Bristol Community Health

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Diabetes Specialist Nurses

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- DUK15 Healthcare Essentials
- NICE 9 Care Processes
- Medication used in Type 2 Diabetes
- Insulin types and actions
- Injection technique and guidance

NICE 9 Care Processes/15 Healthcare Essentials

1. HbA1c – at least annually
2. Blood Pressure
3. Lipids
4. Retinal Screening
5. Foot Screening
6. Kidney Function
7. Dietary and lifestyle advice/support
8. Emotional and psychological support
9. Offered Education if appropriate
10. Flu jab
11. Smoking Cessation
12. Discuss sexual problems
13. Pre pregnancy planning
14. High quality care if admitted to hospital
15. Access to specialist diabetes healthcare professionals

1. Hba1c
2. Blood Pressure
3. Lipids
4. Retinal Screening
5. Foot Screening
6. Kidney Function
7. ACR
8. BMI
9. Smoking Status

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Annual Review

- Exercise
- Travel
- Sick day rules
- Injection sites
- Medication review/concordance
- Needle length
- Contraception
- Driving
- Hypoglycaemia
- Blood Glucose Monitoring
- Goal setting/care planning
- Titration of medications
- Treatment planning
- Waist circumference
- Dementia Screen

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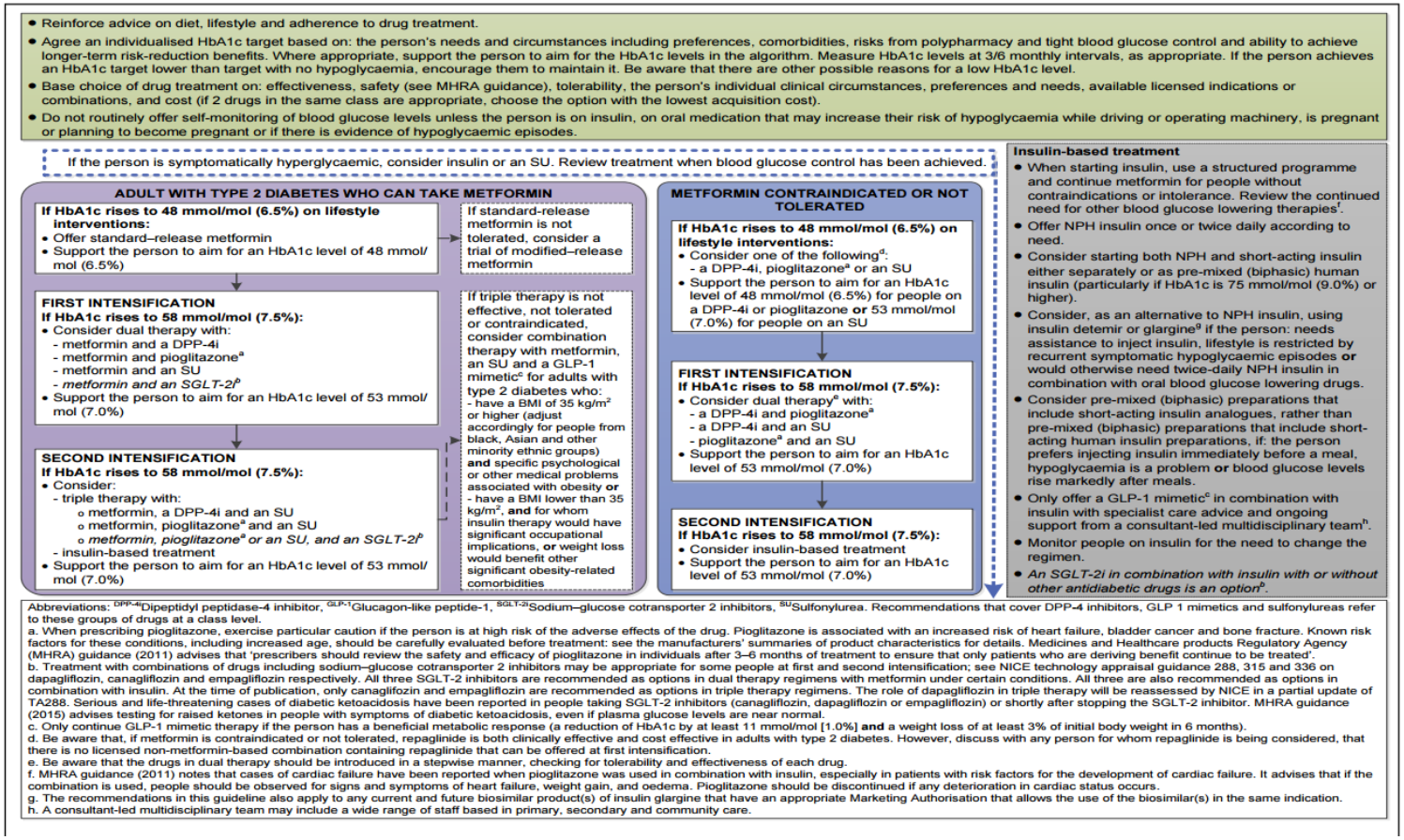
New NICE algorithm

NICE National Institute for Health and Care Excellence

Algorithm for blood glucose lowering therapy in adults with type 2 diabetes



Abbreviations: DPP-4i Dipeptidyl peptidase-4 inhibitor, GLP-1 Glucagon-like peptide-1, SGLT-2i Sodium–glucose cotransporter 2 inhibitors, SU Sulfonylurea. Recommendations that cover DPP-4 inhibitors, GLP 1 mimetics and sulfonylureas refer to these groups of drugs at a class level.

a. When prescribing pioglitazone, exercise particular caution if the person is at high risk of the adverse effects of the drug. Pioglitazone is associated with an increased risk of heart failure, bladder cancer and bone fracture. Known risk factors for these conditions, including increased age, should be carefully evaluated before treatment: see the manufacturers' summaries of product characteristics for details. Medicines and Healthcare products Regulatory Agency (MHRA) guidance (2011) advises that 'prescribers should review the safety and efficacy of pioglitazone in individuals after 3–6 months of treatment to ensure that only patients who are deriving benefit continue to be treated'.

b. Treatment with combinations of drugs including sodium–glucose cotransporter 2 inhibitors may be appropriate for some people at first and second intensification; see NICE technology appraisal guidance 288, 315 and 336 on dapagliflozin, canagliflozin and empagliflozin respectively. All three SGLT-2 inhibitors are recommended as options in dual therapy regimens with metformin under certain conditions. All three are also recommended as options in combination with insulin. At the time of publication, only canaglifozin and empagliflozin are recommended as options in triple therapy regimens. The role of dapagliflozin in triple therapy will be reassessed by NICE in a partial update of TA288. Serious and life-threatening cases of diabetic ketoacidosis have been reported in people taking SGLT-2 inhibitors (canagliflozin, dapagliflozin or empagliflozin) or shortly after stopping the SGLT-2 inhibitor. MHRA guidance (2015) advises testing for raised ketones in people with symptoms of diabetic ketoacidosis, even if plasma glucose levels are near normal.

c. Only continue GLP-1 mimetic therapy if the person has a beneficial metabolic response (a reduction of HbA1c by at least 11 mmol/mol [1.0%] **and** a weight loss of at least 3% of initial body weight in 6 months).

d. Be aware that, if metformin is contraindicated or not tolerated, repaglinide is both clinically effective and cost effective in adults with type 2 diabetes. However, discuss with any person for whom repaglinide is being considered, that there is no licensed non-metformin-based combination containing repaglinide that can be offered at first intensification.

e. Be aware that the drugs in dual therapy should be introduced in a stepwise manner, checking for tolerability and effectiveness of each drug.

f. MHRA guidance (2011) notes that cases of cardiac failure have been reported when pioglitazone was used in combination with insulin, especially in patients with risk factors for the development of cardiac failure. It advises that if the combination is used, people should be observed for signs and symptoms of heart failure, weight gain, and oedema. Pioglitazone should be discontinued if any deterioration in cardiac status occurs.

g. The recommendations in this guideline also apply to any current and future biosimilar product(s) of insulin glargine that have an appropriate Marketing Authorisation that allows the use of the biosimilar(s) in the same indication.

h. A consultant-led multidisciplinary team may include a wide range of staff based in primary, secondary and community care.

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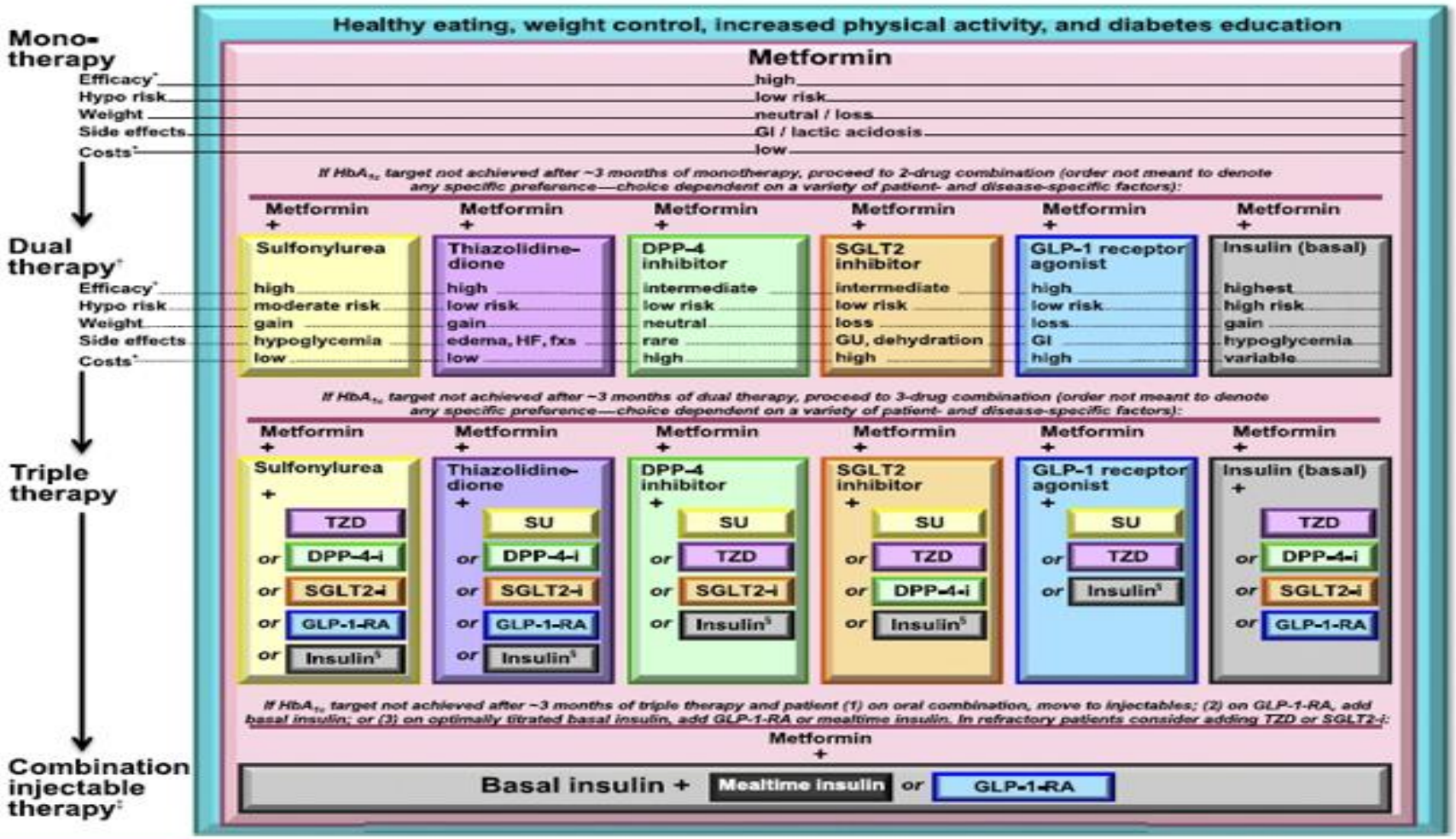
EASD/ADA Guidelines



Source: American Diabetes Association

Metformin

- Reduces hepatic glucose production and increases insulin sensitivity.
- Does not stimulate insulin production
- 1st line treatment unless rescue therapy required.

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Pioglitazone

- Pioglitazone reverses insulin resistance by causing changes at point of insulin resistance in the muscle and fat cells, increasing peripheral glucose uptake

- Reduces hepatic glucose output

DPP-4 Inhibitors (Gliptins)

- DDP4 Inhibits dipeptidylpeptidase 4 enzyme from breaking down GLP1(glucagon like peptide 1) which acts on the presence of food in the gut.

- This in turn increases insulin secretion and reduces hepatic glucose secretions

Sulphonylureas

Insulin secretagogues

- Sulphonylureas stimulates insulin secretion through the beta cell sulphonylurea receptor, and possibly through a direct effect on intracellular calcium transport.

Sodium – Glucose Cotransporter 2 Inhibitors (SGLT2)

- SGLT2 or Gliflozins
  - Blocks glucose reabsorption in the kidneys by reversibly inhibiting sodium glucose co-transporter 2 thereby causing increased glycosuria
  - Initial trials show reduction in HbA1c 5-10mmols/mol
  - Approx 2.5kg weight loss
  - Once daily medications

Glucagon Like Peptide 1 Agonist

- GLP-1 agonists
  - Increases glucose dependent insulin secretion
  - Suppresses inappropriately elevated glucagon secretion
  - Slows gastric emptying
  - Promotes feelings of satiety – crosses blood brain barrier

Treating the glucose

Replace Insulin

Increase insulin sensitivity

Enhance Endogenous Insulin Secretion

Weight loss
Exercise
Metformin
Glitazone

Approaches

Sulphonylureas
GLP-1 receptor Agonists
DPP4 Inhibitors
Prandial Glucose Regulators

Reduce Glucose Absorption

Increase Glucose Excretion

Acarbose

Always diet and lifestyle

SGLT2 Inhibition

Case Study 1

56 yr Female

T2DM 10yrs

BMI 36 – weight stable

Hba1c improved to 68mmol/mol on current treatment.

eGFR 80

Metformin 500mg 2 BD

Gliclazide 80mg 2 BD

Saxagliptin 5mg od

What treatment next?

Case Study 2

82 yr Male

T2DM 10yrs

BMI 29

HbA1c 65mmol/mol

eGFR falling now 48mmol/l

Metformin 500mg 2 bd

Gliclazide 160mg bd

Insulatard 22units daily

- Next steps?

Case Study 3

60yr Female

BMI 40

T2DM 15yrs

eGFR >90

Hba1c 72mmol/mol

Metformin 500mg 2bd

Gliclazide 80mg 1 bd

- What next?

Case Study 4

- 40 yr male
- BMI 29
- T2DM 10yrs
- Hba1c 75mmol/mol
- eGFR 73

- What next?

- Metformin 1g bd
- Saxagliptin 5mg