PRACTICE OBSERVED

Practice Research

Delay in treating diabetes in childhood

ELIZABETH S SAUNDERS, T L CHAMBERS

In a recent survey into the deaths of patients with diabetes in the United Kingdom who were under the age of 50 diabetic ketoacidosis was the commonest cause of death in patients under age 20. We report on four children in whom diabetes was newly diagnosed but treatment was delayed, and on two whose treatment in hospital was also delayed.

Case reports

Case 1—A 10-year-old boy attended his general practitioner complaining of drowsiness and thirst. The following day a urine test showed sugar and ketones, and an outpatient appointment was arranged for four days later. He was admitted to hospital directly from outpatients; he had also lost 9 kg in weight during the previous four weeks and had been enuretic for two weeks. He was 5% dehydrated; his blood sugar concentration was 15.6 mmol/l (281 mg/100 ml) and bicarbonate 21 mmol/l (Eq/l). He was rehydrated with oral fluids and started on soluble insulin.

Case 2—A 9-year-old boy attended his general practitioner with a history of thirst, polyuria, and enuresis for several weeks. Urine testing showed "considerable glycosuria." An urgent outpatient appointment was requested by post, but by the time the letter was sent by a hospital doctor two days later the child and his family were on holiday in Cornwall, where they could not be contacted. He was admitted to hospital on the day he returned from holiday—nine days after the initial consultation. He was distressed, acrotic, 10% dehydrated. The blood sugar concentration was 32.6 mmol/l (587 mg/100 ml) and bicarbonate 5 mmol/l (Eq/l). He required intensive treatment with intravenous fluids and insulin, and his recovery was uneventful.

Case 3—A 9-year-old girl saw her general practitioner with a one-

month history of weight loss, recent thirst and polyuria, and her urine showed 1+ glycosuria. A routine outpatient appointment was requested, and she was seen two days later and admitted. She was 5% dehydrated; the blood sugar concentration was 20.7 mmol/l (373 mg/100 ml) and bicarbonate 22 mmol/l (Eq/l). She was treated with oral fluids and insulin.

Case 4—An 11-year-old girl was visited at home by her general practitioner because of nausea and vomiting. She had a three-week history of thirst, polyuria, and weight loss, and a two-week history of increasing lethargy. She was ketotic, and her urine was "laden with sugar." Arrangements were made for her to be seen at the hospital two days later for a blood sugar estimation, and during the subsequent few days an outpatient appointment was arranged for seven days later. The morning after the general practitioner's visit and the day before the blood sugar test was to be done she arrived on the ward very drowsy, ketotic, and 10% dehydrated; the blood sugar concentration was 20.2 mmol/l (364 mg/100 ml) and bicarbonate 5 mmol/l (Eq/l). She required immediate resuscitation with intravenous fluids. She recovered with appropriate treatment.

Although the aim of this report is to emphasise the need for speedy referral to hospital, two more case reports illustrate that delays may occur there.

Case 5—A 2-year-old boy was being followed in outpatients because of a neurological disorder. His mother brought him for review, complaining that he had started to wet by day and was demanding drinks. The doctor requested a mid-stream urine sample but did not have it tested by dip-stick immediately. A different doctor read the report, overlooking the fact that it showed glycosuria. Four weeks later the child was admitted in ketoacidosis, but his recovery was uneventful.

Case 6—A 6-month-old baby was admitted with tachypnoea and a fever. Pneumonia was diagnosed, and penicillin and oxygen given. The child became increasingly lethargic, suggesting hypoxia, but the nursing staff noted a raised blood sugar and the child was found, and the infant recovered with intravenous fluids and insulin.

Discussion

Glycosuria in children is caused by diabetes mellitus—though there are other rare causes, such as aspirin poisoning and renal

Children's Department, Southmead Hospital, Bristol BS10 5NB
ELIZABETH S SAUNDERS, MRCGP, paediatrician
T L CHAMBERS, MRCGP, paediatrician

1396

tubular disorders, which probably need paediatric referral. When glycosuria is found for the first time hospital assessment and treatment is required on the same day.

These six cases illustrate three possible causes for delay: (i) Inappropriate method of referral—the patients in cases 1, 3, and 4. These patients may get lost in an outpatient waiting list even if the letter is marked urgent—assuming that the letter reaches the hospital promptly. A telephone call to the duty house physician of the local paediatric department should result in prompt attention. (ii) Parents may not appreciate the urgency for treatment and unwittingly default from outpatients (case 2). (iii) Diabetes mellitus may be overlooked in a hospital outpatient department (case 5) or once a patient is admitted with it may be misdiagnosed as pneumonia (case 6), an acute abdomen, or hysteria with hyperventilation.

Four of these children did not come to harm because of the delay, but two arrived seriously ill requiring immediate intensive treatment and were thus exposed to greater risk. Most children's departments admit all children who are newly diagnosed as diabetic, even if well, for assessment and education. Unlike patients with newly diagnosed maturity-onset diabetes, who may often be managed initially as outpatients, children with newly diagnosed diabetes who are not treated frequently develop ketoacidosis. In children insulin production may cease suddenly and completely, and so the metabolic deterioration proceeds rapidly. Patients with newly diagnosed maturity-onset diabetes usually have sufficient concentrations of circulating insulin to prevent ketone bodies forming. Once ketoacidosis develops

BRITISH MEDICAL JOURNAL VOLUME 285 13 NOVEMBER 1982

more intensive treatment is required, and the risk of complications such as coma, aspiration pneumonia, hypokalaemia, and death are greater.

In a recent survey¹ 16 out of the 23 deaths in diabetic patients under 20 years of age were attributed to ketoacidosis, and eight of these were in previously undiagnosed diabetic patients. The duration of symptoms in these eight patients varied up to six months, but in one it was three days and in another five days. Diabetic ketoacidosis is eminently treatable, and that it is still such a great threat to life is disturbing. Paediatricians have a responsibility to educate hospital medical staff to reduce the number of cases missed or misdiagnosed in hospital. Parents need to be told that the diagnosis of diabetes in their children has more immediate risks of complications than when diagnosed in an aged relative. When glycosuria is detected in a child it requires urgent attention, and general practitioners are advised to telephone to ask for immediate hospital referral rather than wait for an appointment by post.

We are grateful to Dr W M G Tumbidge for reading the paper and for helpful comments.

Reference

1 Tumbidge WMG. Factors contributing to deaths in diabetics under fifty years of age. *W Lancet* 1981; ii:569-72.

(Accepted 2 September 1982)

Diary of Urban Marks: 1880-1949

"You are through Sir. Please go upstairs." I was so surprised that I said "Are you sure?" "Don't ask any questions. Sir. Please go upstairs." I joined Leapingwell on the stairs and we mutually congratulated each other. We climbed to the top of the (College of Surgeons) building and were admitted into a large room in which all the professors who had been our examiners were at the moment lounging about. Dr Sidney Phillips, for whom I had "clerked" as a student, came across to me. After shaking hands and congratulating me he remarked that I had had a close shave from being "referred" for three months. I was well aware of that, and hence my surprise when the commissioner had informed me that I had passed. Dr Phillips then told me that he had had some difficulty in persuading his colleagues on the examining board that I was not quite the duffer I had appeared to be while being examined. I duly thanked him.

Sober as we were at the time of leaving the Examination Hall we were compelled to remain so. It is a habit of newly qualified men in any position to celebrate the event in "good red wine," which as a rule flows freely. It is a sort of farewell to the life that has been. Whether Leapingwell and I would have remained sober that night in 1905 if he had been released before 12.30 am I cannot say. We might have had "one or two," but being the end of the month when we were always short of money it is likely that our joint funds were too low to admit of a good binge.

Leapingwell and I talked of things that had been and were to be. "Leaper," as he was always known at the hospital, had no plans for the future. He knew that the income of his father, who was in the Indian Medical Service, had been strained for years in order to allow him to follow his bent for medicine. The only outlook for him was to take up general practice. He had no money available to buy one and therefore proposed to do some assistances with the hope that sooner or later he would be able to buy a practice or a partnership in one, paying for it out of income.

And I? What of my future programme? What was I going to do in the years to come? I had discussed this many times with my father, who was a wealthy man when I commenced to study medicine on 1 May 1899. I had a fair for eye work, and it had been agreed between

us that on attaining my first qualification I should have made over to me—on a trust fund—the sum of £5000. It was calculated that this would be my share of the "governor's" estate when he should be gattered to his forefathers. I am the only professional man in our family, and my father recognised that the money would be more beneficial to me while he lived than if I had to wait for years. Having qualified, I intended to take the MRB, BS of London and the FRCS of England. This would mean a further three years' study at least and on the income from the trust fund I was to live, earning what I could by coaching students and doing work for some of my teachers meanwhile. My merits I had no doubt would be recognised. I visualised myself living in Harley Street with a huge consulting practice. I saw myself as consulting surgeon to large hospitals. I could see myself operating on Royalty and being knighted, at least, for my services. No one ever had a rosier future. Needless to say "Leaper" envied me my future.

Now the manner of our working for the finals was this. We had finished all the necessary attendances at lectures and during the last three months had nothing to do but read medicine or attend, if we so desired, in the medical wards. We had passed our finals in surgery and midwifery during the early part of the year. Therefore we spent a few hours every day in the hospital library reading and after tea in the student's club (in the basement of the hospital), and went on to Hyde Park and strolled around or otherwise went on to our lodgings and read light literature or played the piano. Dinner was at 7 pm. In our house lived three sets of St Mary's students—one set above the other. Consequently our time was always hot and we got the first cut at it. We usually finished our meal at 7.30 pm and then went for a stroll round the squares, returning at 9 pm. We then worked in silence until midnight, when we adjourned to the Bridge Inn which stood at the top of the terrace. The landlady of this place made her own meat pies and very good they were for two pence each. One of these with a glass of rum completed our refreshment—and at 12.30 am we returned home and read for a further 90 minutes. We retired at 2 am, but there was no hurry to rise since we were in no way tied to lectures. Such was our routine.

Law and the General Practitioner

Health and Safety at Work Act 1974: duties to other users of premises

• ANNE CULLINAN, NORMAN ELLIS

Although the purpose of the Health and Safety at Work Act is to ensure the safety of employees it also applies to all persons who enter the premises—ancillary staff employed by a health authority working on the premises, visitors, patients, and sundry "tradesmen" such as postmen, window cleaners, builders, and electricians. The Act imposes a duty on the general practitioner as the "controller" of the premises to ensure the safety of anyone who legitimately visits his premises. A health authority or a private landlord may also have a duty under the licence or lease, and they may also be liable if an accident occurs.

The law requires a general practitioner to conduct his practice in such a way so as to ensure, as far as is reasonably practicable, that all persons not in his employment who could be affected are not exposed to risks to their health and safety. This part of the Act links up with the civil liability of an occupier of premises under the Occupier's Liability Act 1957. It may be assumed that the standards expected under the Health and Safety at Work Act are equal to the "common duty of care" under the Occupier's Liability Act owed to all persons legitimately entering the premises. Under the civil law it is advisable for a general practitioner to anticipate who might be directly affected and to ensure that the premises are safe. The GP would be well advised to consider whether there are any potential hazards for elderly or infirm patients.

The important difference between these duties and those to his own staff is that the staff should be provided with a written safety policy and be instructed and supervised on safety matters, and that quite specific arrangements should be made for their health, safety, and welfare. The Act is intended to protect people at work, but, almost as an afterthought, it has protected everybody who may be affected by the work.

Notifying accidents and dangerous occurrences

The regulations on notifying accidents and dangerous occurrences are relevant to GPs because they impose a statutory obligation on all employers to keep a record of accidents occurring on their premises and to notify the Health and Safety Executive of certain serious accidents. The GP is liable as the "controller of the premises" to notify the Health and Safety Executive of certain accidents to his own staff and to anyone else who happens to be on the premises, such as patients, workmen, or health authority staff.

British Medical Association, London WC1H 9JP
ANNE CULLINAN, LLR, industrial relations officer, Oxford region
NORMAN ELLIS, MA, FRGS, under secretary

1398

Written records

It is a legal requirement for every employer to keep an accident book on the premises. A record must be kept of all the notifiable accidents and dangerous occurrences, so that the employer can monitor these and identify any preventive action that should be taken. The Health and Safety Executive has published a record book, *Record of Accidents, Dangerous Occurrences and Ill-Health Enquiries* (F2509; £1.70; obtainable from HMSO). This accident book has space for 224 notifiable accidents and dangerous occurrences to be recorded, so it should last forever. A GP, however, could adapt an exercise book for this purpose, and a copy of a page from the Health and Safety Executive accident book is attached for guidance (figure).

Record of accidents and dangerous occurrences

Date of accident or dangerous occurrence	Place where accident or dangerous occurrence took place	Brief description of the circumstances	For accidents only: Name of injured person	Sex	Age	Occupation	Initials of GP
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							
45							
46							
47							
48							
49							
50							
51							
52							
53							
54							
55							
56							
57							
58							
59							
60							
61							
62							
63							
64							
65							
66							
67							
68							
69							
70							
71							
72							
73							
74							
75							
76							
77							
78							
79							
80							
81							
82							
83							
84							
85							
86							
87							
88							
89							
90							
91							
92							
93							
94							
95							
96							
97							
98							
99							
100							

Failure to apply these regulations could lead to a fine of up to £1000. Oddly enough, the self-employed person is exempt from the reporting procedure; a GP need not report an accident to himself!

Building work on the premises

Serious hazards can arise when building work is in progress. The main contractor, subcontractor, and their employees, have the prime duty to carry out their work in a safe manner. The GP's duty as the "controller" of the premises is to ensure that the staff, other employees on the premises, patients, and visitors are not put at risk. If unavoidable temporary hazards are caused by building operations these should be identified and their risks reduced as far as possible by providing warning notices that can be easily read by all persons using the premises. If a GP is in any doubt about his responsibilities he may seek clarification from the local office of the Health and Safety Executive.

Clearing snow

A GP may take steps to clear snow and ice from paths on the premises and from adjacent public pavements. Oddly enough, a good deed of this kind may well increase his liability to users of

Accidents and dangerous occurrences may be divided into three categories:

(1) *Notifiable accidents*—These include fatal accidents (and those accidents that prove to be fatal within a year of their occurrence) and major injuries. A major injury is defined as a fracture of the skull, spine, pelvis, any bone in the leg (other than in the ankle or foot), any bone in the arm other than in the wrist or hand, amputation of a hand or foot, the loss of sight of any eye, or any other injury that results in the person injured being admitted into hospital as an inpatient for more than 24 hours, unless that person is detained only for observation.

These accidents must be reported to the Health and Safety Executive if they occur to anyone on the premises. There are two exceptions from the reporting requirements. In the unlikely event of injury occurring to a patient who is undergoing treatment in the surgery which is caused by the treatment it is not to be reported. Accidents to a self-employed person working on the premises, unless he is under the control of another person, are also excluded from the reporting procedure.

(2) *Other accidents*—These do not have to be reported to the Health and Safety Executive. They include what are known in industry as "three-day accidents." This category only applies to the GP's own ancillary staff, not to other health authority employees working on his premises. These accidents are notified to the Health and Safety Executive by the Department of Health and Social Security (not by the GP himself) only if the employer makes a claim for industrial injury benefit.

(3) *Dangerous occurrences*—These mostly apply to industrial premises; few are likely to happen in the GP's premises. From the list of dangerous occurrences that have to be reported, only one type may be relevant. This is when a person is affected by the inhalation, ingestion, or other absorption of any substance, or lack of oxygen to an extent that it causes acute ill health requiring medical treatment. This could be caused by a defective central heating system.

Reporting accidents

The GP would be responsible for reporting the accident, though in some circumstances responsibility would lie with the owner of the premises. It is advisable for the GP to assume that he is responsible for notifying the Health and Safety Executive, even if he does not carry responsibility for the premises. Any notifiable accident must be directly notified to the local office of the Health and Safety Executive by telephone. It is advisable to keep a written record of the call, including the name of the civil servant receiving it, and the details of the accident as given over the telephone. Within seven days of the accident (or dangerous occurrence) taking place a written report on Form F2508 should be sent to the Health and Safety Executive by the doctor. If an accident in category (2) occurs, then the Department of Health will send an accident inquiry form to the GP.

Duties of the staff

Although the heaviest responsibilities lie with the GP, reciprocal duties also lie with his staff. This is to ensure that the employer and his employees co-operate to provide a safe place of work. Employees should take reasonable care for their own health and safety and those of others who may be affected by

their actions and omissions. They should co-operate with their employer or any other person—such as the health and safety inspector—who has responsibilities under the Act.

All employees have these duties to fulfil, both the GP's own employees and any health authority staff. The duties on employees apply "while at work," throughout the time when they are in his employment "but not otherwise." What does "but not otherwise" mean? Would an employee be liable if an accident happened during a lunch or a tea break taken on the premises? It seems likely that any activities that are reasonably incidental to the employment—that is, the sort of activity a "reasonable" employee would indulge in—will be included—for example, making tea in the kitchen or using the toilet or washing facilities. This is important because messing facilities are often neglected but hazardous.

Every employee (and indeed any other person) is under a duty not to interfere with or misuse anything provided for the purposes of health and safety. This protects appliances and arrangements to ensure people's safety, such as fire escapes, fire extinguishers, and hazard warning notices. This could be extended to include interference with anything provided for welfare purposes, such as cloakroom and refreshment facilities. The extra responsibility placed upon employees by this Act is reflected in the far greater number of prosecutions against employees since it was implemented in 1975.

This is the second of a three-part article on the Health and Safety at Work Act.