children when taken accidentally in excess or in a wrongly prescribed dose.

Young children, especially infants in the first few months of life, who have diarrhoea may temporarily lose the brush border of the villi of the small bowel. Since the enzymes which split disaccharides are produced there, intolerance of some sugars, such as lactose, develops. This is most common after a severe attack of gastroenteritis but is relatively frequent in young infants in whom coeliac disease has been precipitated

by the early introduction of cereals. Even after the primary disease has been treated, loose frothy acid stools may persist. The avoidance of lactose, and hence of milk, for two to three weeks usually allows the lining of the small bowel to recover.

G lamblia may be treated with metronidazole (the organism is related to *Trichomonas vaginalis*) or mepacrine. These are effective but difficult to administer to young children since the bitter taste of the medicines cannot be successfully disguised. Fortunately the disease is self-limiting.

Today's Treatment

Endocrine and metabolic diseases

Modern approach to diabetes mellitus—II

J M STOWERS

British Medical Journal, 1976, 1, 573-574

Insulin

The aim in treating diabetes is to achieve biochemical normality, and the most relevant single test is still measurement of the blood sugar level. In the non-diabetic the level of plasma insulin varies in relation to the intake of carbohydrate and protein, so that the diurnal fluctuation in blood sugar may stay within a range of about 1.7 mmol/l (30 mg/100 ml). If diabetics are studied on regular identical feeds every two hours during the day before they start insulin treatment, the blood sugar will usually tend to be considerably higher in the late morning than in the evening, presumably representing the net effect of hormones which tend to antagonise the small amount of residual insulin they produce. Such a diabetic needs treatment with an insulin that acts most strongly in the morning, but it will certainly be impracticable to achieve the narrow limits of normal

blood sugar control seen in the non-diabetic without risking potentially dangerous hypoglycaemia. We have not yet achieved the necessary fine adjustment of insulin administration except by complicated computerised artificial pancreas machines which can continuously monitor the blood sugar and infuse insulin as needed to achieve a predetermined level of glycaemia.

Although new insulins are still being introduced, old ones are seldom withdrawn, so that we now have available 12 different kinds, each one in at least two different strengths. These are classified in the table.

It is most important for doctors to know well a useful range of insulins rather than spread their experience too thinly. There are theoretical and some practical advantages in avoiding the addition of proteins to insulin for they increase the incidence of local skin reactions and antibody formation. Similarly, neutral rather than acid insulins produce less subcutaneous fat atrophy. Finally, porcine insulin is less antigenic in man than bovine, but there is not enough porcine insulin to satisfy the world demand.

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MONOCOMPONENT INSULIN

The most recent addition is monocomponent porcine insulin, which may be virtually non-antigenic and is available also in

Insulins—Comparative table

Name	Duration of action	Peak(s) of action (h)	pH	Appearance	Source	Added protein	Special features
Soluble:							
Unmodified	Short	2-5	Acid	Clear	Mainly beef	0	Virtually non-antigenic
Nuso	Short	2-5	Neutral	Clear	Mainly beef	0	
Actrapid MC	Short	2-5	Neutral	Clear	Pig	0	
Insulin zinc suspensions or lente group							
Amorphous or semilente (SL)	Intermediate	3-6	Neutral	Cloudy	Pig	0	Virtually non-antigenic
Crystalline or ultralente (UL)	Long	6-12	Neutral	Cloudy	Beef	0	
Lente (30% SL)	Intermediate-long	3-8	Neutral	Cloudy	{ 30% pig 70% beef	0	
(70% UL)							
Monocomponent:							
Actrapid MC (see under soluble insulins)							
Semitard	Intermediate	3-8	Neutral	Cloudy	Pig	0	Virtually non-antigenic
Monotard	Intermediate-long	6-10	Neutral	Cloudy	Pig	0	
Biphasic	Intermediate	2-5	Neutral	Cloudy	{ Pig 25% Beef 75%	0	
Globin zinc	Intermediate	3-5	Neutral	Clear	Beef	x	Contains no excess of protamine or zinc uncombined with insulin
Isophane	Intermediate	3-6	Neutral	Cloudy	Beef	x	
Protamine zinc	Long	5-14	Neutral	Cloudy	Beef	x	Contains excess of protamine and zinc

longer acting forms as Semitard and Monotard. The need for such insulins may be 10-20% less than for the less purified types and even sometimes for less pure porcine soluble insulin. Antibodies to exogenous insulin normally form within three months of starting treatment, and at high levels they delay the hypoglycaemic action of the insulin. Monocomponent insulin does not do this, but perhaps the best reasons for using it at present are for the occasional insulin-resistant patient, patients with local fat dystrophy, and pregnant diabetics. Although little if any insulin crosses the human placenta, IgG globulins, which may contain antibodies to exogenous insulin, can cross it and may possibly contribute to the pancreatic beta-cell hyperplasia found so characteristically in the infants of diabetic mothers.

Most young diabetics can be better controlled on two daily doses of a short-acting insulin than on a single daily dose of a longer acting one. As they should have a long life expectancy, it seems to be worth their while to take this amount of extra trouble to avoid or at least postpone the disabling long-term complications of the disease. When starting a diabetic on a two-dose insulin regimen it is helpful to divide their previous daily dose into thirds and to give just under two-thirds before breakfast and just under one-third before the main evening meal. If the patient does hard physical work in the day the proportion of insulin given before breakfast should be reduced. The total dose of the twice-daily insulin is slightly reduced at first to avoid heralding the new regimen with hypoglycaemia, which may discredit it in the patient's eyes. The morning and evening doses or scales of doses may then be cautiously adjusted to achieve optimal control.

Success in this, as in other aspects of insulin treatment, will only be achieved by the well-informed co-operation of the patient: thus adequate written and verbal instruction of all diabetics newly starting insulin is one of the most important goals of treatment. Their instruction should include information

on how to regulate their dose according to Clinitests done mainly before breakfast and before the evening meal. The result of the morning test is used to regulate the evening dose which controls it and for the same reason the evening test is used to regulate the morning dose. Basing the morning and evening doses on the urine tests done at these same times is irrational and likely to lead to unnecessary wide fluctuations of blood sugar.

SINGLE DAILY DOSAGE

Older patients on usually smaller doses of insulin may be able to achieve satisfactory regulation on a single daily dose. This should be regulated by a Clinitest done on freshly formed urine passed when the insulin is expected to be maximally active, for in this way it is relatively safe for the patient to increase the dose to improve poor test results without risking hypoglycaemia at other times of the day or night. Even mild hypoglycaemia may lead to subsequent reactive hyperglycaemia lasting for a day or so. Thus hyperglycaemia is usually an indication to increase the dose of insulin if there has been no hypoglycaemic episode in the previous 24 hours. If, on the other hand, the hyperglycaemia has followed previous hypoglycaemia it is an indication to reduce the dose of insulin which precipitated it. In this way the peaks and troughs of blood sugar may be decreased on a smaller total daily dose of insulin. Such reactive hyperglycaemia is reduced in patients on full doses of beta-blocking drugs, which therefore leave insulin-dependent diabetics at a normally unjustifiably greater risk of developing severe hypoglycaemia without the usual warning signs.

Diabetes is perhaps the best example of a chronic disease where the full instruction of the patient and his willing co-operation are the prime factors in his present and future well-being.

Medical History

Memoir of the South-west Branch of the BMA in Victorian and Edwardian times

P M G RUSSELL

British Medical Journal, 1976, 1, 574-577

This year the South-west Branch of the Association is the host for the BMA's nineteenth Annual Clinical Meeting (see *BMJ*, 2 January, p 53). Launched in 1840 the branch, encompassing Devon and Somerset, and including many doctors from Cornwall, was one of the earliest to be formed, the impetus being the decision to hold the BMA's tenth annual meeting in Exeter in 1842. One hundred years ago a branch was also formed for South Devon and Cornwall but the next year, 1878, saw its members returning to the fold of the South-west Branch.

During a disastrous air-raid on the night of 4 May 1942 much valuable historical material was destroyed, but the minute books

of the Branch for 1877-1911 have survived and provide delightful glimpses of professional and social life of the Victorian and Edwardian era in the south-west. By piecing together extracts from the minutes I have tried to recreate the activities and atmosphere of the period.

The activities of the branch consisted chiefly of annual meetings, at which the branch council met and social events followed, and intermediate meetings, usually three a year, at which cases were shown, papers were read, and contemporary legislation affecting the profession was reviewed. Meetings were held over the whole of Devon and Cornwall at places as far apart as Penzance in the extreme south-west and Ilfracombe in the north.

1877

The first meeting of which any record has survived was held on 14 June 1877 at the Devon and Exeter Hospital. Mr C H Roper was

Upton Pyne, Exeter

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