

**Birmingham, Solihull, Sandwell and Environs Area
Prescribing Committee (APC)**

**Primary Care Sick Day Guidance for the
management of adult patients with diabetes
mellitus**

Diabetes Medicines Management Advisory Group (DMMAG)

This information is not to be used for patients who are pregnant or paediatrics - please seek specialist advice.

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Version: 1.0

Ratified by: DMMAG (Diabetes Medicines Management Advisory Group)

Publication date: October 2020

Review date: October 2022 or earlier as required

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In addition to the information provided in this document please see the following resources:

TREND UK– patient information leaflets : <https://trend-uk.org/resources/>

Diabetes UK - Diabetes information in different languages

<https://www.diabetes.org.uk/diabetes-the-basics/information-in-different-languages>

1. HYPERGLYCAEMIA

Becoming unwell

Blood glucose will fluctuate in patients with diabetes who develop an illness. While they are unwell it is VERY likely that their blood glucose will **increase**, even if they are eating less than usual.

Patients may also find that because of reduced appetite, inability to eat their usual meals or difficulty maintaining adequate hydration, some **oral** hypoglycaemic agents will need to be **temporarily** stopped during the period that they are unwell. This may cause their blood glucose to go up, please see page 5 and appendix 1.¹⁻⁷

It is important to advise patients that insulin should **not be stopped** as part of sick day guidance (unless patient has type 2 diabetes and severe hypoglycaemia), although the dose may need to be adjusted.¹⁻⁷

Any intercurrent illness **can cause glucose levels to rise**, which can include: common cold, chest infection, urinary tract infections, diarrhoea and vomiting and any injury, e.g. fracture.

If they already have access to blood glucose monitoring, ensure they increase the frequency of checking their blood glucose to every 2 to 4 hours.¹⁻⁷

If they DO NOT have access to blood glucose monitoring, counsel patients to look out for symptoms of high blood glucose (hyperglycaemia) which include thirst, passing more urine than usual and tiredness (Table 1).¹⁻⁴

Table 1: Symptoms of high blood glucose (hyperglycaemia)⁴

Increased thirst and a dry mouth	Abdominal pain
Needing to pee /urinate frequently	Feeling or being sick/vomiting
Tiredness	Breath that smells fruity(pear-drop smell)
Blurred vision	Recurrent infections, such as thrush, bladder infections (cystitis) and skin infections
Unintentional weight loss	



Inform patients to seek URGENT medical attention if they are unable to control their blood glucose (persistently over 18mmol/L) or unable to stay hydrated due to vomiting, as their condition could escalate to diabetes ketoacidosis (DKA, Table 2) or hyperosmolar hyperglycaemic state (HHS, Table 3). DKA and HHS are potentially life-threatening and require urgent admission to hospital

Table 2: Signs of diabetic ketoacidosis (DKA)⁵

Ketones can be detected on breath (pear-drop smell) or in the blood or urine.

Excessive Thirst	Tummy (abdominal) pain
Polyuria	Leg cramps
Dehydration	Nausea/sickness and vomiting
Shortness of breath/hard to breathe	Confusion and drowsiness

Table 3: Signs of hyperosmolar hyperglycaemic state (HHS)⁵

Typically seen after several days with glucose levels consistently above 30mmol/L

Polyuria	Thirst and dry mouth
Disorientation or confusion	Nausea
In the later stages, drowsiness and gradually loss of consciousness	

2. SICK DAY GUIDANCE FOR ADULT PATIENTS WITH TYPE 2 DIABETES PRESCRIBED ORAL HYPOGLYCAEMIC AGENTS, GLP1 ANALOGUES, BASAL INSULIN OR PREMIXED INSULIN

This information is intended to support primary care healthcare professionals counselling patients with diabetes

Please ensure patients have access to the following at all times, not just when they become unwell:

- at least 1-month supply of all medicines.
- If they need to check their blood glucose levels at home, ensure they have access to a formulary blood glucose meter with at least 1-month supply of test strips and lancets.
- If they have been advised to check ketones, please ensure they have access to a formulary ketone testing system – blood testing (rather than urine ketone testing) is recommended. ¹⁻⁷

Request patients to contact their local community pharmacist via telephone or virtually (where possible) and request a delivery of medication *if they are self-isolating* during the covid-19 pandemic.

Counsel your patient to ensure they:

- **Stay hydrated:** drink at least 100mls of water (or drink any other sugar free drink) every hour.
- **Do not fast:** maintain carbohydrate intake
- **If they are unable to eat or drink or are vomiting, replace meals with sugary fluids or ice cream**
- Inform patients that they may need to **stop taking some medications during** the period they are unwell (see page 5 for information regarding diabetes medication and appendix 1 for other medicines for specific advice).
- **Never stop insulin:** although they may have to adjust the dose (see page 6).
- If glucose levels are raised, check blood glucose every 2 - 4 hours, drink plenty of sugar free fluids, and request they seek medical advice regarding their medication whilst they are ill.
- Trend UK have a useful leaflet for patients : [Type 2 diabetes : what to do when you are ill.](#)
- **Diabetes UK** - have information have in different languages¹⁻⁷

<https://www.diabetes.org.uk/diabetes-the-basics/information-in-different-languages>

If they are worried about other symptoms not related to their diabetes, ensure they seek medical advice from their GP/practice nurse or NHS 111.^{3,5}

3. DIABETES MEDICATIONS WHICH MAY NEED TO BE STOPPED OR MODIFIED WHEN PATIENTS WITH TYPE 2 DIABETES ARE UNWELL

Advise patients that these diabetes medicines should be **STOPPED** during periods of illness¹⁻⁷

Drug	Consultation points and rationale	Examples to guide consultation with patient
Metformin	<p>Dehydration can make it more likely that they will develop a serious side effect called lactic acidosis. This drug needs to be stopped during periods of illness.</p> <p>Inform patients to restart when they are well- usually after 24 to 48 hours of eating and drinking normally. Restart medication as normal, there is no need to re-titrate unless clinically indicated, e.g. change in renal function.</p>	Metformin, Metformin SR
SGLT2 Inhibitors (sodium-glucose cotransporter 2 inhibitor)	<p>Dehydration can make it more likely that they will develop a serious side effect called ketoacidosis (euglycaemic DKA-see section 1 : hyperglycaemia for symptoms).</p> <p>Monitor blood ketones during this period, this drug needs to be stopped during periods of illness. Restart once ketone values are normal (<0.6) and they are well if still considered appropriate.</p> <p>Inform patients to restart when they are well- usually after 24 to 48 hours of eating and drinking normally. Restart medication as normal, there is no need to re-titrate.</p>	Names ending with 'flozin' such as canagliflozin, dapagliflozin, empagliflozin and ertugliflozin.

Advise patients that these diabetes medicines **MAY** need to be stopped depending on the circumstances during periods of illness.¹⁻⁷

Drug	Consultation points and rationale	Examples to guide consultation with patient
Sulfonylureas	<p>If they are unable to eat or drink, it will be more likely that they may develop low blood glucose (hypos/hypoglycaemia).</p> <p>If they develop hypoglycaemia – advise that these medicines are <u>stopped</u>. They should be advised to seek medical advice before restarting.</p> <p>If they are eating and drinking normally and blood glucose is high instruct patients to <u>continue</u> to take sulfonylureas.</p>	Names ending with 'ide' such as gliclazide, glipizide.
GLP-1 analogues (incretin mimetics)	<p>Dehydration can make it more likely that they will develop a serious side effect. If they develop acute abdominal pain, nausea and vomiting, they should be advised to stop the GLP1 analogue and seek urgent medical attention (pancreatitis has been reported as a side effect of this medication).</p> <p>They should seek medical advice before restarting.</p>	Names ending with 'tide' such as exenatide, dulaglutide, liraglutide, lixisenatide and semaglutide

See also appendix 1 for other medication that may be stopped/paused during periods of illness.

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Sick Day Rules Adults for Primary Care V1

Date: Nov 2020

Review date: Nov 2022

4. INSULIN DOSE ADJUSTMENT ADVICE FOR PATIENTS WITH TYPE 2 DIABETES DURING PERIODS OF ILLNESS

Insulin **SHOULD NOT BE STOPPED**- for further advice on dose adjustment speak to diabetes lead/specialist clinician^{3,5-7}

Basal Insulin

If patients are taking **basal insulin** (e.g. Abasaglar, Insulatard, Humulin I, Lantus, Levemir, Semglee) and able to eat and drink but glucose levels are raised - titrate basal insulin as follows:

Blood glucose (mmol/L)	Increase each insulin dose by:
13-17	Add 2 units extra to each dose
17.1 -22	Add 4 units extra to each dose
Over 22	Add 6 units extra to each dose

Once they have taken their initial increased dose, counsel patients to contact GP/practice nurse or their Diabetes Specialist Nurse for further advice on adjusting their doses and adjustment back to usual insulin dose once blood glucose is below 13 mmol/L.

WARNING - Seek specialist advice for patients on an ultra-long acting insulin (e.g. Tresiba) or high strength insulin (e.g. Toujeo)

Pre-mixed Insulin

If patients are prescribed a **pre-mixed insulin** (e.g. Novomix 30, Humalog Mix 25, Humalog Mix 50, Humulin M3) increase the insulin dose as follows.

Blood glucose (mmol/L)	Increase each insulin dose by:
11.1-17	Add 2 units extra to each dose
17.1-22	Add 4 units extra to each dose
Over 22	Add 6 units extra to each dose

Patients following this titration guidance must eat or drink sufficient carbohydrates at mealtimes to prevent low blood glucose (hypoglycaemia).

Once they have taken their initial increased dose, counsel patients to contact GP/practice nurse or their Diabetes Specialist Nurse for further advice on adjusting their dose and adjustment back to usual insulin dose once blood glucose is below 13 mmol/L

5. SICK DAY GUIDANCE FOR ADULT PATIENTS WITH TYPE 1 OR TYPE 2 DIABETES USING MULTIPLE DAILY INJECTIONS (MDI) OF INSULIN

This information is intended to support primary care healthcare professionals counselling patients with diabetes.

Consider contacting your MDT/DiCE teams for advice and guidance through your usual diabetes specialist team.

Please ensure the patient had access to following at all times (as part of an emergency kit box)

- At least 1-month supply of all insulin's – long acting/basal and rapid acting (mealtime).
- Blood glucose meter with at least 1-month supply of blood glucose test strips and lancets – expiry dates should be checked regularly to ensure the sticks/strips/lancets have not expired
- **If the patient is using continuous or flash / continuous glucose monitoring systems** (Freestyle Libre, Dexcom, Medtronic Guardian, Enlite) - ensure they have access to a back-up blood glucose meter and test strips and use blood glucose testing alongside the sensor.

Freestyle Libre Care Line: 0800 170 1177 or via <https://www.freestylelibre.co.uk/libre/>

Dexcom Care Line information: <https://www.dexcom.com/en-GB/contact-us-direct-08000315761>

Medtronic Care Line: 01923205167

- Ketone test kits – **preferably blood ketone testing as this is more accurate** -check the ketone test strips have not expired. Testing ketones is usually only recommended as necessary in patients with Type 2 under specialist recommendation, see Type 2 Diabetes Information pages 4-6. ¹⁻⁹

If the patient becomes unwell

- If they develop coronavirus symptoms or any other illness it is likely to affect their blood glucose.
- While they are unwell it is **VERY likely they will need to take more insulin.**
- Even if they are vomiting they must **NEVER stop taking their insulin.**
- The patient should monitor their blood for ketones (if advised to do so) depending on their type of diabetes: every 4-6 hours (if ketones are less than 1.5mmol/l) ; every 2 hours, including through the night (if ketones are 1.5 mmol/L or more).
- Blood glucose levels should be monitored every 2- 4 hours.
- It is important to know the patient's **total daily dose (TDD)** of insulin (meal time + total long acting/basal insulin) to be able to advise the rapid acting insulin dose required to correct ketones (see appendix 2). It would be useful to do the calculations with the patients before they become unwell.
- Advise the patient to drink at least 100mls of water every hour, or drink any other sugar free drinks if preferred.
- The patient should not fast, but should be advised to try to eat some food which contains carbohydrates e.g. yoghurt, toast, ice cream and cereal.
- If the patient is on other medication, please also refer to appendix 1 for information regarding medication that should be temporarily stopped in times of sickness.
- **Trend UK have useful patient leaflets about sick day information:** [Type 2 diabetes : what to do when you are ill.](#) and [Type 1 Diabetes - what to do when you are ill.](#) ¹⁻⁹

Patients should be advised that they will need face-to-face urgent medical attention if continuously vomiting for more than 4-6 hours or if their ketone levels in blood or urine are not reducing despite following sick day guidance. If the patient is worried about other symptoms not related to their diabetes, they should be advised to seek medical advice from NHS 111 or call 999 if it is an emergency.

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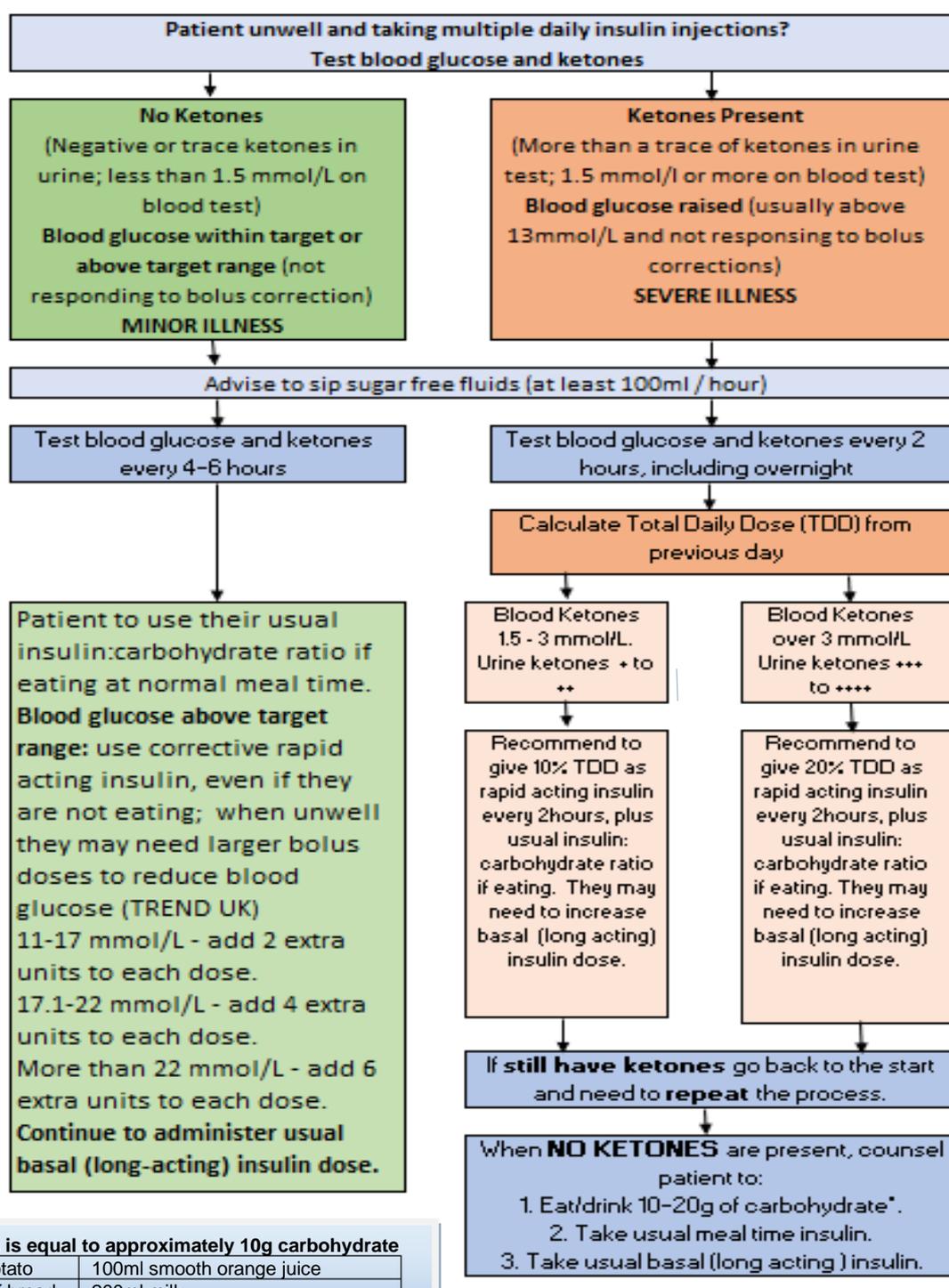
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Date: Nov 2020

Review date: Nov 2022

Multiple daily injections (MDI) - sick day information^{3,6,10}

Seek advice from specialist diabetes team if the patient's ketones remain >3mmol/L or if you are unsure of how to manage the patient's diabetes at any point.



*Each portion is equal to approximately 10g carbohydrate

Egg-sized potato	100ml smooth orange juice
Small slice of bread	200ml milk
Tablespoon of cooked rice or pasta	Plain ice-cream 1 large scoop
200 g Tomato soup (half a large tin)	150g low fat yoghurt (1 small pot)
	2 rich tea or malted milk biscuits

If ketones are still present after 4-6 hours and or if the patient continues to vomit, are unable to keep fluid down, or unable to control their blood glucose or ketone levels they must go to hospital as an emergency. They must never suspend/stop their basal (long acting insulin).

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6. SICK DAY GUIDANCE FOR ADULT PATIENTS WITH TYPE 1 DIABETES ON AN INSULIN PUMP

This information is intended to support primary care healthcare professionals counselling patients with diabetes.

Speak to your diabetes specialist team if you have any queries regarding patients using an insulin pump. Refer patients for specialist advice if they have not been trained specifically to manage their blood glucose in times of sickness.

Insulin pump users can contact their Diabetes Specialist Team or care line numbers provided in clinic. Pump companies are extending warranties for 3 months and they also have a 24 hour advice line.¹⁻⁹

Please ensure patients have access to following at all times, not just when they are unwell (perhaps as an emergency kit box).

- At least 1-month supply of all insulin cartridges, vials or pens.
- Ensure they have access to alternative means of **insulin delivery** – pens or syringes. They should have access to long acting and rapid acting insulin to use in case of pump failure (**ensure they have emergency supplies at all times in case of pump failure/supply issues**).
- A blood glucose meter with at least 1-month supply of blood glucose test strips and lancets.
- If the patient uses continuous or flash glucose monitoring systems (examples include Freestyle Libre/Dexcom) ensure they have access to a backup blood glucose meter and test strips.

Freestyle Libre Care Line: 0800 170 1177 or via <https://www.freestylelibre.co.uk/libre/>

Dexcom Care Line information: <https://www.dexcom.com/en-GB/contact-us-direct-08000315761>

Medtronic Care Line: 01923205167

- A ketone meter – Blood ketone testing is preferred.
- A supply of hypoglycaemia treatments and glucagon.

PATIENTS SHOULD BE ENCOURAGED TO REGULARLY CHECK THE EXPIRY DATES OF THE ITEMS IN THE EMERGENCY KIT.¹⁻⁹

If the patient becomes unwell : they should follow advice relating to correcting their insulin dose to correct ketones, it is very likely their glucose levels will increase and additional insulin will be required (follow pump sick day rules in flow chart below).

Management of unexplained hyperglycaemia

- Check blood glucose in 2 hours post correction bolus – if no change or glucose is higher, take correction dose of rapid acting insulin with a pen and check for ketones.

It is important that the patient and clinician are aware of the patient total daily dose (TDD) of insulin, so that the correct rapid acting insulin dose is administered to correct ketones. It would be useful for patients to know 10% and 20% of their insulin TDD calculation before they become unwell.

- Change infusion set, cannula and reservoir (start new pod if using Omnipod® pump)
- Check glucose and ketones in two hours and take a correction bolus via pump if required, check for ketones if glucose still over 13mmol/L. Follow page 11 if ketones are present and appendix 2 for correction dose advice.
- The patient should not go to sleep with unexplained hyperglycaemia which has not resolved or, within 2 hours of a new set change.

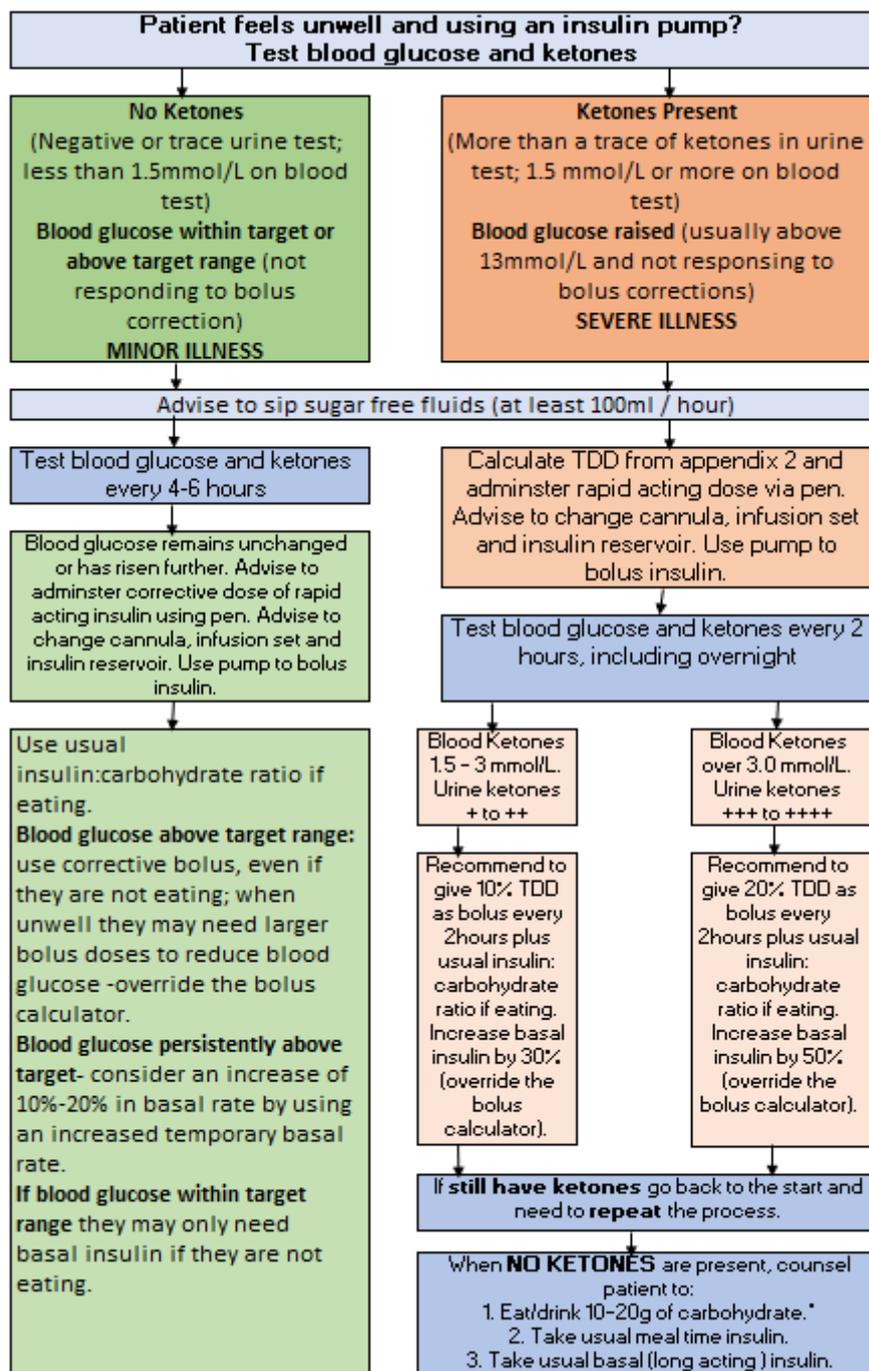
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In the event of insulin pump failure – the patient should contact their local Diabetes Specialist Team via switchboard or contact the number they have been provided with and the company for a replacement/advice, as appropriate.

- If they suspect the pump is not administering insulin (pump failure), they should revert back to insulin injections with pens / syringe.
- The emergency basal insulin dose via pens / syringes would be the same as their total daily basal insulin on the pump (e.g. total basal insulin 20 units on pump – if using Levemir start injections 10 units in the morning & 10 units in the evening, if using Lantus, start 20 units once a day injections).
- The insulin:carbohydrate ratio (for meals) and insulin sensitivity factor (for corrections) would be the same as on the pump: advise the patient to contact their local Diabetes Specialist Team.
- In the event of pump failure and not being able to access long acting insulin the patient should check their glucose levels and give an injection of rapid acting insulin every 3 hours.⁹

Insulin Pump Therapy - Sick Day Information^{3,6,9,13,17}

Seek advice from specialist diabetes team if the patient's ketones remain >3mmol/L or if you are unsure of how to manage the patient's diabetes at any point.



***Each portion is equal to approximately 10g carbohydrate**

Egg-sized potato	100ml smooth orange juice
Small slice of bread	200ml milk
Tablespoon of cooked rice or pasta	Plain ice-cream 1 large scoop
200 g Tomato soup (half a large tin)	150g low fat yoghurt (1 small pot) 2 rich tea or malted milk biscuits

If the patient is vomiting, unable to keep fluid down or unable to control their blood glucose or ketone levels they must go to hospital as an emergency. They must never suspend/stop their insulin pump.

7. APPENDIX 1 : MEDICATIONS WHICH SHOULD BE TEMPORARILY STOPPED/PAUSED DURING ILLNESS

Advise patients that these medicines should be **STOPPED temporarily** during periods of illness to reduce the risk of hospital admissions^{3,5-7}

Drug	Consultation points and rationale	Examples to guide consultation with patient
ACE inhibitors (angiotensin-converting enzyme)	These medicines are used for heart conditions, high blood pressure and for kidney protection. If patients are dehydrated, these medicines can stop their kidneys working properly. This can lead to acute kidney injury (AKI).	Ending in 'pril' such as ramipril, lisinopril, perindopril, captopril
ARBs (angiotensin receptor blocker)		Names ending in 'sartan' such as candesartan, irbesartan, losartan, valsartan
Diuretics	These medicines are used for excess fluid and high blood pressure and are sometimes called 'water pills'. These medicines can make dehydration more likely. This can result in acute kidney injury (AKI). If patients take more than two tablets a day of either bumetanide or furosemide, they should seek medical advice before adjusting doses or stopping.	Include bendroflumethiazide, furosemide, indapamide, bumetanide, spironolactone, eplerenone. Caution with heart failure the specialist team should be contacted for dosing information.
Metformin	Dehydration can make it more likely that they will develop a serious side effect called lactic acidosis.	Metformin, Metformin SR
NSAIDs (non-steroidal anti-inflammatory drugs)	These are anti-inflammatory pain killers. If patients are dehydrated, these medicines can stop their kidneys working properly and result in AKI.	Include ibuprofen, naproxen
SGLT2 Inhibitors (sodium-glucose cotransporter 2 inhibitor)	Dehydration can make it more likely that patients will develop a serious side effect called ketoacidosis (euglycaemic DKA-see Table 2). Monitor blood ketones during this period, this drug needs to be stopped during periods of illness . Restart once ketone values are normal (<0.6) and they are well and if still considered appropriate.	Names ending with 'flozin' such as canagliflozin, dapagliflozin, empagliflozin and ertugliflozin

Inform patients to restart when they are well - usually after 24 to 48 hours of eating and drinking normally. Restart medication as normal, there is no need to re-titrate, unless clinically indicated, e.g. change in renal function.

Advise patients that these diabetes medicines **MAY** need to be stopped **temporarily** depending on the circumstances during periods of illness.

Drug	Consultation points and rationale	Examples to guide consultation with patient
Sulfonylureas	<p>If they are unable to eat or drink, it will be more likely that they may develop low blood glucose (hypos/hypoglycaemia).</p> <p>If they develop hypoglycaemia – advise that these medicines are <u>stopped</u>. They should be advised to seek medical advice before restarting.</p> <p>If they are eating and drinking normally and blood glucose is high instruct patients to <u>continue</u> to take sulfonylureas.</p>	Names ending with ‘ide’ such as gliclazide, glipizide.
GLP-1 analogues (incretin mimetics)	<p>Dehydration can make it more likely that they will develop a serious side effect. If they develop acute abdominal pain, nausea and vomiting, they should be advised to stop the GLP1 analogue and seek urgent medical attention (pancreatitis has been reported as a side effect of this medication).</p> <p>They should seek medical advice before restarting.</p>	Names ending with ‘tide’ such as exenatide, dulaglutide, liraglutide, lixisenatide and semaglutide.

8. APPENDIX 2: HOW TO CALCULATE THE TOTAL DAILY DOSE OF INSULIN FOR CORRECTION DOSES OF RAPID ACTING INSULIN

Calculating an insulin total daily dose (TDD)

If you need to calculate how much total daily dose of insulin the patient requires to follow the sick day information, see EXAMPLE calculations below.

Each individual's total daily dose of insulin and calculations will be different; the example is a guide only.

Example 1 - if you know the patient's daily dose in units :

(to calculate how much bolus rapid acting insulin is administered every 2 hours depending on ketone levels (and blood glucose levels).

Total of all rapid acting (mealtime) insulin = 11 units

Total of all background/basal (long acting) insulin = 19 units

Total daily dose = 11+19 = 30 units

10% of total daily dose = $30 \div 10 = 3$ units

20% of total daily dose = $30 \div 5 = 6$ units

Example 2 –using an approximation of the patients's total daily dose⁶

Advise additional 10% of TDD as rapid-acting insulin every 2 hours	Total daily insulin dose : TDD	Advise additional 20% of TDD as rapid-acting insulin every 2 hours
1 unit	Up to 14 units	2 units
2 units	15-24 units	4 units
3 units	25 to 34 units	6 units
4 units	35 to 44 units	8 units
5 units	45 to 54 units	10 units
If the patient is prescribed more than 54 unit discuss with a diabetes specialist- advise the patient to contact specialist team or GP if they are unsure of how to adjust their dose.		

Hypoglycaemia advice

IF blood glucose falls below 5mmol/L – advise patients to sip sugary drinks and if blood glucose below 4mmol/L refer to hypoglycaemia treatments appendix 3.¹⁰⁻¹⁸

9. APPENDIX 3 : HYPOGLYCAEMIA

Risk factors that can cause hypoglycaemia include impaired awareness of hypoglycaemia, having diabetes for a long time, having strict blood glucose control, terminal illness, increased exercise, lack of blood glucose monitoring and other factors such as food malabsorption disorders.

Other possible causes of hypoglycaemia can include acute illness, accidental intramuscular injection of insulin/incorrect technique, irregular/missed meals, reduced appetite and unplanned exercise. Other factors include stress, depression or alcohol consumption.

Symptoms include: tremor, hunger, palpitations, nausea, headaches, sweating, drowsiness, blurred vision, confusion and can lead to loss of consciousness and coma.

Some medications can cause hypoglycaemia, including anti-diabetic agents, as well as beta blockers.¹⁰⁻¹⁸

Treating Mild Hypoglycaemia –conscious and able to self-treat	
<p>Treat with 15-20g fast acting carbohydrate.</p> <p>Examples of fast acting carbohydrate include:</p> <ul style="list-style-type: none"> • 5 or 6 Dextrose tablets • 4-5 standard size jelly babies/jelly beans • 150ml of full sugar Coca-Cola® • 200ml (a small carton) of smooth orange juice • 60ml glucojuice or Lift® 	<p>Check blood glucose 10-15minutes after treating, if still less than 4mmol/L re-treat as above with 15-20g fast acting carbohydrate. Repeat until blood glucose levels are over 4mmol/L. If this is repeated more than 3 times dial 999 and seek urgent medical advice.</p> <p>If the patient is taking insulin and experiencing hypoglycaemia request that they reduce their daily dose by 20%, if still experiencing regular hypoglycaemia seek advice from diabetes leads/specialist team.</p>

Moderate Hypoglycaemia :conscious and can swallow but requires someone else to treat them	
<p>Use 2 TUBES x 25g of 40% glucose gel e.g. GlucoGel® or Rapirose® Gel. The contents of the tube are squeezed into the side of the mouth (between teeth and gums) and cheeks are then massaged gently from the outside</p>	<p>Check blood glucose 10-15minutes after treating, if still less than 4mmol/L and able to swallow re-treat as above with 15-20g fast acting carbohydrate or with 40% glucose gel as left. Repeat until blood glucose levels are over 4mmol/L. If this is repeated more than 3 times dial 999 and seek urgent medical advice.</p>

Severe Hypoglycaemia: unconscious and requires someone else to treat them, or fitting/having a seizure	
<p>Administer 1mg Glucagon injection (subcutaneous or intramuscular injection) if someone is available and trained to do so).</p> <p>They should not be administered glucose orally.</p>	<p>Call 999 if fitting/unconscious, place patient in a recovery position. If the person is not breathing – cardiopulmonary resuscitation should be commenced.</p> <p>Seek urgent medical advice and liaise with paramedics on arrival for further management.</p> <p>Patients experiencing hypoglycaemia requiring medical attention should be referred to a specialist diabetes team.</p>

After treating the hypoglycaemia episode in all cases, where the next meal is not due and the patient can swallow safely, They should eat **15-20g of slower acting** carbohydrate, e.g: a sandwich, an apple or banana, 2 plain biscuits, a cereal bar or bowl of cereal or a glass of milk (200ml).

N.B. Patients given glucagon require a **larger portion** (40g) of starch carbohydrate to replenish glycogen stores Please note patients who self-manage their insulin pumps may not need a long acting carbohydrate but should take initial treatment, continue their pump and assess for the cause of the episode.

Seek medical attention if low blood glucose levels persist despite changes and they are unable to maintain hydrated or take carbohydrates due to vomiting.

Following the hypoglycaemia episode, the GP or diabetes specialist team must review the potential cause and medication. If the patients drives see Diabetes UK website and the DVLA website for advice.¹⁷⁻¹⁸

Patients should be given information about hypoglycaemia and be encouraged to carry treatments with them. Trend UK provide a useful patient leaflet on their website: [Why do I sometimes feel shaky dizzy and sweaty? Hypoglycaemia explained](#)^{3,10-18}

Birmingham, Sandwell, Solihull and environs Area Prescribing Committee (BSSE APC).

10. REFERENCES

1. Diabetes UK (2020). *Updates Coronavirus and diabetes*. Available: https://www.diabetes.org.uk/about_us/news/coronavirus Last accessed 5th July 2020.
2. NHS (2020) *Coronavirus (COVID-19)* Available: <https://www.nhs.uk/conditions/coronavirus-covid-19/> Last accessed 5th May 2020.
3. NHSE NHSI (2020) *Diabetes COVID-19 Key Information*. Available: <https://www.england.nhs.uk/london/london-clinical-networks/our-networks/diabetes/diabetes-covid-19-key-information/> Last accessed 14th August 2020.
4. NHS (2020) *Hyperglycaemia*. Available: <https://www.nhs.uk/conditions/high-blood-sugar-hyperglycaemia/> Last accessed 14th August 2020.
5. Su Downs, Diabetes & Primary Care Vol 20(1)2018. *PCDS Sick Day Rules*. Available: Diabetes on the net.com. Last accessed: 14th August 2020.
6. TREND-UK (2020) *Managing diabetes during intercurrent illness in the community*. Available: <http://trend-uk.org/resources/> . Last accessed: 14th August 2020.
7. NICE CG169 – *Acute kidney injury: prevention, detection and management* Last accessed 5th May 2020.
8. Leicester Diabetes Centre. (2020). Advice given to people with Type 1 diabetes for managing Insulin doses during illness. Available: https://www.t1resources.uk/fileadmin/user_upload/downloads/Type1_Sick_day_rules_InsulinV3.pdf Last accessed: 9th October 2020
9. ABCD. (2018). Best Practice Guide: Continuous subcutaneous insulin infusion (CSII). A clinical guide for adult diabetes service. Available: https://abcd.care/sites/abcd.care/files/BP_DTN_v13%20FINAL.pdf Last accessed: 10th November 2020
10. American Diabetes Association. (2020). *Hypoglycaemia (Low blood sugar)*. Available: <https://www.diabetes.org/diabetes/medication-management/blood-glucose-testing-and-control/hypoglycemia>. Last accessed: 14th August 2020.
11. Diabetes UK. (2020). *Having a hypo*. Available: <https://www.diabetes.org.uk/guide-to-diabetes/complications/hypos/having-a-hypo> . Last accessed: 14th August 2020.
12. Diabetes UK. (2020). *What is a hypo*. Available: <https://www.diabetes.org.uk/guide-to-diabetes/complications/hypos> . Last accessed: 14th August 2020.
13. Diabetes.co.uk. (2019). *Diabetes and Hypoglycaemia*. Available: <https://www.diabetes.co.uk/Diabetes-and-Hypoglycaemia.html> . Last accessed: 14th August 2020.
14. NICE. (2020). *Treatment of hypoglycaemia*. Available: <https://bnf.nice.org.uk/treatment-summary/hypoglycaemia.html>. Last accessed: 14th August 2020.
15. TREND UK. (2018). *Hypoglycaemia in adults in the community: Recognition, management and prevention*. Available: https://trend-uk.org/wp-content/uploads/2018/09/HCP_Hypo_TREND_FINAL.pdf. 14th. Last accessed: August 2020.
16. ABCD (2020). *A Covid-19 Response Action – Diabetes Management in Care Homes*. Available: https://abcd.care/sites/abcd.care/files/site_uploads/Resources/COVID-19/Covid-19_and_Diabetes_Care_Home_Guidance_Final_120520.pdf Last accessed: September 2020
17. Diabetes.co.uk. (2019). *Driving and Hypoglycaemia*. Available: <https://www.diabetes.co.uk/driving-and-hypoglycaemia.html> . Last accessed: 14th August 2020.
18. Driver & Vehicle Licensing Agency. (2020). *Assessing fitness to drive - a guide for medical professionals*. Available: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/866655/assessing-fitness-to-drive-a-guide-for-medical-professionals.pdf Last accessed 14th August 2020.

Birmingham, Sandwell, Solihull and environs Area Prescribing Committee (BSSE APC).

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Date: Nov 2020

Review date: Nov 2022