

DIABETES UPDATE

by Dr Larry Distiller, MBBCh FCP (SA)



Over the past decade the management of diabetes has undergone a revolution. This has been aided by an adequate definition of diabetes itself, coupled with a more meaningful classification of the diabetic state.

Diabetes is now defined as a fasting blood glucose above 7mmol/l or a two hour post-prandial level above 11mmol/l.

Diabetes is further subdivided into Type 1 diabetes which is the young insulin-dependent and ketosis-prone diabetic, and Type 2 diabetes, the diabetic who does not require insulin for survival.

With the realization that the microvascular complications of diabetes are almost certainly related to sub-optimal diabetic control, probably a mean blood glucose above 11mmol/l, came attempts to improve the degree of glycaemia to more normal levels.

In this respect, there have been several major advances.

In the first instance, it is now understood that insulin absorption rates differ from different subcutaneous sites, so that patients should be encouraged to move their injections around within one anatomical area, preferably the abdomen.

Furthermore, insulin absorption is enhanced during exercise when the insulin has been injected into the exercising limb, so that the tendency to exercise-

induced hypoglycaemia can be reduced by injecting into a non-exercising site.

Bovine insulin differs from human insulin by virtue of three amino-acids, whereas porcine insulin differs by only one amino-acid and is therefore considerably less immunogenic. In addition, conventional insulins contain many impurities, mainly proinsulin and other peptide hormones. The use of bovine insulin and the presence of impurities gives rise to the formation of insulin antibodies which have many detrimental effects, including insulin allergy, insulin resistance and the formation of lipohypertrophy.

Insulin antibodies may also cause irregular and delayed insulin release, resulting in an unpredictable and erratic hypoglycaemic effect. Far better overall diabetic control can be achieved with the use of purified porcine (monocomponent) insulin and these insulins are the only ones which should be used.

In the near future human Monocomponent insulin will be available and this will obviously then, on basic principles, become the insulin of choice.

The availability of different insulin concentrations, namely 40u and 80u/ml, has resulted in a considerable amount of confusion not only among patients but also among pharmacists, doctors and nurses, giving rise to major errors in dosage which can be life threatening. Because of this, a

decision has been reached to standardize the insulin concentrated internationally and a strength of 100u/ml has been decided upon.

In recent years it has been realized that acceptable diabetic control can only be attained with adequate patient education and instruction and with more sophisticated methods of monitoring. With this in mind, it has become essential for patients to learn to monitor their own blood glucose levels at home and several different techniques have been developed.

The serial measurement of glycosolated haemoglobin has also proved to be a useful method of monitoring overall diabetic control.

At present, many new forms of insulin administration are being developed to provide more physiological insulin delivery. The open-loop continuous insulin infusion pump is one of these which is now being used on a wide scale, providing improved overall diabetic control.

With the advent of the advances described above it is hoped that we will see a reduction or a delay in the onset of diabetic microvascular disease, and acceptable diabetic control rapidly becoming an attainable goal for most diabetic patients. □

Pocket syringe for diabetics



Improved control of diabetes has been the aim of many research centres in recent years. Although new insulin pump delivery systems have been developed, most diabetics needing insulin continue to use conventional injections.

Few of them have any fear of a needle, but the fuss and bother of preparing the syringe and needle, drawing up insulin from a bottle, and then cleaning the syringe and storing it away discourages most patients from taking more than one injection a day.

To overcome this inconvenience, a new "fountain pen" pocket syringe has been developed.

The syringe, which carries two to three days' supply of insulin, can be accurately metered simply by pressing a button at the end. The syringe uses disposable pre-filled cartridges of insulin, which can be replaced when required as easily as putting a refill in a pen.

Patients have found the syringe of great benefit, especially if they have to take injections when away from home or in a poor light. It can even be used by partially sighted diabetics.

For further information please contact S Charlton, P.O. Box 2236, Johannesburg, 2000.