Sulphonylurea oral antidiabetic drugs encourage the pancreas to produce insulin. They are therefore effective only when some insulin-secreting cells remain active; this is why they are ineffective in the treatment of Type 1 diabetes. Metformin alters the way in which the body metabolizes sugar. Acarbose slows digestion of starch and sugar. Both slow the increase in blood sugar that occurs after a meal. Nateglinide and repaglinide stimulate insulin release. Pioglitazone reduces the body's resistance to insulin. Exenatide and sitagliptin stimulate insulin release and block the release of glucagon (a substance that raises blood glucose), thereby helping to prevent the rise in blood sugar after a meal.

Insulin treatment and you

The insulin requirements in diabetes vary greatly between individuals and also depend on physical activity and calorie intake. Hence, insulin regimens are tailored to particular needs, and the person is encouraged to take an active role in his or her own management.

A regular record of home blood glucose monitoring should be kept. This is the basis on which insulin doses are adjusted, preferably by the person with diabetes.

A person with diabetes should learn to recognize warning signs of hypoglycaemia. A hypoglycaemic event may be induced by giving insulin under medical supervision. The symptoms of sweating, faintness, or palpitations are produced but disappear when glucose is administered, so anyone with diabetes should always carry glucose tablets or sweets. Recurrent "hypos" at specific times of the day or night may require a reduction of insulin dose. Rarely, undetected low glucose levels may lead to coma. The injection of glucagon rapidly reverses this. A relative may be instructed how to perform this procedure.

Repeated injection at the same site may disturb the fat layer beneath the skin, producing either swelling or dimpling. This alters the rate of insulin absorption and can be avoided by regularly rotating injection sites.

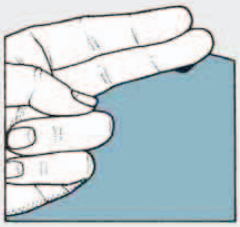
Insulin requirements are increased during illness and pregnancy. During an illness, the urine should be checked for ketones, which are produced when there is insufficient insulin to permit the normal uptake of glucose by the tissues. If high ketone levels occur in the urine during an illness, urgent medical advice should be sought. The combination of high blood sugars, high urinary ketones, and vomiting is a diabetic emergency and the person should be taken to an Accident and Emergency department without delay.

Exercise increases the body's need for glucose, and therefore extra calories may be needed before and during exertion. The effects of vigorous exercise on blood sugar levels may last up to 18 hours, and the subsequent (post-exercise) doses of insulin may need to be reduced by 10–25 per cent to avoid hypoglycaemia.

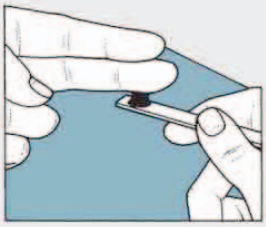
It is advisable for anyone with diabetes to carry a card or bracelet detailing their condition and treatment. This may be useful in a medical emergency.

MONITORING BLOOD GLUCOSE

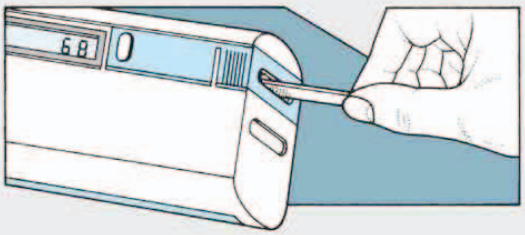
People with diabetes need to check either their blood or urine glucose level at home. Blood tests give the most accurate results. There are many types of meters for measuring blood glucose but they all work in basically the same way.



1 Prick your finger to give a large drop of blood.

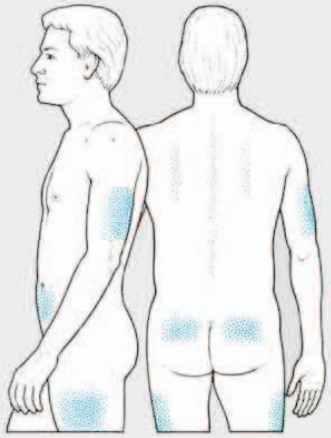


2 Touch the blood on to the test pads of the special testing strip.



3 Insert the test strip into the meter. Your blood glucose reading will appear as a digital readout.

SITES OF INJECTION



The shaded areas indicate suitable sites for the injection of insulin

Antidiabetic drugs and you

The sulphonylureas may lower the blood glucose too much, a condition called hypoglycaemia. This condition can be avoided by starting treatment with low doses and ensuring a regular food intake. Rarely, these drugs cause a decrease in the blood cell count, a rash, or intestinal or liver disturbances. Interactions may occur with other drugs, so your doctor should be informed of your treatment before prescribing any medicines for you.

Unlike the sulphonylureas, metformin does not cause hypoglycaemia. Its most common side effects are nausea, weight loss, abdominal distension, and diarrhoea. It should not be used in people with liver, kidney, or heart problems. Acarbose does not cause hypoglycaemia if used on its own. The tablets must either be chewed with the first mouthful of food at meal times or swallowed whole with a little liquid immediately before food. Sitagliptin is taken orally once a day, either with or without food. Exenatide, used mainly in obese patients, is given by injection twice a day before meals.

COMMON DRUGS

Sulphonylurea drugs
Glibenclamide ✻
Gliclazide ✻
Glimepiride
Glipizide
Tolbutamide ✻

Other drugs
Acarbose
Diazoxide
Exenatide ✻
Glucagon ✻
Insulin ✻
Insulin aspart ✻
Insulin glargine ✻
Insulin glulisine ✻
Insulin lispro ✻
Metformin ✻
Nateglinide
Pioglitazone ✻
Repaglinide ✻
Sitagliptin ✻

✻ See Part 3