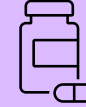




Medication Safety Series (MSS) 20

Non-insulin medications for Type 2 diabetes



- A number of different types of medication are available to manage type 2 diabetes and can be used as monotherapy, or in combination, dependent on patient response.
- Timing and frequency of administration varies with each drug and formulation ([see table](#)).
- Blood glucose monitoring requirements vary dependent on the medication prescribed and the combinations used, see below for examples. Monitoring requirements are individual to each patient and need to be agreed and clearly documented within the intervention plan including a rationale for monitoring.
- **If an inpatient is prescribed a sulfonylurea drug (e.g. gliclazide, glimepiride) or a combination of oral hypoglycaemic agents**, dextrose 40% oral gel and Glucagon 1 mg IM should be prescribed “as required” on EPMA as detailed in the [“Standards for use of as required and rescue medication”](#). Any omitted dose of an oral hypoglycaemic agent (intentional or accidental) must be reported to a prescriber

Key safety messages:

- ✓ **Metformin** – consider monitoring vitamin B12 if unexplained anaemia; dose reduction required if eGFR is < 45 ml/minute/1.73m²; stop if the eGFR is < 30 ml/minute/1.73m²
- ✓ **Sulphonylureas** – avoid long-acting preparations in the elderly. Avoid in significant hepatic impairment or if eGFR less than 30 ml/minute/1.73m²
- ✓ **Pioglitazone** – avoid in heart failure, current or history of bladder cancer, un-investigated haematuria, macular oedema. Increased risk of bone fractures; avoid in significant hepatic impairment. Rare reports of liver dysfunction – monitor liver function
- ✓ **DPP-4 inhibitors (gliptins)** – avoid if previous incidence of pancreatitis or recurrent gall stones; discontinue if symptoms of acute pancreatitis. Possible dose adjustment in renal impairment.
- ✓ **SGLT-2 inhibitors (gliflozins)** – high risk of volume depletion during acute illness or with diuretics. Increased risk of genital & urinary tract infections; possibility of diabetic ketoacidosis even with only moderate elevation of blood glucose. Follow licensing in relation to eGFR limits.
- ✓ **GLP-1 receptor agonists** - several formulations are available which have different dosing regimens and different indications – check carefully. Avoid in history of pancreatitis, significant alcohol excess and history of gall stones; discontinue if pancreatitis is suspected. Risk of diabetic ketoacidosis when concomitant insulin rapidly reduced or discontinued.
- ✓ See [NENC guidance](#) for further information.

Sick Day Rules: All people with T2DM require counselling on sick day rules and what to do if they become unwell. This should be reiterated at every opportunity. Advice during acute illness that causes dehydration e.g. fever, sweats, vomiting, diarrhoea, unable to eat or drink:

Metformin / SGLT2 inhibitors	Sulphonylureas / Insulin	Pioglitazone, GLP-1 agonists, DPP-4 inhibitors (Gliptins)
Temporarily stop. Can be restarted after 2 to 3 days once eating and drinking fluids normally.	Doses may need to be adjusted to maintain appropriate glucose control.	Can be continued during acute illness

Ensure fluid intake to minimise dehydration. Increase blood glucose monitoring during acute illness and check for ketones

Diuretics, ACE inhibitors, Angiotensin Receptor Blockers and NSAIDs are also usually temporarily stopped during acute illness

Leaflet from TREND can support patients with sick day management of their T2DM - [link](#)

Title: MSS20 non-insulin medications for type 2 diabetes v2.1	
Approved by: Drug & Therapeutics Committee	
Date of approval: 25 th September 2025	Review date: 1 st August 2027

Suggested frequency of Blood Glucose Monitoring in Type 2 diabetes (NENC guidance):			
Diet & exercise only or treatment with: <i>metformin, pioglitazone, gliptins, GLP-1 receptor agonists, SGLT2 inhibitors</i>	Treatment with: <i>Sulfonylureas and/or other treatment</i>	Treatment with: <i>Basal insulin plus oral medication</i>	Treatment with: <i>Twice daily pre-mixed insulin</i>
HbA1c is the outcome measure. Routine blood glucose testing not recommended. Short-term testing <i>may</i> be required: - during illness - when therapy is changed - post-prandial hyperglycaemia	Increased risk of hypoglycaemic episodes compared with other non-insulin therapies. Individual assessment required. Testing should be considered for: - symptomatic or suspected hypoglycaemia - evaluating lifestyle changes - new or increased treatment - where required for driving or operating machinery.	Fasting glucose should be tested once a day before breakfast to titrate basal insulin plus once per day at different times to identify periods of hypo and hyperglycaemia. Once blood glucose is within target range and very stable, testing frequency can sometimes be reduced to two to three times per week.	Test twice a day at various times to include pre and post-prandial and pre-bedtime blood glucose monitoring. Once blood glucose is within target range and very stable, testing frequency can sometimes be reduced to two to three times per week. Always test before driving
If corticosteroids are co-prescribed - test at midday, before evening meal and two hours after evening meal			
Treatment with multiple daily insulin injections should be as for Type 1 diabetes			

Generic	Brand	Timing of administration
Biguanides		
Metformin	Glucophage Glucophage MR	With or after food (main meals) With or after evening meal
Sulphonylureas (also available: glibenclamide, tolbutamide)		
Gliclazide	Diamicon Diamicon MR	With main meal(s) of the day With breakfast
Glimepiride	Amaryl	Shortly before or with main meal
Glipizide	Minodiab	Shortly before food
Prandial glucose regulators (also available: nateglinide)		
Repaglinide	Prandin	Within 30 mins (usually 15 mins) prior to main meals
Alpha-glucosidase inhibitors		
Acarbose	Glucobay	Chew with first mouthful or swallow whole before food
Thiazolidinediones (“glitazones”)		
Pioglitazone	Actos	With or after food
DPP-4 inhibitors (also available: vildagliptin)		
Alogliptin	Vipidia	With or after food
Linagliptin	Traienta	
Saxagliptin	Onglyza	
Sitagliptin	Januvia	With or after food
Sodium-glucose co-transporter (SGLT2) inhibitors (also available: sotagliflozin)		
Canagliflozin	Invokana	Once daily, before first meal of the day
Dapagliflozin	Forxiga	Once daily at any time of the day, with or without food
Empagliflozin	Jardiance	With or after food
Ertugliflozin	Steglatro	Taken in the morning

Generic		Brand	Timing of administration
Combination products			
Pioglitazone / metformin		Competact	With or just after food
Vildagliptin / metformin		Eucreas	With or just after food
Sitagliptin / metformin		Janumet	With food
Alogliptin / metformin		Vipdomet	With food
Linagliptin / metformin		Jentadueto	With food
Saxagliptin / metformin		Komboglyze	With food
Canagliflozin / metformin		Vokanamet	With food
Dapagliflozin / metformin		Xiqduo	With food
Saxagliptin / dapagliflozin		Qtern	Any time of day, with or after food
Empagliflozin / linagliptin		Glyxambi	With or without food at any time of day
Empagliflozin / metformin		Synjardy	With food
Generic	Brand	Timing of administration	
Glucagon-like peptide-1 (GLP-1) receptor agonists (“ incretin mimetics”)			
Dulaglutide	Trulicity	Once-weekly injection , with or without food at any time of day	
Exenatide	Bydureon	Once-weekly injection on the same day each week, with or without food at any time of day; day of administration can be changed if last dose was administered at least three days before.	
Liraglutide	Victoza	Daily injection at any time, independent of meals; timing can be changed without dose adjustment, but preferable around the same time of day once the most convenient time has been chosen.	
Semaglutide	Ozempic Rybelsus	Once-weekly injection at any time of day, with or without meals. Tablets: on empty stomach (1 hour before or 2 hours after food)	
Dual glucose-dependent insulintropic polypeptide (GIP) & GLP-1 receptor agonist			
Tirzepatide	Mounjaro	Once-weekly injection at any time of day, with or without meals.	