

Starting Metformin

GP and Practice Nurse guide to Patient Information Leaflet

Unless contraindicated, metformin should in Type 2 diabetes always be the oral hypoglycaemic agent that is initiated as first line. It is generally well-tolerated, not associated with hypoglycaemia or weight gain, and generally safe in the short and long term. Evidence has shown that metformin may offer benefits against cardiovascular disease in type 2 diabetes.

NICE advises that in adults with type 2 diabetes if HbA1c rises to 48mmol/mol on lifestyle interventions: Offer standard release metformin in addition. [1]

In UK Prospective Diabetes Study (UKPDS) this benefit was achieved at a relatively high dose of metformin (more than three quarters of patients received at least 1700 mg/day) so generally it is recommended that patients are titrated to a maximum tolerated dose. [2]

Thus it is generally recommended that where clinically appropriate patients are titrated to a daily dose of metformin 2000mg, divided into two doses.

Caution needs to be exercised in prescribing for patients who have renal impairment and in those with an increased risk of lactic-acidosis [see monitoring section below for further details]. Although metformin alone does not cause hypoglycaemia consideration needs to be given to hypoglycaemia risk in those patients who are also taking agents that can cause hypoglycaemia such as sulphonylureas (SU) and insulin, in which case metformin dose maximisation might increase this risk.

NB: An HbA1c is not required before titration except when patients are also taking agents such as SU or insulin.

The enclosed metformin patient information leaflet may be useful in helping patients to self- titrate in a timely manner.

Adjusting Metformin

Patients should be advised to increase their dose gradually (e.g. by 500mg every 1-2 weeks). It can be done more slowly if any side effects are experienced.

Emphasise to patients that if symptoms occur, they can return to the previous dose and if symptoms settle, try again to increase the dose.

Metformin MR can be used for patients that are unable to tolerate standard metformin.

NB: Any tolerated dose is beneficial.

Initiation and Monitoring

Renal function:

As metformin is excreted by the kidney eGFR levels should be determined before **initiating** treatment and regularly thereafter.

Initiation: [3,4]

- Metformin may be used in patients with moderate renal impairment- eGFR 45-59ml/min but use with caution in the presence of other conditions that may increase the risk of lactic acidosis such as CCF, hepatic impairment, alcohol misuse, and advanced age.
- Consider reducing/half the dose if eGFR <45ml/min (Total maximum daily dose 1000mg divided into 2 or 3 doses daily)
- **Stop metformin if eGFR<30ml/min**

Monitoring:

- Annually in patients with normal renal function
- Minimum 2-4 times a year in patients with eGFR at the lower limit of normal and in elderly patients.

All patients should be informed about **sick day rules** when they are taking metformin because although extremely rare in practice, the risk of lactic acidosis is increased in conditions associated with systemic hypoxaemia such as sepsis, dehydration, cardiorespiratory disease and major surgery. The risk is even greater if there is renal impairment. **Patients should therefore be told to stop metformin during an episode of acute illness and to restart it only after seeking advice.**

Diabetic patients taking ACEIs, ARBs, diuretics or SGLT inhibitors should be told to stop these drugs as well. It may be necessary to review renal function before resuming them.

References

1. National Institute for health and Care Excellence. 2015. *Algorithm for blood glucose lowering therapy in adults with type 2 diabetes*. [ONLINE] Available at: <https://www.nice.org.uk/guidance/ng28/resources/algorithm-for-blood-glucose-lowering-therapy-in-adults-with-type-2-diabetes-2185604173>. [Accessed 5 April 2017].
2. John H B Scarpello - The British Journal of diabetes and vascular disease. 2001. *Optimising dosing strategies for maximising the clinical response of metformin in type 2 diabetes*. [ONLINE] Available at: <https://secure.sherbornegibbs.com/bjdvd/pdf/975.pdf>. [Accessed 2 April 2017].
3. Summary of product Characteristics for Glucophage (metformin) <http://www.medicines.org.uk/emc/medicine/1043> [Accessed 2 April 2017].
4. NICE Clinical Knowledge Summary (updated July 2016) <https://cks.nice.org.uk/diabetes-type-2#!prescribinginfosub> [Accessed 2 April 2017].

Version	1.0
Developed by:	HVCCG Pharmacy and Medicines Optimisation Team and Herts Valleys CCG Diabetes Clinical Forum. With thanks to PrescQIPP and NHS Aylesbury Vale and Chiltern CCG.
Date Ratified:	February 2018 (Medicines Optimisation Clinical Leads group); April 2018 (Primary Care Commissioning Committee)
Review date	February 2020