A patient’s guide to the management of diabetes at the time of surgery
Diabetes is a common condition, affecting at least 4 to 5% of people in the UK. At least 10% of patients undergoing surgery have diabetes.

People with diabetes undergoing surgery need to have first-class integrated care from the time of initial referral through to after their operation and before they go home to ensure their sugar levels are managed properly. To help achieve this, NHS Diabetes in collaboration with Diabetes UK as well as anaesthetists, surgeons and diabetes specialists, have produced guidance based on the best available evidence, best practice, and patient experience¹. This guidance covers all stages of your pathway from GP referral to surgical outpatients, pre-operative assessment, hospital admission, surgery, post-operative care and discharge.

At the Royal National Orthopaedic Hospital (RNOH), we have adopted these guidelines with the aim of improving standards of care for diabetic patients undergoing surgery at our hospital.

This booklet will describe how to manage your diabetic medication in the lead-up to surgery as well as giving general advice on preparation for your operation. We have also included information on what to expect regarding your diabetes following discharge from hospital and advice on what to do if you become unwell once you are at home.

A guide for patients with diabetes, which is controlled with tablets or by injections of GLP-1 agonists - Byetta® (exenatide) or Victoza® (liraglutide), before surgery

Before your operation or procedure:

Please follow the instructions in the table below marked “What to do with your medication before surgery”

If your operation is in the morning:

- Do not eat any food after midnight
- Drink clear fluids such as black tea or coffee, sugar free squash or water up to 5am

If you do not know at what time of day your operation is, please assume that it is in the morning and follow the above guidelines. If you have been specifically told that your operation (procedure) is in the afternoon, please contact the Pre-assessment Unit to verify this, and if confirmed, follow the guidelines overleaf.
• Eat breakfast before 7am and do not eat food after this time
• Drink clear fluids such as black tea or coffee, sugar free squash or water up to 10am
• When you travel to and from the hospital for your operation, please carry some glucose tablets or a sugary drink
• If you have any 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 4 mmol/L, take four glucose tablets or 150 mls of the sugary drink (this is the same as half a standard sized can of non-diet cola). Please tell staff at the hospital that you have done this because it is possible that your surgery may have to be rearranged for another day.

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 tablets the morning after surgery. However, your blood glucose levels may be higher than usual for a day or so.

When you get home, if you feel nauseated or vomit and are unable to eat, please refer to the sick day rules on page 13.

If you do not improve quickly and usually attend your local hospital for diabetes care, please telephone the diabetes team during office hours Monday to Friday. Outside these hours, please contact your GP practice or out-of-hours service. If you usually see your GP about your diabetes, please phone your GP practice.
Remember to bring with you to hospital:

- Glucose tablets or a sugary drink
- Blood glucose testing equipment (if you usually monitor your blood glucose)
- The tablets you usually take for your diabetes
What to do with your medication before surgery (procedure)

<table>
<thead>
<tr>
<th>Tablets</th>
<th>Day prior to admission</th>
<th>Day of surgery</th>
<th>Patient for AM surgery</th>
<th>Patient for PM surgery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acarbose</td>
<td>Take as normal</td>
<td>Take as normal if you have been told to fast from midnight</td>
<td>Take your morning dose if eating breakfast. Do not take your lunchtime dose</td>
<td>Omit morning dose if you have been told to fast from midnight</td>
</tr>
<tr>
<td>Meglitinitide (repaglinide or nateglinide)</td>
<td>Take as normal</td>
<td>Take as normal if you have been told to fast from midnight</td>
<td>Take your morning dose if eating breakfast. Do not take your lunchtime dose</td>
<td>Omit morning dose if you have been told to fast from midnight</td>
</tr>
<tr>
<td>Metformin</td>
<td>Take as normal</td>
<td>Take as normal, unless instructed otherwise by pre-assessment</td>
<td>If taken once a day, do not stop unless instructed by pre-assessment</td>
<td>If taken once a day, do not stop unless instructed by pre-assessment</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>If taken twice a day, do not stop unless instructed by pre-assessment</td>
<td>If taken twice a day, do not stop unless instructed by pre-assessment</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>If taken three times a day, omit your lunchtime dose only unless instructed otherwise by pre-assessment</td>
<td>If taken three times a day, omit your lunchtime dose only unless instructed otherwise by pre-assessment</td>
</tr>
</tbody>
</table>
### Additional specific instructions

<table>
<thead>
<tr>
<th>Tablets</th>
<th>Day prior to admission</th>
<th>Day of surgery</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sulphonylureas</strong> (glibenclamide, gliclazide MR, glimepiride, gliquidone)</td>
<td>Take as normal</td>
<td>If taken once a day in the morning, omit this dose</td>
<td>If taken once a day in the morning, omit this dose</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If taken twice a day, omit the morning dose</td>
<td>If taken twice a day, omit both doses</td>
</tr>
<tr>
<td><strong>Thiazolidinediones</strong> (Pioglitazone)</td>
<td>Take as normal</td>
<td>Take as normal</td>
<td>Take as normal</td>
</tr>
<tr>
<td><strong>DPP-IV inhibitors</strong> (Sitagliptin, saxagliptin, vildagliptin)</td>
<td>Take as normal</td>
<td>Omit your morning dose</td>
<td>Omit your morning dose</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| If you are taking Byetta® (exenatide) or Victoza® (liraglutide) by injection, these medications should not be taken the day of surgery and restarted once you start eating and drinking normally.

**You should resume taking your normal tablets the morning after surgery. However, your blood glucose may be higher than usual for a day or so.**

---

### Drug:  

- .................................................................................................................................................................................................................................................................................................................................................................................................................................................. 
- .................................................................................................................................................................................................................................................................................................................................................................................................................................................. 
- .................................................................................................................................................................................................................................................................................................................................................................................................................................................. 

### Drug:  

- .................................................................................................................................................................................................................................................................................................................................................................................................................................................. 
- .................................................................................................................................................................................................................................................................................................................................................................................................................................................. 

**For further information, please contact the pre-assessment team on 020 8909 5630.**
A guide for patients with insulin (or insulin and tablet) controlled diabetes undergoing surgery or a procedure requiring a period of starvation

Before your operation or procedure:

Please follow the instructions in the table below marked “What to do with your insulin before surgery (or procedure).”

If your operation is in the morning:

- Do not eat any food after midnight
- Drink clear fluids such as black tea or coffee, sugar free squash or water up to 5am

If you do not know at what time of day your operation is, please assume that it is in the morning and follow the above guidelines.

If you have been specifically told that your operation (procedure) is in the afternoon, please contact the Pre-assessment Unit to verify this, and if confirmed:

- Eat breakfast before 7am and do not eat more food after this time
- Drink clear fluids such as black tea or coffee, sugar free squash or water up to 10am
When you travel to and from the hospital for your operation, please carry some glucose tablets or a sugary drink.

If you have any 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 4 mmol/L, take 4 glucose tablets or 150 mls of the sugary drink (this is the same as half a standard sized can of non-diet cola). Please tell staff at the hospital that you have done this because it is possible that your surgery may have to be re-arranged for another day.

- After your operation (procedure), your blood sugar will be checked and additional insulin given if necessary
- After your operation (procedure), you will be offered food and drink when you feel able to eat
- If you are eating and drinking normally, you should restart taking your normal insulin (and tablets) the next morning. However, your blood glucose levels may be higher than usual for a day or so
- When you get home, if you feel sick or are sick and are unable to eat, please refer to the sick day rules on page 13
- If you do not improve quickly and usually attend your local hospital for diabetes care, please telephone your diabetes team during office hours Monday to Friday. Outside these hours, please contact your GP practice or out-of-hours service. If you usually see your GP about your diabetes, please phone your GP practice
Remember to bring with you to hospital

- Glucose tablets or sugary drink
- Blood glucose testing equipment you usually use
- Insulin (and tablets) you usually take for your diabetes

What to do with your insulin before surgery (procedure)

<table>
<thead>
<tr>
<th>Insulins</th>
<th>Day prior to admission</th>
<th>Day of surgery</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Once daily (evening) (Lantus®/Glargine or Levemir/Detemir®)</td>
<td>No dose change</td>
<td>Patient for AM surgery No dose adjustment necessary</td>
<td>Patient for PM surgery No dose adjustment necessary</td>
</tr>
<tr>
<td>Insulatard® or Humulin I®</td>
<td></td>
<td></td>
<td>---</td>
</tr>
<tr>
<td>Once daily (morning) (Lantus®/Glargine or Levemir/Detemir®)</td>
<td>No dose change</td>
<td>Take your normal dose Your blood glucose will be checked on admission</td>
<td>Take your normal dose Your blood glucose will be checked on admission</td>
</tr>
<tr>
<td>Insulatard® or Humulin I®</td>
<td></td>
<td></td>
<td>---</td>
</tr>
<tr>
<td>Twice daily (Novomix 30®, Humulin M3®, Humalog Mix 25®, Humalog Mix 50%)</td>
<td>No dose change</td>
<td>Halve the usual dose Your blood glucose will be checked on admission Resume your normal insulin with your evening meal</td>
<td>Halve the usual dose Your blood glucose will be checked on admission Resume your normal insulin with your evening meal</td>
</tr>
</tbody>
</table>
### Additional specific instructions

**Insulins**

<table>
<thead>
<tr>
<th>3, 4 or 5 injections daily</th>
<th>Day prior to admission</th>
<th>Day of surgery</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No dose change</td>
<td></td>
</tr>
</tbody>
</table>

**Day prior to admission**

- **Patient for AM surgery**
  - Omit your morning dose of short-acting insulin if no breakfast is eaten.
  - If you normally take a long-acting basal insulin in the morning, you should take your normal dose.
  - If you normally take a pre-mixed insulin, the dose should be halved.
  - Omit your lunchtime dose.
  - Resume your normal insulin with your evening meal.

- **Patient for PM surgery**
  - Take the usual morning insulin dose(s).
  - Omit the lunchtime dose.
  - Your blood glucose will be checked on admission.
  - Resume your normal insulin with your evening meal.

**For further information, please contact the pre-assessment team on 020 8909 5630.**

You should resume taking your normal insulin the morning after surgery, however, your blood glucose may be higher than usual for a day or so.
Advice for patients with diabetes who are discharged following a surgical procedure

• Take your insulin or other medication as advised in this leaflet
• Monitor your blood glucose if you have the equipment to do so – four times per day if possible
  You should test more frequently if you are unwell, feeling or being sick
• Your blood glucose may be higher than usual; this is not a concern if you are feeling well
• If you are feeling unwell (particularly if you are being sick and unable to take food or medication), please contact your usual diabetes team/GP surgery
• If outside normal working hours, please contact your local out of hours service or go to your local hospital’s Accident and Emergency Department
Sick day rules for people with diabetes

What should I do if I am unwell?

- **NEVER** stop taking your insulin or tablets – illness usually increases your body’s need for insulin
- **TEST** your blood glucose level every two hours, day and night
- **TEST** your urine for ketones every time you go to the toilet or your blood ketones every two hours if you have the equipment to do this
- **DRINK** at least 100 mls water/sugar free fluid every hour – you must drink at least 2.5 litres per day during illness (approximately five pints)
- **REST** and avoid strenuous exercise as this may increase your blood glucose level during illness
- **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:
  - 400 mls milk
  - 200 mls carton fruit juice
  - 150-200 mls non-diet fizzy drink
  - 1 scoop ice cream
When should I call the diabetes specialist nurses or my GP?

- **CONTINUOUS** diarrhoea and vomiting and/or high fever
- **UNABLE** to keep down food for four hours or more
- **HIGH** blood glucose levels with symptoms of illness (above 15 mmol/L - you may need more insulin)
- **KETONES** at ++2 or +++3 in your urine or 1.5 mmol/L blood ketones or more. You may need more insulin and if this is the case, please contact the person who normally looks after your diabetes immediately.

Outside normal working hours, please consult your local out of hours service or go to your local hospital’s Accident and Emergency Department.
If you have any comments about this leaflet or would like it translated into another language/large print, please contact the Clinical Governance Department on 020 8909 5439/5717.

Royal National Orthopaedic Hospital NHS Trust
Brockley Hill
Stanmore
Middlesex
HA7 4LP

www.rnoh.nhs.uk

Twitter: @RNOHnhs

12-145 © RNOH
Publication date: October 2012
Date of last review: July 2012
Date of next review: July 2014
Author: Dr Paul Flynn