End of Life Diabetes Care
Commissioned by Diabetes UK

Supplementary Documents and Flowcharts

Endorsed By:
Phases of End of Life and Medications

A - Blue: “All” From Diagnosis Stable With Year Plus Prognosis

The use of cardio-protective therapies (e.g., ACE inhibitors, angiotensin-receptor blockers, aspirin, statins) should be reviewed in the light of the diagnosis and the presence of other medical co-morbidities, and dosage reductions (even withdrawal) of some of the therapies considered.

Patients may experience more gastrointestinal effects from aspirin with poor dietary intake or concurrent steroid use. Patients on aspirin and steroids should be considered for gastro-intestinal protection with a proton-pump inhibitor or suitable alternative. Oral hypoglycaemic agents (OHAs) should be reviewed and the targets for glucose control agreed.

Weight loss may mean a reduced need for OHAs or offer potential for simplifying regimens including insulin.

B - Green: “Benefits” Ds1500 Unstable / Advanced Disease Months Prognosis

At this stage the aim is to keep drug interventions to a minimum that will control symptoms. All of the above comments apply but complex regimens should be reviewed especially where patients are on combinations of oral hypoglycaemic agents with insulin. It is generally simpler for patients to switch from combinations to insulin alone, once or twice daily insulin.

- Insulin alone is a simpler option than combinations of tablets and insulin.

Insulin regimens should be simplified if possible. The likelihood of carers being involved in insulin therapy increases at this stage and may inform the choice of insulin regime. If moving from twice daily to once daily insulin, the starting dose of long acting insulin such as Glargine or Insulin Degludec should be less than the total dose of twice daily insulin or pre-mixed insulin and 75% of total previous dose is recommended.

- Once daily insulin is a simpler option if carers are involved and/or appetite is changing.

C - Yellow: “Continuing Care” Deteriorating Weeks Prognosis

Patients may present at this stage, in which case all of the suggested changes above should be considered but keeping in mind that there may be little time to get used to a new insulin regimen. Intensive support can be needed for dose adjustments as well-being, activity and appetite can change day to day.

Managing diabetes can be an added stress at an emotional time for patients and carers. Relaxing targets for control may seem like “giving up” for some while others may view managing diabetes in addition to their terminal illness as “pointless.”

D - Red: in the final days of life / terminal care with one or more days prognosis

Ideally by this stage diabetes treatment has been minimised so that few changes are needed in the last days of life. If the stage is reached where the patient is bed bound, semi-comatose, no longer able to take tablets, no longer able to eat and only able to take sips of fluid, use of local protocol, or an alternative guidance such as “Deciding Right” should be considered.

Insulin regimens should be simplified if possible. The likelihood of carers being involved in insulin therapy increases at this stage and may inform the choice of insulin regime. If moving from twice daily to once daily insulin, the starting dose of long acting insulin such as Glargine or Insulin Degludec should be less than the total dose of twice daily insulin or pre-mixed insulin and 75% of total previous dose is recommended.

- Once daily insulin is a simpler option if carers are involved and/or appetite is changing.
### Medicines Management: Non- Insulin therapies

<table>
<thead>
<tr>
<th>Metformin (standard Metformin or Glucophage SR®)</th>
<th>Sulphonylureas (glimepiride / glibizide / glipizide)</th>
<th>Pioglitazone</th>
<th>GLP-1 analogues (exenatide or liraglutide, Lexinatide and Bydureon)</th>
<th>Sodium Glucose Co-Transporter 2 Agents (SGLT2) Dapagliflozin (Forxiga)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review dose according to changing renal function</td>
<td>Review if dietary intake is reduced and/or there is significant weight loss.</td>
<td>The risk-benefit ratio for pioglitazone in patients with terminal disease requires review and should be only prescribed if benefits can clearly be identified.</td>
<td>Review doses in accordance with individual licences if renal function deteriorates.</td>
<td>Review if eating patterns change or significant weight loss occurs.</td>
</tr>
<tr>
<td>Review if dietary intake is reduced and/or there is significant weight loss.</td>
<td>Review dose in accordance with individual licences if renal function deteriorates.</td>
<td>Review if eating patterns change or significant weight loss occurs.</td>
<td>Starting dose is 10mg daily, unless there is severe liver failure, then start at 5mg.</td>
<td>Review doses in accordance with individual licences if renal function deteriorates.</td>
</tr>
<tr>
<td>Withdraw if creatinine &gt;150μmol/l or eGFR &lt; 30ml/l/1.73m²</td>
<td>Review dose if renal function deteriorates and consider a switch to tolbutamide.</td>
<td>Some gliptins can be used for all stages of renal disease.</td>
<td>Withdraw if abdominal pain or pancreatitis develops.</td>
<td>Withdraw if eGFR &lt; 60ml/l/1.73m²</td>
</tr>
<tr>
<td>Review if gastrointestinal disease is present or symptoms of nausea, heartburn, diarrhoea or flatulence are making patients miserable with discomfort.</td>
<td>Review dose if liver function deteriorates as hypoglycaemia may occur.</td>
<td>Combination with sulphonylureas increases the risk of hypoglycaemia.</td>
<td>Limited evidence for use in people over 75 years old.</td>
<td>-</td>
</tr>
</tbody>
</table>

**Insulin therapies (Type 1 and Type 2 Diabetes)**

- Doses may need to change with changes in renal function.
- Insulin (Type 1 and Type 2 Diabetes)
  - Equipment for insulin delivery may need to be reassessed if physical capabilities alter, vision is poor, or carers become involved in giving insulin.
- Hypoglycaemia risk will need to be reassessed with changes in eating patterns.
- Evening Isophane (Insulatard / Humulin I, or Insumin Basal) in combination with daytime oral hypoglycaemic drugs may be a good first line treatment choice.
- A change of insulin regimen may be needed to match changes in activity levels.
- The simplest regimen should be chosen if switching to insulin only, both once or twice daily injection can be considered.
### Treating Hypoglycaemia

**Is patient conscious and able to swallow?**

- Yes
  - Give one of the following:
    - 150 ml of non-diet cola (small can)
    - 200 ml of pure smooth orange juice (small carton)
    - 100 ml of Lucozade Original
    - 4 glucose tabs
    - 5 to 6 dextrose tablets

- No
  - If unconscious: Put the patient in the recovery position and maintain airway. Do not put glucose in the mouth. Give 1mg glucagon intramuscularly if available and carer trained.
  - If glucagon is not available or ineffective, and IV access is available, give 75-80ml of 20% glucose (over 10-15 minutes). If not available, call paramedics.

**If after 5 minutes, the blood glucose level is still less than 4 mmol/l, repeat the treatment.**

**Patients on PEG feeds:**

- You should stop the feed and insert one of the following:
  - 30ml undiluted Ribena
  - 150 ml non-diet cola
  - 100 ml Lucozade Original into the feeding tube.

**If unconscious:**

- Give one of the following:
  - 30ml undiluted Ribena
  - 150 ml non-diet cola
  - 100 ml Lucozade Original into the feeding tube.

**If still unconscious:**

- Repeated this procedure every 5 minutes until the blood glucose is above 4 mmol/l.

**Afterwards resume the feed.**

### End of Life Diabetes Care Management

**Type 1 diabetes:**

- Administer rapid acting insulin if unconscious.
- Call paramedics.

**Type 2 diabetes:**

- Stop tablets and GLP1 Agonists.

**Note:** glucagon may not be effective in people with liver disease.

**After an episode of hypoglycaemia:**

- Consider discontinuing insulin (unless type 1 diabetes) or reducing insulin or oral hypoglycaemic agents.
- Review management plan with patient and relatives to clarify/confirm goals of diabetes management or their stage of life.

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**Key**

- Type 2 diabetes on other tablets and/or insulin / or GLP1 Agonist
- Type 1 diabetes always on insulin
- Type 2 diabetes Diet controlled or Metformin treated

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**End of Life Diabetes Care Management**

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- Review management plan with patient and relatives to clarify/confirm goals of diabetes management or their stage of life.
Managing Glucose on Once Daily Steroids

End of Life Diabetes Management - Managing Glucose Control on Once Daily Steroids

No known diabetes

- Check random glucose before starting on steroids to identify patients at risk
- Random capillary blood glucose over
- Random venous glucose over

11 mmol/l needs a second check to confirm pre-existing unknown diabetes

- Sulphonylurea treated
- Metformin alone or (Gliclazide)
- Metformin + Glitazins

If no hypoglycaemia symptoms, day or night and taking less than 320mg/day mealtime

- Morning dose will
- Breakfast & lunchtime
- If develops repeated rapid acting insulin may
- High readings (urine glucose > 2+ or blood glucose > 15 mmol/l) add Gliclazide 40mg with breakfast
- Daily doses of Gliclazide according to glucose reading before evening meal
- High readings before lunch or evening meal

- Aim blood glucose 6-15 mmol/l or <1+ glycosuria before evening meal
- Mid-meal snacks

• Aim blood glucose 6-15 mmol/l before lunch and evening meal unless patient has “hypo” before snacks or has long gaps
If glucose above 15 mmol/l before lunch or evening meal

- Aim blood glucose 6-15 mmol/l or <1+ glycosuria before evening meal
- Increase dose
- Increase breakfast or lunchtime dose
- Review daily until stable increasing dose as necessary

If glucose 10-15 mmol/l before evening meal • Consider increasing dose depending on risk of hypoglycaemia
• Encourage the individual to take small sips of fluid regularly. (aim for 100ml per hour)
• Offer frequent small easily digested carbohydrate foods to replace meals if unable to eat normally. Offer sips of sugar-free fluids, aiming for 100mls over an hour
• Offer frequent small portions of easily digested foods or fluids e.g. soup, ice cream, milky drinks
• Consider increasing diabetes medications (if blood glucose levels above 15 mmol/l) or reducing diabetes medication (if blood glucose levels less than 6mmol/l)
• Only check capillary blood glucose to confirm hyperglycaemia: aim to maintain blood glucose at
• Diabetes treatment may be discontinued if the patient develops diabetic ketoacidosis (DKA) or hyperosmolar hyperglycaemic state (HHKS).
• Consider stopping metformin if the patient has sickness/diarrhoea
• If ketones are present, test blood glucose and ketones 2 hourly:¬
- Continue usual insulin regimen (e.g. long-acting insulin daily) but add an additional 10% of current total average daily dose of short or rapid-acting insulin (e.g. Apidra, NovoRapid) every 2 hours if ++ or greater on urine ketone strip or greater than 1.5mmol on blood ketone test. *
- If ketone levels do not improve, and the patient is vomiting, admit to hospital for intravenous insulin and rehydration

* If this advice is not practical for those working in a community setting please contact the hospital team for advice.

A Guide for Healthcare Professionals

Sick Day Management for End of Life Diabetes Care (HCP)

Type 2 Diabetes: Specific Advice

1. Patients with Type 2 Diabetes on diet alone
2. Patients with Type 2 diabetes on a
   - Encourage the individual to take small sips of fluid regularly. (aim for 100ml per hour)
   - Offer frequent small easily digested carbohydrate foods to replace meals if unable to eat normally. Offer sips of sugar-free fluids, aiming for 100mls over an hour
   - Offer frequent small portions of easily digested foods or fluids e.g. soup, ice cream, milky drinks
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   - If ketone levels do not improve, and the patient is vomiting, admit to hospital for intravenous insulin and rehydration

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Type 1 Diabetes: Specific Advice

1. Patients with Type 1 Diabetes on insulin treatment appropriate measures include:
   - If unable to eat usual meals, offer frequent small portions of easily digested foods or fluids e.g. soup, ice cream, milky drinks
   - Test for urine or blood ketones if patient has symptoms of hyperglycaemia and dehydration
   - If ketones are present, test blood glucose and ketones 2 hourly:¬
   - Continue usual insulin regimen (e.g. long-acting insulin daily) but add an additional 10% of current total average daily dose of short or rapid-acting insulin (e.g. Apidra, NovoRapid) every 2 hours if ++ or greater on urine ketone strip or greater than 1.5mmol on blood ketone test. *
   - If ketone levels do not improve, and the patient is vomiting, admit to hospital for intravenous insulin and rehydration

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Withdrawal of Treatment

Multiple factors may influence this process:

- Patient’s wishes
- Dealing with concerns by family of a ‘euthanasia’ approach
- Advance decision to refuse treatment
- Intravenous/subcutaneous fluid or nasogastric feeding may be warranted for a brief spell

Close liaison with the patient, family and GP is warranted in this scenario.
Withdrawal of part or whole of diabetes related treatment can be considered under the following:

<table>
<thead>
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<th>Conditions of withdrawal</th>
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<tbody>
<tr>
<td>1. When the patient is commenced on the Liverpool Care Pathway</td>
</tr>
<tr>
<td>2. Where frequent treatment-related hypoglycaemia is causing distress and significant management difficulties</td>
</tr>
<tr>
<td>3. Where continued treatment with insulin poses an unacceptable risk of hypoglycaemia or where the benefits of stricter glucose control cannot be justified</td>
</tr>
<tr>
<td>4. Where the tablet burden and side effects of blood pressure tablets and lipid lowering therapy outweigh any long term benefit</td>
</tr>
<tr>
<td>5. Where continued food or fluids is not the choice of the patient</td>
</tr>
<tr>
<td>6. Where prescribing anti-infective therapy is not likely to benefit the patient</td>
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</table>

Treating hypoglycaemia

If patient conscious and able to swallow give one of the following:

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<th>150ml of non diet cola</th>
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<td>200ml of pure smooth orange juice</td>
<td>150ml non-diet cola</td>
</tr>
<tr>
<td>100ml lucozade original</td>
<td>100ml lucozade original into the feeding tube</td>
</tr>
<tr>
<td>Once blood glucose is &gt;4mmol/l give a starchy snack.</td>
<td>Repeat procedure every 5 mins until blood glucose &gt;4mmol/l and resume feed.</td>
</tr>
</tbody>
</table>

Always seek advice from the Diabetes Specialist Team

Produced in cooperation with:

- Association of British Clinical Diabetologists
- Institute of Diabetes for Older People
- TREND UK

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