?

The system needs to operate for at least a year, and preferably two, before improvement can be assessed. This is done by repeating the baseline survey, much of which may again be delegated. Our practice and one other have done this, mainly from the point of view of frequency of surveillance rather than quality of control, since this seemed the first priority. Results are very encouraging, with a dramatic improvement in all the criteria measured. The patients have expressed their appreciation, too. Default rates are very low, which may reflect the prescribing power of general practitioners. It remains to be seen whether this leads to improved control of diabetes. In future surveys we hope to have enough paired data on individual patients to begin to answer this question.

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Useful reading

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ANY QUESTIONS

Does the use of pyrethroid insecticides exacerbate asthma, allergic rhinitis, or eczema in atopic people?

Pyrethroids are synthetic derivatives of the naturally occurring pyrethrins that are obtained from pyrethrum flower (*Chrysanthemum cinerariaefolium*). Hypersensitivity reactions to pyrethrum have been reported and can be severe. I have not been able to find any reports of allergic reactions to synthetic pyrethroids or of their effects in atopic people.—LINDA BEELEY, director, Drug and Therapeutics Unit, Birmingham.

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