Attach 1.4

NHS
Herts Valleys
Clinical Commissioning Group

Most Commonly Prescribed Drugs for Diabetes (information for pharmacists)

Medicine name and counselling	How it works	Why taking it/benefits	Concerns that might affect adherence
Metformin (Biguanides) Increased gradually to one tablet three times a day with or after food (maximum dose 2g per day) in divided doses)	Helping the body to make better use of the lower amount of insulin it produces	Controls symptoms of diabetes and prevents long-term problems. Used alone as first line treatment for many patients.	**Unwanted effects** – Gastro-intestinal side effects are often transient and are kept to a minimum by gradual increase in dose. Unwanted effects include feeling sick or being sick, diarrhoea, unusual taste, lack of appetite, abdominal pain. Very rare but serious - lactic acidosis. **Dose frequency** – may find it difficult to fit three times daily dose into lifestyle, or have problems remembering to take them. (support and encourage patients to take as per prescribed instructions) **Hypoglycemia (Hypos) -** Metformin does not usually make you more or less likely to get hypos. **Weight -** Usually no effect or small weight loss
Gliclazide and glimepiride (sulfonylureas) **Gliclazide** – usually taken once daily 30 minutes before breakfast though it may be taken twice a day, according to the main meals of the day. Doses higher than 160 mg to be given in divided doses; maximum 320 mg per day. **Glimepiride** – usually taken once daily shortly before or with first main meal of the day.	Stimulate insulin production	Controls symptoms of diabetes and prevents long-term problems. Used alone as first line treatment when metformin not appropriate. Added to metformin when that alone does not control blood sugar.	**Unwanted effects –** feeling sick or being sick, diarrhoea, constipation and abdominal pain. **Hypos** - Sulfonylureas make you more likely to get hypos. The number of people affected is not certain. **Weight** - Possible increase but amount not certain.
Alogliptin, Linagliptin, Sitagliptin, Saxagliptin, Vildagliptin (DPP-4 inhibitor) Taken once daily	Works in part by increasing the amount of insulin produced by the body and also reduces the amount of a substance (glucagon) that causes the liver to produce sugar	Controls symptoms of diabetes and prevents long-term problems. Added to metformin when that alone does not control blood sugar and a sulfonylurea not appropriate. Added to metformin and sulfonylurea when those together do not control blood sugar. Can be added in Type 2 diabetics to insulin (with or without metformin).	**Unwanted effects** – feeling sick or being sick, cold and flu like symptoms (headache, sore throat, aches and pain, upper respiratory tract infection), diarrhoea, abdominal pain, heartburn, rashes/itching, urine infections and inflammation of the pancreas (pancreatitis). **Hypos** - DPP-4 inhibitors do not usually make you more or less likely to get hypos. **Weight** - Usually no effect on weight.

Pioglitazone (thiazolidinedione) Usually taken once daily	Helps the body to make better use of the lower amount of insulin it produces	Controls symptoms of diabetes and prevents long-term problems. Added to metformin when that alone does not control blood sugar and a sulfonylurea not appropriate. Added to metformin and sulfonylurea when those together do not control blood sugar.	**Unwanted effects** – feeling sick or being sick, weight gain, ankle swelling, headache, bone fractures, bladder cancer, fluid retention, which could worsen heart failure in people who already have it or might get it. People taking pioglitazone need a blood test from time to time to check how well their liver is working. Should not be used in patients with heart failure or a history of heart failure. **Hypos** - Pioglitazone does not usually make you more or less likely to get hypos **Weight** - Average 2–3 kg increase over 12 months.
Canagliflozin, dapagliflozin, Empagliflozin (SGLT-2 inhibitors) Usually taken once daily	Block the reabsorption of glucose in the kidney and increase the urinary glucose excretion	Controls symptoms of diabetes and prevents long term problems. Used alone as first line treatment when metformin, sulfonylureas and pioglitazone not appropriate. Added to metformin when that alone does not control blood sugar and a sulfonylurea not appropriate. Dapagliflozin - added to metformin and sulfonylurea when those together do not control blood sugar. Canagliflozin and empagliflozin – added to metformin and sulphonylurea or metformin and a thiazolidinedione when these medicines together do not control blood sugar.	**Unwanted effects** – nausea, constipation, thirst, increased passing of urine, urine infections and thrush (in men and women), low blood pressure (which might lead to fainting or other problems) and risk of diabetic ketoacidosis. People taking SGLT-2 inhibitors need a blood test from time to time to check how well their kidneys are working. **Hypos** - SGLT-2 inhibitors do not usually make you more or less likely to get hypos. **Weight** - Average 2–3 kg decrease over 6–12 months.
Insulin Insulin is tailored to the patient's needs and different types of insulin are given at different times of the day. May need to inject insulin several times a day, twice or once a day. Usually administered into the upper arms, thigh, buttocks or abdomen	Replaces the insulin that the body does not produce	Controls symptoms of diabetes and prevents long-term problems. Used for Type 1 diabetes. Sometimes used in Type 2 diabetes when oral medicines alone have not controlled blood sugar.	**Unwanted effects** – hypoglycaemia and lumpiness at injection site.

Solutions To Common Problems And When To See The GP

Unusual taste, lack of appetite, abdominal pain (with metformin): If these become troublesome, speak to the doctor.
Feeling sick or being sick: Common side effect of metformin that usually improves after a few days but if it continues, speak to the doctor**.** For other diabetes medicines, eat little and often and stick to simple foods. Taking the dose with food can also help.
Diarrhoea: Drink plenty of water to replace lost fluids**.** With metformin, usually improves as patient gets used to the medicine but speak to the doctor if it continues.
Constipation: Eat a balanced diet with plenty of fibre and drink 6-8 glasses of water each day.
Cold and flu-like symptoms, headache, sore throat, aches and pains: Speak to pharmacist to recommend an OTC treatment.
Weight gain: Maintain a balanced diet and discuss with doctor if feel gaining weight without eating more.
Ankle swelling: Keep legs raised at rest. Contact the GP if required.
Headache: Take a simple painkiller such as paracetamol.
Lumpiness at injection site: Rotate injection sites.
Symptoms of hypoglycaemia include: feeling hungry, trembling or shakiness, sweating, anxiety/irritability, palpitations and tingling of lips. Once you notice hypo symptoms you should take action straight way. To treat the hypo, you need to take about 15 to 20 grams of quick acting carbohydrate like 200ml (a small carton) of smooth orange juice or five or six dextrose tablets or four large jelly babies. Check your blood glucose levels 5-10 minutes after treating the hypo. If your blood glucose levels are below 4mmol/l, repeat the treatment. When you start to feel better and if you are not due to eat a meal, eat some starchy food (slower acting carbohydrate) like 2 plain biscuits or a small banana.
Symptoms of diabetic ketoacidosis include: rapid weight loss, nausea or vomiting, abdominal pain, fast and deep breathing, sleepiness, a sweet smell to the breath, a sweet or metallic taste in the mouth, or a different odour to urine or sweat, and seek immediate medical advice if any of these are developed.
Symptoms of Lactic acidosis include: feeling weak or tired, muscle pains, breathing trouble, and stomach discomfort, feeling cold or dizzy and developing a slow/irregular heartbeat. Any sudden changes should be reported to your doctor instantly.

Pancreatitis: Discontinue if there are symptoms of acute pancreatitis - persistent, severe abdominal pain.
Vaginal thrush: Speak to pharmacist to recommend an OTC treatment. If recurrent see GP.
Symptoms of hypotension include: dizziness or lightheadedness, unsteadiness, fainting, blurred vision, heartbeats that suddenly become more noticeable (palpitations). If you think you are experiencing an episode of hypotension, you should: stop what you're doing, sit or lie down and drink some water. General advice for managing hypotension is to stand up gradually – particularly first thing in the morning, avoid standing for long periods of time, and wear support stockings. However, you should speak to your GP before using support stockings as they're not suitable for everyone. Also avoid caffeine at night, and limit your alcohol intake – this can help you to avoid becoming dehydrated, which can also cause low blood pressure. You should see your GP if you have frequent symptoms of low blood pressure.
Diabetes and Driving: Blood-glucose should always be above 5 mmol/litre while driving. If blood-glucose falls to 5 mmol/litre or below, a snack should be taken. Drivers treated with insulin should ensure that a supply of fast-acting carbohydrate is always available in the vehicle. If blood-glucose is less than 4mmol/litre, or warning signs of hypoglycaemia develop, the driver should not drive. If already driving, the driver should: stop the vehicle in a safe place; switch off the engine, remove keys from the ignition, and move from the driver's seat; eat or drink a suitable source of sugar and wait until 45 minutes after blood-glucose has returned to normal, before continuing journey. Other tips include: avoid delaying or missing meals and snacks, take breaks on long journeys, always keep hypo treatments to hand in the car, do not drink alcohol and drive. For further information see https://www.diabetes.org.uk/Guide-to-diabetes/Life-with-diabetes/Driving
Self-monitoring of Blood Glucose (SMBG): It is recommended that healthcare professionals do NOT routinely offer SMBG to adults with type 2 diabetes unless: the person is using insulin, evidence of hypoglycaemic episodes, person is on oral medication that may increase risk of hypoglycaemia when such as sulphonylureas and meglitinides or the person is pregnant or planning to become pregnant. The Driver and Vehicle Licensing Agency (DVLA) require people on insulin who hold licenses to drive cars and motorcycles to monitor blood glucose no more than 2 hours before start of driving and every 2 hours whilst driving, with more frequent self-monitoring if they have greater risk of hypoglycemia, such as after physical activity or altered meal routine. People on insulin who hold licenses to drive buses and lorries should in addition also conduct regular blood glucose testing at least twice daily including on days of not driving. They will need to show 3 months of consecutive blood glucose readings at their annual or biannual assessment to review their license, so they will need to use glucose meters with memory functions. These recommendations also apply for people in either license group who are managed by tablets carrying hypoglycemia risks, which include sulphonylureas and meglitinides. For further information see https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/670819/assessing-fitness-to-drive-a-guide-for-medical-professionals.pdf

General Sick day rules: If patient is unwell with any of the following: fevers, sweats and shaking, vomiting or diarrhoea (unless only minor), consider temporarily stopping the following medicines during acute intercurrent illnesses: Angiotensin-converting enzyme (ACE) inhibitors, Angiotensin receptor blockers (ARBs), Non-steroidal anti-inflammatory drugs (NSAIDs), Diuretics and Metformin. Medicine should be re-started once you have recovered from the illness. If you are in any doubt, contact your pharmacist, GP or nurse.
Diabetes sick day rules: (for further information see https://patient.info/doctor/diabetes-and-intercurrent-illness). Some of the important points

- Contact a GP or diabetes team who will help with any queries or any uncertainty about what to do
- **INSULIN SHOULD NOT BE STOPPED** - hyperglycaemia can arise from inter current illness irrespective of the patient's calorie intake. There are no hard and fast rules regarding insulin dosage, as response depends on the individual patient's metabolism and the type of insulin they are taking. Sick-day rules should follow those agreed with specialist units at the time of initiation of insulin. If in any doubt contact the GP or specialist nurse.
- Keep taking most diabetes medications - even when not feeling like eating. The dose of medication may need to be altered – your diabetes team will be able to advice on this.
- It is advisable to stop taking a SGLT2 inhibitor (eg, dapagliflozin, canagliflozin, empagliflozin) if unwell and unable to eat or drink. You should contact your diabetes team as soon as possible.
- Stay well hydrated. Have plenty of unsweetened drinks to avoid dehydration. Eat little and often
- If the patient is becoming dehydrated - Metformin should be stopped.
- Further advice should be sought from the GP or specialist nurse for patients with diarrhoea and who are acutely unwell.
- At all times remember, whatever the blood glucose level is, if the patient cannot keep drinking, has persistent vomiting, becomes drowsy, breathing becomes deep & rapid then they should immediately seek medical advice - dial 999.

This table is correct at the time of writing and should be used in conjunction with the patient information leaflet for the medicine(s). You should refer to the latest Summary of Product Characteristics for full drug information, including dosing, and use other reference sources such as the British National Formulary and current NICE guidance.

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