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Type 2 Diabetes

Stopping Smoking	→	Consider referral to smoking cessation
BMI > 25 kg m² (Set a weight loss target of a 5-10% reduction)	→	Consider referring for weight management advice
Control BP to <140/80mmHg (Monitor monthly if BP > 150/90mmHg) (<130/80mmHg if kidney, eye or cerebrovascular damage)	→	See NHS Rotherham hypertension guidelines
If microalbuminuria/ proteinuria present.	→	Ramipril 10mg daily Start at 1.25mg daily, titrate to the maximum tolerated dose. (If ramipril is not tolerated consider Irbesartan 150mg increased to 300mg daily).
Aspirin 75mg daily Only if patient has had an MI or has symptoms of cardiovascular disease (Secondary prevention only).	→	• If dyspepsia or increased risk or GI bleeding add Lansoprazole 15mg daily. • If aspirin allergic consider Clopidogrel 75mg daily see antiplatelet guidelines.

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Lipid Management in type 2 diabetes

Calculate 10 year CVD risk annually for all type 2 diabetes patients. Using QRISK

Is 10 year risk > 10%*

Yes

Initiate
Atorvastatin 20mg daily

Monitor lipid profile 3 months after initiation is there a > 40% reduction in non-HDL cholesterol

Yes

- Maintain current statin prescription

*Use clinical judgement if;

- Over 40yrs of age?
- Diabetic for more than 10 years?
- Established nephropathy?
- Other CVD risk Factors?

Consider atorvastatin 20mg daily if CVD < 10%

No

Reassess in one year

No

- Discuss adherence and timing of statin dose
- Optimise diet and lifestyle measures
- Consider increasing Atorvastatin if not already on maximal dose

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Type 2 Diabetes

Before starting lipid therapy take at least 1 lipid sample, this need not be fasting but should include

- Total cholesterol
- HDL cholesterol
- non-HDL cholesterol
- Triglycerides

Also Check

- Smoking status
- Alcohol status
- BMI
- Liver transaminases
- TSH

Refer for specialist advice if;

- Total cholesterol is above 9mmol\litre Or non-HDL cholesterol is above 7.5 mmol\litre.
- Triglyceride concentration above 20mmol\litre (urgent referral)

Consider familial hypercholesterolaemia and refer if

- Total cholesterol more than 7.5 mmol\litre
- A family history of premature coronary heart disease

Triglyceride concentration

- Between 10 and 20mmol\litre, repeat with a fasting sample after 5 days but within 2 weeks)
- Between 4.5 and 9.9 mmol\litre CVD risk may be underestimated

Exclude common causes of secondary dyslipidaemia such as

- Excess alcohol
- Uncontrolled diabetes
- Hypothyroidism
- Liver disease
- Nephrotic syndrome

Always use Non-HDL cholesterol for all risk assessment calculations
= Total Cholesterol – HDL Cholesterol

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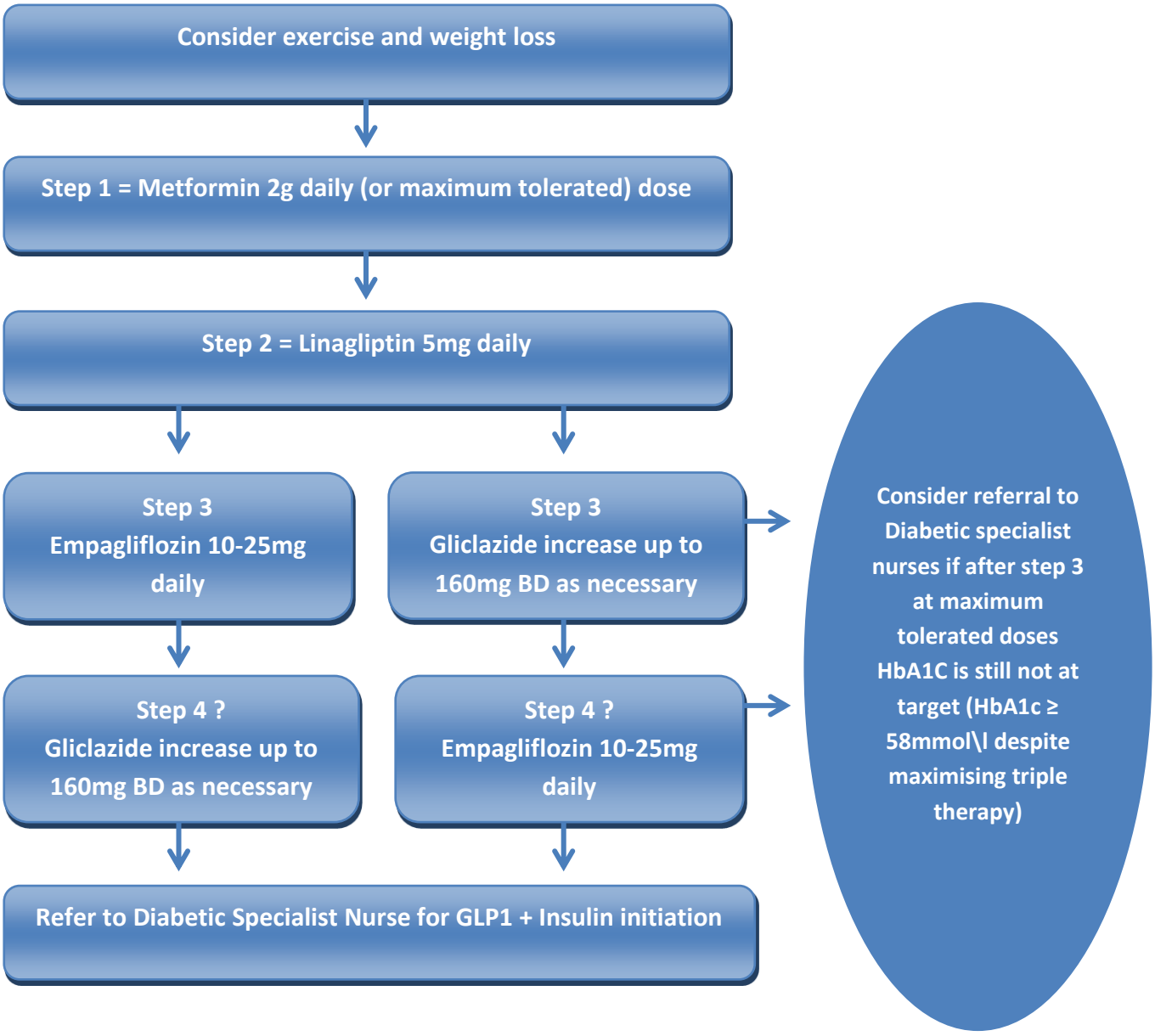
HbA1C management pathway

Recommended First Line Choices



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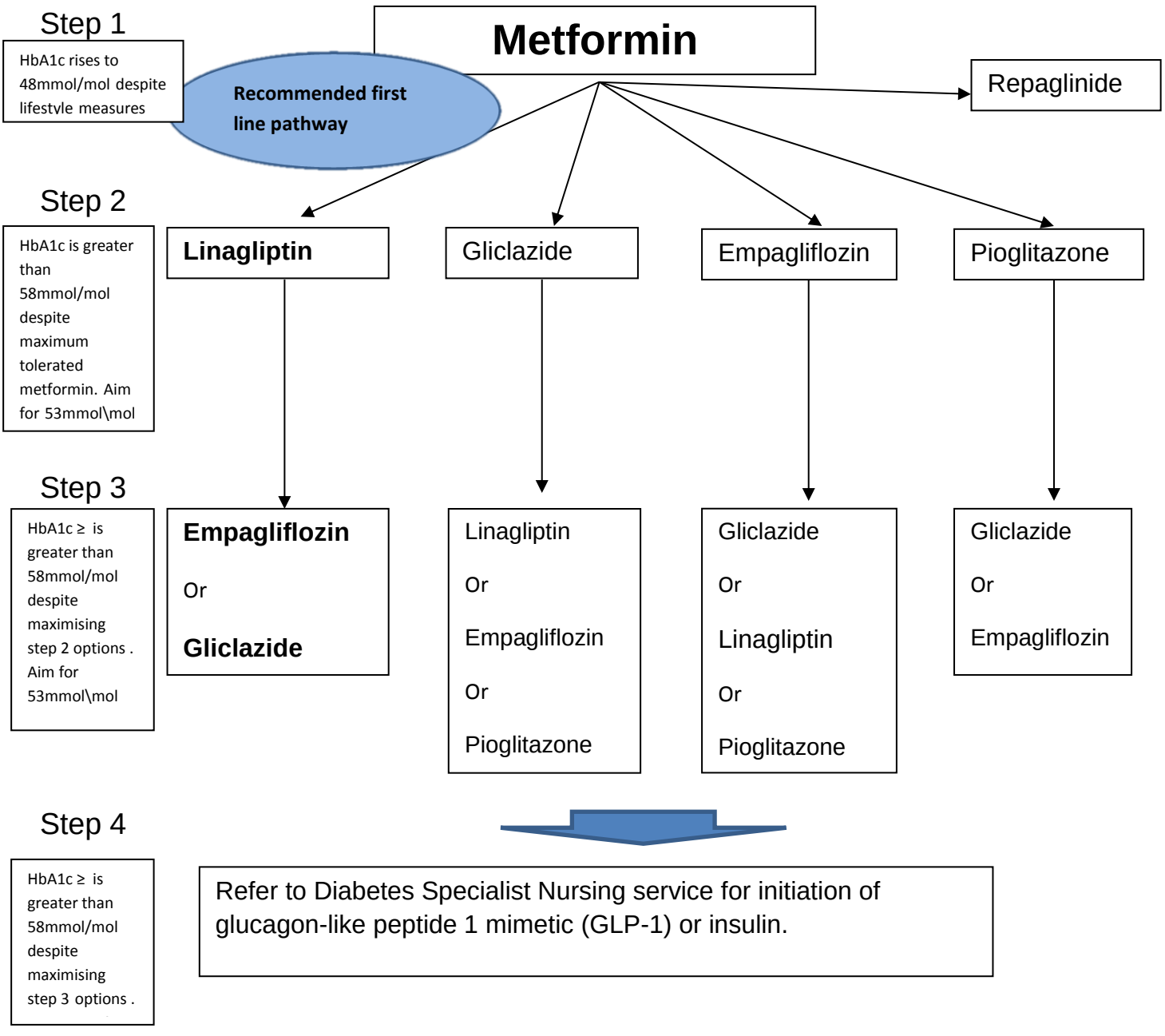
Type 2 Diabetes
Blood Glucose Management
pathway options



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Oral Diabetes treatment Pathways

Recommended First Line Choice

Step 1		Step 2		Step 3	Advantages /disadvantages
HbA1c rises to 48mmol/mol despite lifestyle measures		**HbA1c is greater than 58mmol/mol despite maximum tolerated metformin. Aim for 53mmol\mol**		**HbA1c is greater than 58mmol/mol despite maximising step 2 options . Aim for 53mmol\mol**	
Metformin Initially 500mg once a day for a least a week increasing to 500mg twice a day for a week and to 500mg three times a week . Maximum dose 2g a day in divided doses GI intolerance with metformin consider Metformin M\R if unable to tolerate ordinary tablets Reduce metformin dose if eGFR ≤ 45ml\min Stop metformin if eGFR ≤ 30ml\min Metformin is associated with weight loss		**Linagliptin** 5mg once a day Consider using the linagliptin+metformin combination preparation (2.5mg\850mg) (2.5mg\1000mg) One tablet twice a day. Linagliptin is weight neutral Linagliptin and **pancreatitis** = increased risk discontinue if severe abdominal pain If linagliptin unsuitable consider Empagliflozin or Gliclazide or pioglitazone		**Empagliflozin** 10mg once a day increasing to 25mg once a day. Not recommended if over 85 years of age. Reduce dose of empagliflozin if eGFR ≤ 60ml\min Stop empagliflozin if eGFR ≤ 45ml\min Empagliflozin is associated with weight loss Empagliflozin is associated with an **increased incidence of UTIs** Empagliflozin; be mindful of **volume depletion** especially in elderly and if diuretics are co-prescribed.	**Recommended first line pathway** Self Monitoring of Blood Glucose (SMBG) not necessary with this combination All drugs associated with positive or neutral cardiovascular outcomes.

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Oral Diabetes treatment Pathways

Alternative Options

Step 1 **HbA1c rises to 48mmol/mol despite lifestyle measures**		Step 2 **HbA1c is greater than 58mmol/mol despite maximum tolerated metformin. Aim for 53mmol\mol**		Step 3 **HbA1c is greater than 58mmol/mol despite maximising step 2 options . Aim for 53mmol\mol**	Advantages /disadvantages
Metformin Initially 500mg once a day for a least a week increasing to 500mg twice a day for a week and to 500mg three times a week . Maximum dose 2g a day in divided doses GI intolerance with metformin consider Metformin M\R if unable to tolerate ordinary tablets Reduce metformin dose if eGFR ≤ 45ml\min Stop metformin if eGFR ≤ 30ml\min Metformin is associated with weight loss		**Linagliptin** 5mg once a day Consider using the linagliptin+metformin combination preparation (2.5mg\850mg) (2.5mg\1000mg) One tablet twice a day. Linagliptin is weight neutral Linagliptin and **pancreatitis** = increased risk discontinue if severe abdominal pain If linagliptin unsuitable consider Empagliflozin or Gliclazide or pioglitazone		**Gliclazide** Initially 40-80mg daily, increase up to 160mg once a day. Doses higher than 160mg must be given as divided doses. Maximum dose 320mg a day. Gliclazide is associated with significant **weight gain** A 2-4kg weight gain is recognised as a consequence of sulphonylurea therapy; in some patients this may exceed 10kg. Patients should be re-assessed and dietary compliance reaffirmed before initiation Sulphonylureas are considered to be cardiovascular neutral	SMBG necessary with gliclazide see SMBG guidelines **Hypoglycaemia with gliclazide** All drugs associated with positive or neutral cardiovascular outcomes

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Oral Diabetes treatment Pathways					
Alternative Options					
Step 1 **HbA1c rises to 48mmol/mol despite lifestyle measures**		**Step 2** **HbA1c is greater than 58mmol/mol despite maximum tolerated metformin. Aim for 53mmol\mol**		**Step 3** **HbA1c is greater than 58mmol/mol despite maximising step 2 options . Aim for 53mmol\mol**	**Advantages /disadvantages**
Metformin Initially 500mg once a day for a least a week increasing to 500mg twice a day for a week and to 500mg three times a week . Maximum dose 2g a day in divided doses GI intolerance with metformin conside Metformin M\R if unable to tolerate ordinary tablets Reduce metformin dose if eGFR ≤ 45ml\min Stop metformin if eGFR ≤ 30ml\min Metformin is associated with weight loss		**Repaglinide** Adult 18-74 years initially 500 micrograms a day-adjusted according to response at intervals of 1-2 weeks . Maximum dose 16mg a day 4mg maximum as a single dose. Doses to be taken 30 minutes before main meals.			SMBG necessary with repaglinide see SMBG guidelines Hypoglycaemia with repaglinide. **Repaglinide is only licensed as monotherapy or with metformin, if moving to a third agent repaglinide has to be discontinued and an alternative established before a third agent can be added.**

Step 2 alternatives to Linagliptin	
Empagliflozin 10mg once a day increasing to 25mg once a day. Not recommended if over 85 years of age. Reduce empagliflozin if eGFR ≤ 60ml\min Stop empagliflozin if eGFR ≤ 45ml\min Empagliflozin is associated with weight loss Empagliflozin is associated with an increased incidence of UTIs (Common 1 in 10 to 1in 100) Empagliflozin; be mindful of volume depletion especially in elderly and if diuretics are co-prescribed (uncommon side effect between 1 in 100 to 1 in 1000) The sodium glucose co-transporters 2 inhibitors are all new drugs and their adverse effect profiles are still developing. Drugs within this class have been recently implicated in causing acute kidney injury especially if used in combination with other drugs known to cause acute kidney injury (ACE, ARBs, NSAIDS Diuretics) also there have been reports of lower limb amputations associated with SGLT2 use Empagliflozin has to date been implicated with these issues Empagliflozin has demonstrated a cardioprotective effect.	SMBG not necessary
Gliclazide Initially 40-80mg daily, increase up to 160mg once a day. Doses higher than 160mg must be given as divided doses maximum dose 320mg a day. **Weight Gain** Gliclazide is associated with significant weight gain. A 2-4kg weight gain is recognised as a consequence of sulphonylurea therapy; in some patients this may exceed 10kg. Patients should be re-assessed and dietary compliance reaffirmed before initiation **CVS Risk** Sulphonylureas are considered to be cardiovascular neutral	SMBG is necessary if gliclazide is used in combination with all other drugs. See NHS Rotherham CCG SMBG guidelines.
Pioglitazone Although included in the NICE diabetes guidance a prescriber needs to have a clear rational for initiating pioglitazone, after considering the other available agents and the established adverse side effect profile of pioglitazone Initially 15-30mg once daily. Maximum dose 45ng once a day	SMBG not necessary

CVS Risk
Pioglitazone associated with negative cardiac outcomes.
Pioglitazone increased incidence of heart failure and is contraindicated in existing heart failure

Weight gain
Pioglitazone associated with significant weight gain

Points to consider
Pioglitazone is associated with;

- Atypical fractures
- Increased incidence of bladder cancers, advise patients before starting, investigate all haematuria, dysuria, or urinary urgency, Assess patients risk of bladder cancer before starting
- Pioglitazone check liver function before starting and at each review. Rare cases of elevated liver enzymes and hepatocellular dysfunction have occurred in post-marketing experience. Although in very rare, cases with fatal outcome has been reported, causal relationship has not been established.

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Alternative Options

If Metformin not tolerated

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Linagliptin 5mg once a day Linagliptin is weight neutral Linagliptin and pancreatitis discontinue if severe abdominal pain		**Empagliflozin** 10mg once a day increasing to 25mg once a day. Not recommended if over 85 years of age. Reduce empagliflozin if eGFR ≤ 60ml\min Stop empagliflozin if eGFR ≤ 45ml\min Empagliflozin is associated with weight loss Empagliflozin is associated with a increased **incidence of UTIs?** Empagliflozin; be mindful of **volume depletion** especially in elderly and if diuretics are co-prescribed.		**Gliclazide** Initially 40-80mg daily, increase up to 160mg once a day. Doses higher than 160mg must be given as divided doses maximum dose 320mg a day. Gliclazide is associated with significant **weight gain** A 2-4kg weight gain is recognised as a consequence of sulphonylurea therapy; in some patients this may exceed 10kg. Patients should be re-assessed and dietary compliance reaffirmed before initiation Sulphonylureas are considered to be cardiovascular neutral	SMBG necessary with gliclazide see SMBG guidelines **Hypoglycaemia with gliclazide** All drugs associated with positive or neutral cardiovascular outcomes been reported

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Alternative Options

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