Algorithm for the Management of Type 2 Diabetes

NHS
Humber and North Yorkshire
Integrated Pharmacy and Medicines Optimisation Committee

Step 1

Initial Treatment

Target HBA1C 48 **mmol/mol**

Provide rescue therapy for symptomatic hyperglycaemia, consider insulin or a sulfonylurea and review when blood glucose control has been achieved. Offer lifestyle advice, referral to local structured education programme and **Metformin ± SGLT2i** (with proven cardiovascular benefit).

Not at high CVD risk

- Metformin

If metformin contraindicated:

- a DPP-4 inhibitor or
- a sulfonylurea or
- a SGLT2 inhibitor or
- pioglitazone

High risk of CVD QRISK2 of 10% or higher

- Metformin

Consider SGLT2 inhibitor when metformin tolerability is confirmed.

If metformin contraindicated:

- SGLT2 inhibitor monotherapy

Chronic HF or established atherosclerotic CVD*

- Metformin

Offer SGLT2 inhibitor when metformin tolerability is confirmed.

If metformin contraindicated:

- SGLT2 inhibitor monotherapy

*Established atherosclerotic CVD includes coronary heart disease, ACS, MI, stable angina, coronary/other revascularisation, ischaemic stroke, TIA and PAD

Step 2

Further Treatment

Target HBA1C 53-58 **mmol/mol** (or individually agreed threshold)

If HBA1c not controlled below individually agreed threshold, consider switching or adding treatments **up to triple therapy oral regimes**.
If cardiovascular risk or status change at any point, consider starting an **SGLT2 inhibitor**.

Dual and triple therapy regimes (with metformin)

Consider combinations with:

- a DPP-4 inhibitor or
- a sulfonylurea or
- a SGLT2i (if not already prescribed) or
- pioglitazone

If metformin contraindicated

Consider a combination of 2 oral treatments before moving to step 3.
If HBA1c is not controlled below individually agreed threshold, **do not initiate a third oral treatment.**

For information regarding choice of oral treatment, see pages 2 & 3

Step 3

GLP-1/ GIP-GLP1 dual agonist / Insulin

Target HBA1C 53-58 **mmol/mol** (or individually agreed threshold)

If oral drug treatments are not effective, not tolerated or contraindicated, consider switching one drug for a **GLP-1 mimetic, a GIP/GLP1 dual agonist or consider starting insulin based treatment.** If HBA1c not controlled after injectable treatments **refer to specialist diabetes team for advice.**

If triple therapy with metformin and 2 other oral drugs is not effective, not tolerated or contraindicated

- consider switching one drug for a GLP-1
- If GLP-1 is not tolerated, ineffective or unavailable consider a dual GLP1/GIP agonist ***(e.g., tirzepatide** as per NICE TA 924)*
  - Green /Amber SR for North Yorkshire and York GP Practices
  - Amber 1 for Humber GP Practices

If metformin is contraindicated or not tolerated and dual therapy with 2 oral drugs has not continued to control HbA1c to below the person's individually agreed threshold for intervention

- consider insulin-based treatment (with or without other drugs)

For further information regarding GLP-1/insulin treatment, see pages 4 & 5 ***GLP1 Supply Issues –SPS Prescribing GLP-1s & SPS Prescribing Insulin***

Medication choice / Decision making support

Assess the response of any drug at 3-6 months – if there is no reduction of at least 6mmol/mol in HbA1c in 6 months or weight loss if using GLP-1 or if there are any concerns regarding side effects **stop** the chosen medication and move to an alternative class

Agent	Sulfonylurea Gliclazide	DPP4 inhibitors Sitagliptin, Linagliptin, Alogliptin	Thiazoldinedione (TZD) Pioglitazone	SGLT2i Dapagliflozin, Empagliflozin, Canagliflozin	GLP1 Liraglutide, Semaglutide, Dulaglutide
Positive reasons to use this class	▪ Low cost ▪ Rapid clinical effect ▪ Long established profile ▪ Agent of choice in Monogenic Diabetes (MODY)	▪ Low hypoglycaemia risk ▪ Weight neutral ▪ Licensed in people with CKD (may require dose reduction) ▪ Fewer drug interactions	▪ Low hypoglycaemia risk ▪ Reduces insulin resistance ▪ Slower progression to insulin treatment	▪ Low hypoglycaemia risk ▪ Weight loss ▪ Proven cardiovascular benefits ▪ Proven renal benefits	▪ Low hypoglycaemic risk ▪ Proven reduction in cardiovascular risk.
Reasons not to use this class	▪ Risk of hypoglycaemia (increased in CKD) ▪ Weight gain ▪ Potential need for blood glucose monitoring in patients who drive or increased risks of hypoglycaemia	▪ Relatively low potency and moderate cost	▪ Weight gain ▪ Establish diabetic retinopathy ▪ Diabetic maculopathy ▪ Slow onset of action ▪ Contraindicated in CCF, LVF ▪ Risk of fractures (women) ▪ Small increase in incidence of bladder cancer) ▪ Moderate cost ▪ Do not use with insulin, unless advised by secondary care specialists	▪ UTI, genital thrush ▪ Moderate cost ▪ Risk of DKA – need to discuss Sick day rules when starting therapy	▪ GI symptoms (e.g nausea, vomiting diarrhoea) ▪ History of pancreatitis ▪ Risk of hypoglycaemia if used with SU and/or Insulin. Continue only if after 6 months and HbA1C reduction 11mmol/mol and/or weight loss >3%
Good choice for	▪ Use as rescue remedy for symptomatic hyperglycaemia ▪ Patients needing short term steroid use	▪ In people whom further weight gain would cause or exacerbate significant problems associated with high body weight ▪ Frail older people ▪ Any person for whom hypoglycaemia is a particular concern	▪ Most likely to benefit people who wish to delay progression to insulin (e.g. group 2 LGV and C1 driving licence holders)	▪ Obesity ▪ In those whom further weight gain would cause or exacerbate significant problems associated with high body weight ▪ People for whom hypoglycaemia is a particular concern	▪ Patients with high BMI >35 or established ischaemic heart disease and/or high cardiovascular risk
Monitoring required	▪ home glucose monitoring in patients who drive or increased risks of hypoglycaemia	▪ Review U & E annually	▪ Review urine dip for blood annually ▪ Review LFTs annually ▪ Stop if heart failure/fluid overload develops	▪ Review U & E annually ▪ Ensure Sick Day rules discussed when commencing therapy	▪ Review U&Es annually ▪ If acute abdominal pain check amylase

Management of Diabetes in the over 75 age group

Functionally Independent	Functionally Dependant	Frail / Dementia
People living independently with none / minimal care giver support	Impairment of activities of daily living e.g. bathing, dressing and personal cares. May need additional medical or social care	Increased risk of fall or persons living in care facilities, restricted mobility and significant fatigue. Cognitive impairment, memory problems and unable to self-care
Target HbA1c **53 – 59 mmol/mol**	**Target Hba1c** **53 – 64 mmol/mol** **Capillary blood glucose target:** **6 – 12mmol/L**	**Target HbA1c** **<75 mmol/mol** **Capillary blood glucose target:** **7 – 13mmol/L**
As per Algorithm for management of type 2 diabetes but consideration around: Metformin 1st line unless renal impairment. Titrate slowly to avoid GI side effects. Sulfonylurea can be considered for acute illness or on steroids (blood glucose monitoring may be required) Use in caution as may cause hypoglycaemia Consider DPP4i after Metformin /SGLT2 if not symptomatic with hyperglycaemia as lowest risk of hypoglycaemia	**Aim for top of target (64 mmol/mol) to reduce risk of hypoglycaemia. Follow guidelines as for functionally dependant but consideration around:** Stop Sulfonylureas if Hba1c < 53 mmol/mol as increased risk of hypoglycaemia in this group Consider simplifying regimens as third party may need to administer. Use oral agents with low risk of hypoglycaemia If insulin required, in type 2 diabetes, consider once daily in the morning. Intermediate (Isophane insulin) 1st choice for example Humulin I or Human Insulatard	**Ensure simplifying regimens. Avoidance of hypoglycaemia a priority** Consideration of education / support to care givers or if person with diabetes is institutionalised. Contact Specialist Diabetes team for advice If acutely unwell or hyperglycaemic and/or on steroids consider substituting all oral agents for insulin. Review use of insulin once acute event has passed • For end of life care follow local guidelines.

GLP-1 & GIP/GLP-1 dual agonist Initiation

***** GLP-1 Supply Issues – See SPS Prescribing GLP-1s *****

When to consider initiation of a GLP-1

Treatment with GLP-1s is associated with the prevention of weight gain and possible promotion of weight loss:
GLP-1s should be considered in people with Type 2 diabetes and

- a body mass index of 35 kg/m2 or higher
- In those with a body mass index of less than 35 kg/m2 where:
  - Insulin treatment would be unacceptable for significant occupational reasons
  - Where weight loss would benefit other significant obesity related co-morbidities

Considerations before initiating

- Persistent and severe abdominal pain with or without vomiting may be a sign of acute pancreatitis. If this is suspected, the GLP-1 should be stopped, and if confirmed, not be resumed
- Not recommended for individuals with severe gastro-intestinal problems.
- Individuals receiving a GLP-1 in combination with sulfonylurea may be at increased risk of hypoglycaemia, therefore consider a reduction in the dose of sulfonylurea
- There are no specific restrictions for drivers with Class 1 licences (cars and motorcycles) when being treated with a GLP-1. Normal precautions to avoid low blood glucose when driving apply.
- Not recommended during pregnancy or where pregnancy is planned, or for nursing mothers
- Liraglutide, dulaglutide and semaglutide can be used in severe renal impairment or eGFR down to 15 ml/min/1.73 m^2)

Treatment options

Daily options:

- **Liraglutide (Victoza**) 0.6mg daily for 1 week, increasing to 1.2mg thereafter – option to increase to 1.8mg if required.
- **Semaglutide (Rybelsus)** 3mg oral daily tablet for 1 month, increasing to 7mg for 1 month and then 14mg as maintenance if necessary. Note **interaction between oral semaglutide and levothyroxine** – Consider monitoring thyroid parameters when co-prescribed or consider injectable GLP-1. Patients should wait at least 30 minutes after a dose before eating, drinking, **or taking other oral medicines**.

Once weekly options:

- **Dulaglutide (Trulicity)** 1.5mg once weekly, can increase to 3mg after 4 weeks then 4.5mgs after another 4 weeks if necessary.
- **Semaglutide (Ozempic)** 0.25mg weekly for 4 weeks, increasing to 0.5mg weekly for 4 weeks then 1mg weekly as maintenance dose if necessary.

NICE recommends that treatment with GLP-1s is continued only if HbA1c has reduced by at least 11 mmol/mol [1%] and a weight loss of 3% is achieved within 6 months of commencing treatment

Other treatment options

If GLP-1 is not tolerated, ineffective or unavailable consider a **GIP/GLP1 dual agonist.**
Tirzepatide Injections (Mounjaro) 2.5 mg once weekly for 4 weeks, then increased to 5 mg once weekly for at least 4 weeks, then specialist recommendation for doses above 5mg if HBA1c is not controlled.

Injectable Treatments

Insulin Initiation

*** GLP-1 Supply Issues – See SPS Prescribing Insulins ***

When to consider initiation of insulin

- Fail to reach glycaemic targets using diet and non-insulin therapies
- If the individual is symptomatic, including weight loss, polyuria, nocturia
- In steroid induced diabetes, when hyperglycaemia persists following max oral hypoglycaemic agents
- In the individual who is intolerant to non- insulin therapies

Before insulin therapy

- Reinforce dietary advice and lifestyle issues including smoking, alcohol
- Consider driving or employment issues
- Check ability to self-administer own insulin or will need support
- Ensure patient can monitor own blood glucose levels and understands management of hypoglycaemia (hypos) and sick day rules

Treatment options

Single injection of basal insulin with oral hypoglcaemics /GLP-1

Isophane (NPH) injected once daily e.g. Humulin I

Recommended in:

- Overweight BMI >30
- Patients with community/specialist care involvement on twice daily insulin change to Toujeo once daily should be considered
- Patients with no complications but where hypoglycaemia is unacceptable (for example over 75 years or learning disabilities)

Twice daily biphasic insulin regime with oral hypoglycaemics

Human Mixed Insulin first choice e.g. Humulin M3

Recommended in:

- first line in pts with HbA1c > 75 mmol/mol
- Regular lifestyles, consistent dietary intake
- Patient symptomatic and / or normal weight
- Significant post prandial glucose rise

Basal Bolus regime

Refer to specialist diabetes nursing team for advice and support in initiation

Ongoing management on insulin should include:

- Management of hypos including causes, symptoms, treatment and driving advice
- Advice on titration of insulin
- Sick day rules / illness management
- Annual inspection of injection sites, and advice on rotation of insulin injections
- Safe disposal of sharps
- General Driving Guidelines