



# Patient Instruction Leaflet

For patients with diabetes undergoing surgery or procedures requiring a period of starvation

Information for patients with diabetes controlled by subcutaneous injections of insulin.

**Please read the following information carefully prior to your surgery or procedure. This booklet will help you manage your insulin before and after a surgical procedure. This information is not for patients with an insulin pump – you will receive specific advice from the insulin pump team. Do not turn off your insulin pump prior to surgery.**

Follow the instructions in the table overleaf marked “What to do with you insulin before surgery”. If you are also on tablets or non-insulin injectables in addition to insulin, you will receive a separate leaflet with instructions relating to these.

**If your operation is in the morning (if your appointment letter has advised you to come into hospital before 9am on the day of surgery):**

- Do not eat any food after midnight.
- Drink clear fluids such as black tea or coffee, sugar-free squash or water up to 6.30am.

If your operation is in the afternoon (if your appointment letter has advised you to come into hospital after 9am on the day of surgery):

- Eat breakfast before 7am and eat no food after this time.
- Drink clear fluids such as black tea or coffee, sugar-free squash or water up to 10am.

**If you are having a colonoscopy or CT colonography, please refer to the specific information leaflets for these procedures in relation to what foods you are allowed to eat prior to the procedures.**


When you travel to and from the hospital for your operation, carry some suitable quick acting glucose treatment to provide 15g to 20g carbohydrate e.g. glucose (dextrose) tablets, glucose (dextrose) oral gel, 200ml (a small carton) of smooth orange juice (no bits). If you have symptoms of low blood sugar such as sweating, dizziness, blurred vision or shaking please test your blood sugar if you are able to do so. If it is less than 6 mmol/L preferably take 1-2 tubes of glucose gel or 4-6 glucose tablets. If these are not available, take 200ml of a sugary drink e.g. smooth orange juice (no bits).

**Please tell staff at the hospital that you have done this, as it is possible that your surgery may have to be delayed.**

- After your operation you will be offered food and drink when you feel able to eat. If you are eating and drinking normally you should resume taking your normal insulin as directed in the table overleaf. Your blood sugar levels may be higher than usual for a day or so. If you have more major surgery and have been admitted to hospital following this, the ward staff will monitor your blood sugars, prescribe your insulin and provide further advice.
- When you get home, if you feel nauseated or vomit and are unable to eat, please follow the **sick day rules advice** (page 6)
- If you do not improve quickly, please telephone the diabetes team (if you usually get advice from the diabetes team) or your GP practice for further help and information.

## What to do with your insulin before surgery

Insulin Regime	Day before going into hospital	Day of surgery	
		Patient for a.m. surgery	Patient for p.m. surgery
<p>Long-acting – morning (for example:</p> <p>Lantus, Levemir, Humulin I Tresiba, Insulatard, Insuman Basal, Toujeo, Abasaglar)</p> <input type="checkbox"/>	<p>Take as normal</p>	<p><b>Reduce insulin dose by 20%.</b></p> <p>Your blood sugar will be checked on admission and staff will give you further advice.</p> <p>Resume your normal insulin the morning after your surgery or procedure, if eating and drinking.</p>	<p><b>Reduce insulin dose by 20%.</b></p> <p>Your blood sugar will be checked on admission and staff will give you further advice.</p> <p>Resume your normal insulin the morning after your surgery or procedure, if eating and drinking.</p>
<p>Long-acting – evening (for example:</p> <p>Lantus, Levemir, Humulin I, Tresiba, Insulatard, Insuman Basal, Toujeo Abasaglar)</p> <input type="checkbox"/>	<p><b>Lantus, Levemir, Tresiba, Toujeo, Abasaglar:</b> Reduce dose by 20%.</p> <p><b>Humulin I, Insulatard, Insuman Basal</b> Take as normal</p>	<p>Resume your normal insulin with your evening meal if you are able to manage fluids and a snack after your surgery.</p>	<p>Resume your normal insulin with your evening meal if you are able to manage fluids and a snack after your surgery.</p>
<p>Twice or three times daily mix (for example:</p> <p>Novomix 30, Humulin M3, Humalog Mix 25, Humalog Mix 50, Insuman Comb 15, Insuman Comb 25, Insuman Comb 50)</p> <input type="checkbox"/>	<p>Take as normal</p>	<p>Take half your normal dose in the morning.</p> <p>Your blood sugar will be checked on admission. You may require intravenous insulin to manage your diabetes until you are eating and drinking again.</p> <p>If you are able to manage fluids and a snack after your surgery, resume your normal dose with your evening meal (or with your lunch, if you take three times daily insulin).</p>	<p>Take half your normal dose in the morning. If you are on three times daily mix insulin, omit your lunchtime dose.</p> <p>Your blood sugar will be checked on admission. It is possible you will require intravenous insulin to manage your diabetes until you are eating and drinking again.</p> <p>If you are able to manage fluids and a snack after your surgery, resume your normal dose with your evening meal.</p>

Insulin Regime	Day before going into hospital	Day of surgery	
		Patient for a.m. surgery	Patient for p.m. surgery
<p>2, 3, 4 or 5 injections daily – any combination of background long-acting insulin combined with short-acting insulin at mealtimes (“basal bolus” regimens)</p> <p>for example:</p> <p><b>Long acting insulins:</b></p> <p>Lantus, Levemir, Humulin I, Tresiba, Insulatard, Insuman Basal, Toujeo, Abasaglar</p>	<p><b>Long acting insulin:</b></p> <p><b>Morning</b> – Take as normal</p> <p><b>Evening</b> – Reduce dose by 20% for <b>Lantus, Levemir, Tresiba, Toujeo and Abasaglar</b> only.</p> <p>For other long-acting insulins, take normal dose (Humulin I, Insulatard, Insuman Basal)</p>	<p><b>Long acting insulin:</b></p> <p><b>Morning</b> – Reduce dose by 20%. Your blood sugar will be checked on admission and staff will give you further advice.</p> <p><b>Evening</b> – Resume your normal insulin with your evening meal if you are able to manage fluids and a snack after your surgery.</p> <p>If you cannot tolerate diet after surgery, staff will give you further advice. You may require to go onto an intravenous insulin infusion.</p>	<p><b>Long acting insulin:</b></p> <p><b>Morning</b> – Reduce dose by 20%. Your blood sugar will be checked on admission and staff will give you further advice.</p> <p><b>Evening</b> – Resume your normal insulin with your evening meal if you are able to manage fluids and a snack after your surgery.</p> <p>If you cannot tolerate diet after surgery, staff will give you further advice. You may require to go onto an intravenous insulin infusion.</p>
<p><b>Short acting insulins:</b></p> <p>Actrapid, Novorapid, Humalog, Apidra, Humulin S, Insuman Rapid, Fiasp, Hypurin Bovine Neutral, Hypurin Porcine Neutral,</p> 	<p><b>Short acting insulin:</b> take as normal day before surgery.</p>	<p><b>Do not</b> take your short-acting insulin if no breakfast is eaten.</p> <p>If you are able to manage fluids and a snack after your surgery, restart your short-acting insulin with lunch.</p>	<p>Take your usual morning dose of short-acting insulin if breakfast is eaten. <b>Do not</b> take your lunchtime dose.</p> <p>If you are able to manage fluids and a snack after your surgery, restart your short-acting insulin with your evening meal.</p>

## Sick Day Rules for People with Diabetes

What should I do if I am unwell when I get home?

- **NEVER** stop taking your insulin, tablets or other injectables. Illness will usually increase your body's need for insulin.
- **TEST** your blood sugar level every 2 hours, day and night.
- **TEST** your urine for ketones every time you go to the toilet, or your blood ketones every 2 hours if you have the equipment to do this.
- **DRINK** at least 100ml of water or sugar-free fluid every hour – this is around 5 pints (or 2.5 litres) in 24 hours.
- **EAT** as normally as you can. If you cannot eat or if you have a smaller appetite than normal, replace solid food during illness, with one of the following (each contains around 10-20g of carbohydrates):
  - 400ml milk
  - 200ml carton fruit juice
  - 150-200ml non-diet fizzy drink
  - 1 scoop ice cream
  - 1 small carton yogurt (120g)
- **REST** and avoid strenuous exercise as this may increase your blood sugar level during illness.

**If you are unwell due to the surgery you have just received, please follow your surgical discharge advice.**

**When should I contact my GP surgery, out of hours service or usual diabetes care provider?**

- **CONTINUOUS** diarrhoea and vomiting, and/or high fever.
- **UNABLE** to keep food down for 4 hours or more, or you have missed more than 1 meal.
- **HIGH** blood sugar levels with symptoms of illness (above 15mmol/L – you may need more insulin).
- **KETONES** at ++2 or +++3 in your urine or 1.5mmol/L blood ketones or more (you may need more insulin). In this case, contact the person who normally looks after your diabetes immediately.
- **NO IMPROVEMENT** in symptoms within 24-48 hours.

**Remember to tell your healthcare professional you have recently had surgery or a procedure.**

## Medicines and Dehydration: Patient Information

This information is about what actions to take if you develop an illness that causes dehydration. These actions are called “medicine sick day rules”.

### Who is this information for?

This information is for people who take the following long-term medicines.

- **ACE inhibitors:** a medicine for high blood pressure and heart conditions  
*Examples: names ending in “pril” such as lisinopril, perindopril, ramipril*
- **ARBs:** a medicine for high blood pressure and heart conditions  
*Examples: names ending in “sartan” such as losartan, candesartan, valsartan*
- **NSAIDs:** anti-inflammatory pain killers  
*Examples: ibuprofen, naproxen, diclofenac*
- **Diuretics:** sometimes called “water pills” for excess fluid and high blood pressure  
*Examples: furosemide, bendroflumethiazide, indapamide, spironolactone*
- **Metformin:** a medicine for diabetes
- **SGLT2 inhibitors:** medicines for diabetes  
*Examples: dapagliflozin, empagliflozin, canagliflozin*

### Which illnesses cause dehydration?

Dehydration is the loss of fluid from your body. Vomiting, diarrhoea and fever (high temperature, sweats, shaking) can make you dehydrated. If you are sick once or have diarrhoea once, then you are unlikely to become dehydrated. Having two or more episodes of vomiting or diarrhoea can lead to dehydration: in these cases, you should follow the advice in this leaflet.

### What is the problem?

Taking certain medicines when you are dehydrated can result in you developing a more serious illness. These are:

- **ACE inhibitors, ARBs and NSAIDs:** if you are dehydrated, these medicines can stop your kidneys working properly.
- **Diuretics:** these medicines can make dehydration more likely.
- **Metformin:** dehydration can make it more likely that you will develop a serious side effect called lactic acidosis.
- **SGLT2 inhibitors:** can worsen dehydration and cause acid in the blood

### What actions should I take?

If you develop a dehydrating illness, you should temporarily stop taking the medicines listed above. It is very important that you re-start your medicine(s) once you have recovered from the illness. This would normally be after 24 to 48 hours of eating and drinking normally. When you re-start your medicines, just take them as normal: do not take extra for the doses you have missed.

## Contact details for Diabetes Nurse Teams (Monday – Friday 09.00 – 17.00):

Inverness, Badenoch, Strathspey, Ross and Cromarty	01463 704631
Caithness & Sutherland	01847 893442
Fort William and Skye	07816 060497

## Contact details for NHS 24: Tel 111

### Further Resources

Information adapted from:

Joint British Diabetes Societies for inpatient care: Management of adults with diabetes undergoing surgery and elective procedures: Improving standards (Revised March 2016) (available from <https://abcd.care/resource/management-adults-diabetes-undergoing-surgery>)

Healthcare Improvement Scotland and Scottish Patient Safety Programme: Medicines and Dehydration Patient Information (Version 2) (available from <https://ihub.scot/improvement-programmes/scottish-patient-safety-programme-spsp/spsp-medicines-collaborative/high-risk-situations-involving-medicines/medicines-sick-day-rules-card/>)

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