Type 2 Diabetes Mellitus (T2DM) Adult Treatment Pathway

integrated working

NHS West Suffolk Clinical Commissioning Group

Target Blood Pressure 140/80mmHg (130/80 if complication present) ↔ **Target HbA_{1c} (48-53mmol/mol) 6.5-7.0% or agreed target** ↔ **Target Total Cholesterol <5mmol/L and LDL<3mmol/L**

HbA_{1c} ≥6.5% after 3-6months, initiate drug therapy:

Healthy diet, weight control and physical activity

Monotherapy

	Metformin
Efficacy[§]	High
Hypoglycaemia risk	Low
Weight	Neutral / Loss
Side effects	Nausea and diarrhoea
Costs (£)	Low

If metformin not tolerated, consider metformin modified release (MR)

HbA_{1c} ≥7.5% after ~3months, proceed to:

Dual therapy

Choose any ONE of the oral treatment options below to ADD to metformin

	Dipeptidyl peptidase-4 inhibitors (DPP4-i) *"ending gliptin"*	Sodium-glucose-cotransporter-2 inhibitors (SGLT2-i) *"ending flozin"*	Sulfonylurea (SU)	Thiazolidinediones (TZD)
Efficacy[§]	Intermediate	Intermediate	High	High
Hypoglycaemia risk	Low	Low	Moderate	Low
Weight	Neutral	Loss: ~2kg	Gain: ~1.5-2kg	Gain: ~4-5kg
Side effects	Rare	Genital thrush	Hypoglycaemia	Oedema, Heart failure, Fractures
Costs (£)	Medium	Medium	Low	Low
	Safe: low risk of hypo suggested dual combination with metformin	Safe: low risk of hypo suggested dual combination with metformin	Potent but consider risk of hypo + weight gain	Potent but consider risk of weight gain + other side effects

Injectable treatment to add to metformin

	Glucagon-like-peptide-1 receptor agonist (GLP-1)	Insulin (basal)
Efficacy[§]	High	Highest
Hypoglycaemia risk	Low	High
Weight	Loss: ~1-3kg	Gain: ~4-5kg
Side effects	Nausea *(initially)*	Hypoglycaemia
Costs (£)	High	Variable
	Potent: please discuss with Community Diabetes Nursing Service (CDNS)	Potent: please discuss with CDNS

HbA_{1c} ≥7.5% after ~3months, proceed to:

Triple therapy

Suggested oral triple combination based on safety

Metformin

SGLT2-i *"ending flozin"*

DPP4-i *"ending gliptin"*

Safest: low risk of hypo + weight neutral/loss

Contact Community Diabetes Nursing Service if HbA_{1c} not achieved after ~3 months of triple therapy.

[§]Efficacy is an estimated improvement in HbA_{1c}:
Highest Efficacy = >2% drop
High Efficacy = 1-2% drop
Intermediate efficacy = upto1% drop

Antidiabetics

Therapeutic class	Drug‡	Physiological action	Costs*	Additional Information
Biguanides	Metformin Metformin MR	• ↓ gluconeogenesis • ↑ peripheral glucose utilisation	Low	Most of these drugs should not be used if patient has significant renal and/or liver disease, for more details consult British National Formulary (BNF) or Summary of Product Characteristics (SPC).
Sulfonylurea (SU)	Gliclazide Glipizide	• Augments insulin secretion • Effective but needs some residual pancreatic β-cell activity	Low	
Thiazolidinediones (TZD)	Pioglitazone	• ↓ peripheral insulin resistance • ↓ blood glucose concentration	Low	
Dipeptidyl peptidase-4 inhibitors (DPP4-i)	Saxagliptin Vildagliptin Linagliptin Sitagliptin Alogliptin	• ↑ insulin secretion *(glucose-dependent)*	Medium	
Sodium-glucose-cotransporter-2 inhibitors (SGLT2-i)	Dapagliflozin Canagliflozin Empagliflozin	• Blocks renal glucose reabsorption • ↑ glucosuria	Medium	
Glucagon-like-peptide-1 receptor agonist (GLP-1)	Exenatide Exenatide MR Liraglutide Lixisenatide Dulaglutide	• ↑ insulin secretion *(glucose-dependant)*	High	

Prevention of Cardiovascular disease¥

Antihypertensives‡

Target Blood Pressure 140/80mmHg (130/80 if complication present)

Patients aged <55years

Step 1
Angiotensin-converting enzyme inhibitor (ACEi), if not tolerated **angiotensin II receptor blocker (ARB-II)**

Patients aged >55years or black of African or Caribbean family origin

Step 1
Calcium-channel blocker (CCB)

Step 2: ACEi / ARB-II + CCB

Step 3: ACEi / ARB-II + CCB + Thiazide-like diuretic

Step 4: Resistant hypertension
Add Alpha-blocker or Beta-blocker or Spironolactone

Lipid Management‡

Target Total Cholesterol <5mmol/L and LDL<3mmol/L
(the lower the better)

Primary prevention – Atorvastatin; if 10-year CVD risk ≥10% (QRISK2).
Secondary prevention – Atorvastatin

‡*Refer to SPC (http://www.medicines.org.uk/emc/default.aspx) or BNF (http://www.medicinescomplete.com/mc/index.htm) for all dosage, cautions, contraindications, interactions and adverse effects for each drug.*

¥*Refer to NICE pathways, treatment steps for hypertension. December 2015 and NICE guidance, cardiovascular disease: risk assessment and reduction, including lipid modification. July 2014 for full details.*

**Cost criteria per month at the usual dose:*
Low - ≤£10; Medium – ≤£40; High - >£50

References:
1. British National Formulary (BNF) 69 accessed from: www.medicinescomplete.com
2. Management of Hyperglycemia in Type 2 Diabetes, 2015: A Patient-Centered Approach. Update to a Position Statement of the American Diabetes Association and the European Association for the Study of Diabetes. Diabetes Care 2015; 38:140–149 | DOI: 10.2337/dc14-2441
3. NICE guidance. Blood glucose lowering therapy for type 2 diabetes. July 2014
4. NICE guidance. Type 2 diabetes in adults: management NG 28. December 2015
5. NICE guidance. Type 2 diabetes: newer agents. May 2009
6. NICE pathways. Treatment steps fir hypertension. December 2015.
7. NICE guidance. Cardiovascular disease: risk assessment and reduction, including lipid modification. July 2014.

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