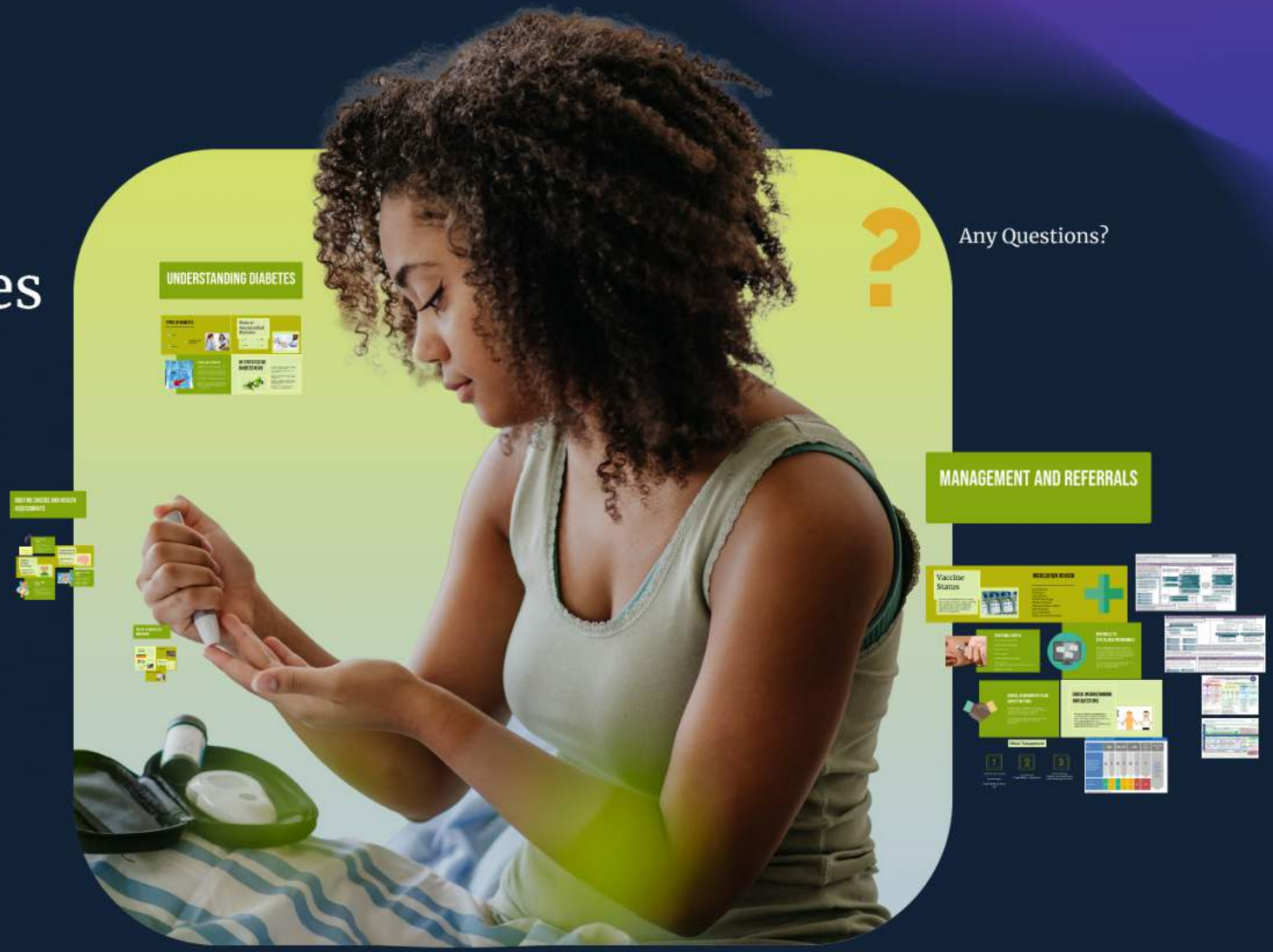
THE JOURNEY OF A DIABETES REVIEW

Understanding Type 2 Diabetes and Patient Management



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UNDERSTANDING DIABETES

TYPES OF DIABETES

1. TYPE 1
2. TYPE 2

GESTATIONAL DIABETES

Risks of Uncontrolled Diabetes

PHYSIOLOGY OVERVIEW

Diabetes type 2 is a condition where your body has trouble using sugar (or glucose) properly.

Normally, when you eat food, your body breaks it down into sugar, and insulin—a hormone made by your pancreas—helps move that sugar from your blood into your cells where it can be used for energy.

Think of insulin like a key that the sugar needs to get out of the blood stream and into your cells.

In type 2 diabetes, either your body doesn't make enough of those keys (insulin), or it doesn't respond the way it should despite having those keys. This means the sugar stays in your blood instead of moving into your cells.

UK STATISTICS ON DIABETES RISKS

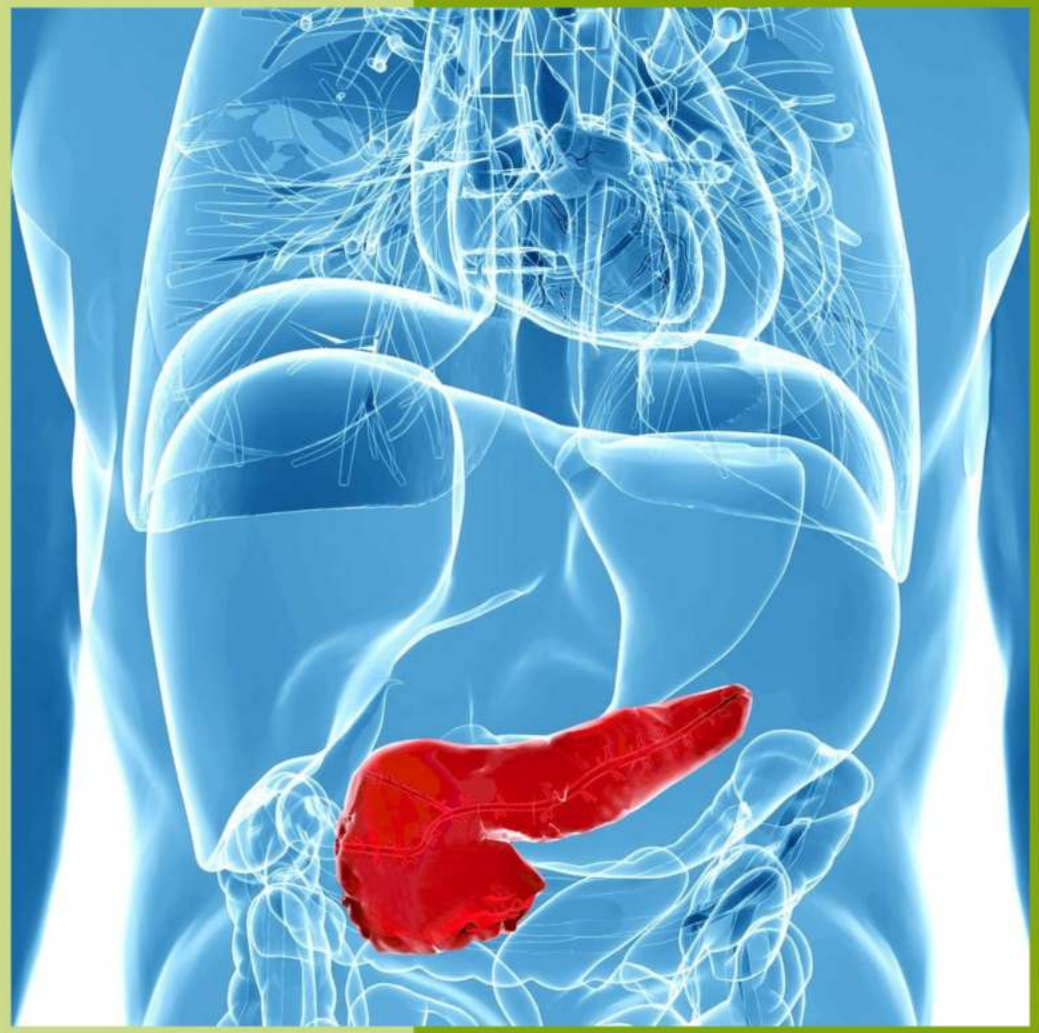
- 4.9 million people in the UK live with diabetes, with 90% of cases being Type 2.
- 1 in 10 adults is affected, and many remain undiagnosed.
- The overall diabetes prevalence in the UK stands at 7%, with Leicester reporting rates exceeding 9%.
- Diabetes accounts for a significant number of hospital visits, totaling 1.3 million in the 2020–2021 period.
- The NHS allocates £10 billion annually, primarily addressing complications.

TYPES OF DIABETES

1. TYPE 1

2. TYPE 2

GESTATIONAL DIABETES



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Risks of Uncontrolled Diabetes

FEET

Microvascular neuropathy primarily affects the nerves in the feet, potentially leading to loss of sensation or pain in the extremities.

KIDNEYS

Microvascular nephropathy involves damage to the small blood vessels in the kidneys, potentially leading to chronic kidney disease.

HEART

Macrovascular issues in the heart arise from conditions like ischemic heart disease, which affects the coronary arteries and can lead to heart attacks.

EYES

Microvascular retinopathy refers to damage to the small blood vessels in the retina, which can affect vision and lead to serious eye issues.

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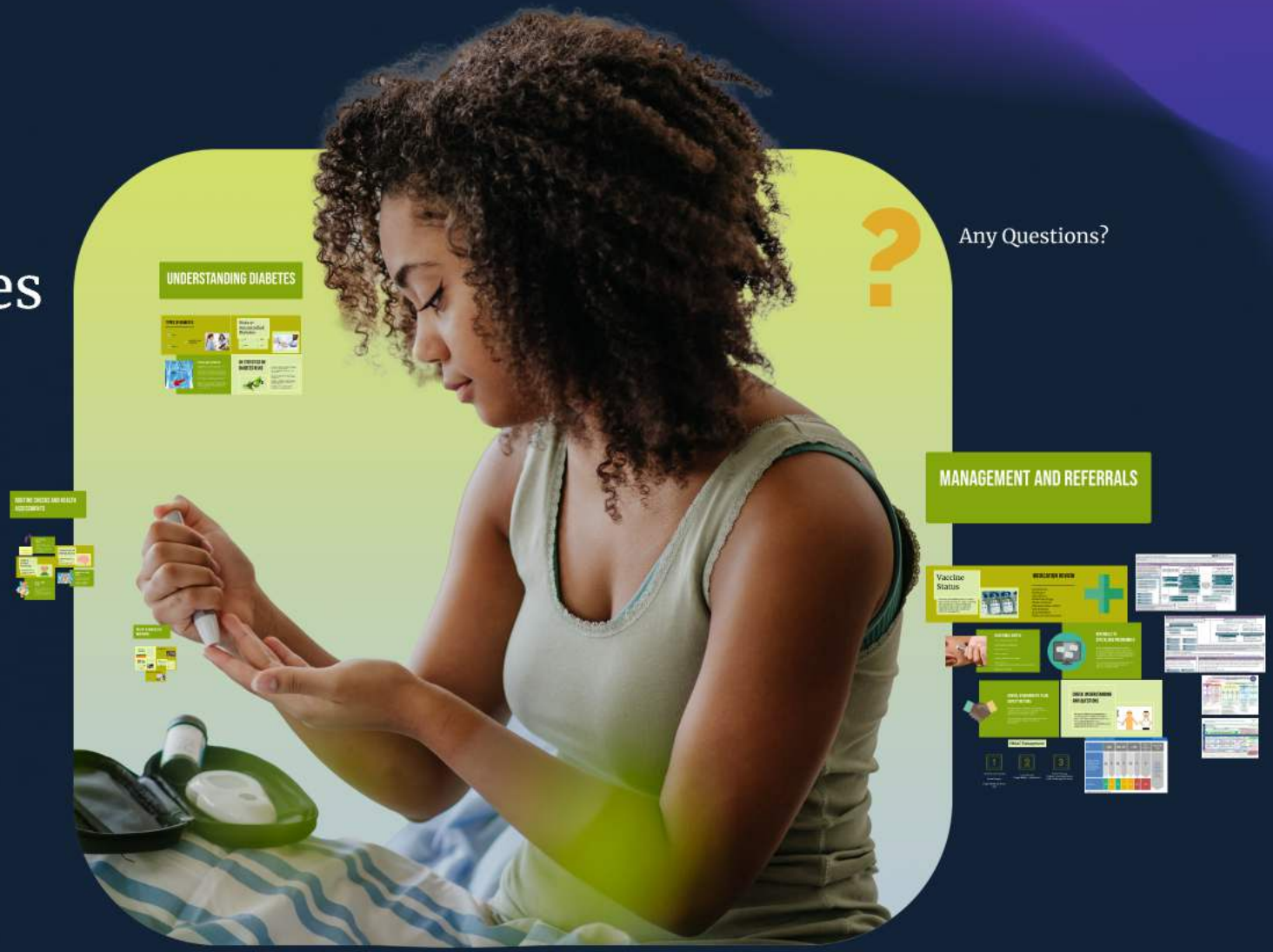

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PATIENT DIAGNOSIS AND MONITORING

DIAGNOSIS CONFIRMATION

If asymptomatic - X2 HbA1C, 3 weeks apart, ≥6+ mmol/mol.

If symptomatic, only X1 HbA1C above ≥6+ mmol/mol required.

Most patients tend to be asymptomatic, however typical symptoms include:

- Increased urination
- THIRST
- Tiredness
- Unexplained weight loss
- Itchiness around the genital area, or regular bouts of thrush (2 years infection)
- Cuts or wounds that heal slowly
- Blurred vision – caused by the lens of the eye becoming dry.

DURATION OF DIABETES

Understanding the duration of diabetes is crucial for assessing risk for complications and guiding treatment decisions.

Documentation of the exact diagnosis date facilitates effective management and quality of care.

ANNUAL BLOOD TEST MONITORING

U&E

LIPIDS

HBA1C

Key Observations

Blood Pressure & Pulse

BMI MEASUREMENT

Updated Height & Weight

HOME BLOOD SUGAR MONITORING

Home blood sugar monitoring is crucial for patients on insulin or sulfonylureas, allowing them to maintain glucose levels within target ranges.

It empowers patients to make informed decisions about their dietary and insulin management.

Finger prick test VS. continous glucose monitor.

DIAGNOSIS CONFIRMATION

	HbA1c mmol/mol (%)	FPG (mmol/L)	2 hour Glucose (mmol/L)
Normal Results	<42 (6)	<6	<7.8
Intermediate Results (Pre-Diabetes)	42-47 (6-6.4)	6.1-6.9	7.8-11.0
Diabetes	≥ 48 (6.5)	≥ 7	≥11.1

If asymptomatic - X2 HbA1C, 2 weeks apart, 48+ mmol/mol.

If symptomatic, only X1 HbA1C above 48+ mmol/mol required.

Most patients tend to be asymptomatic, however typical symptoms include:

- Increased urination
- Thirst
- Tiredness
- Unexplained weight loss
- Itchiness around the genital area, or regular bouts of thrush (a yeast infection)
- Cuts or wounds that heal slowly
- Blurred vision – caused by the lens of the eye becoming dry.

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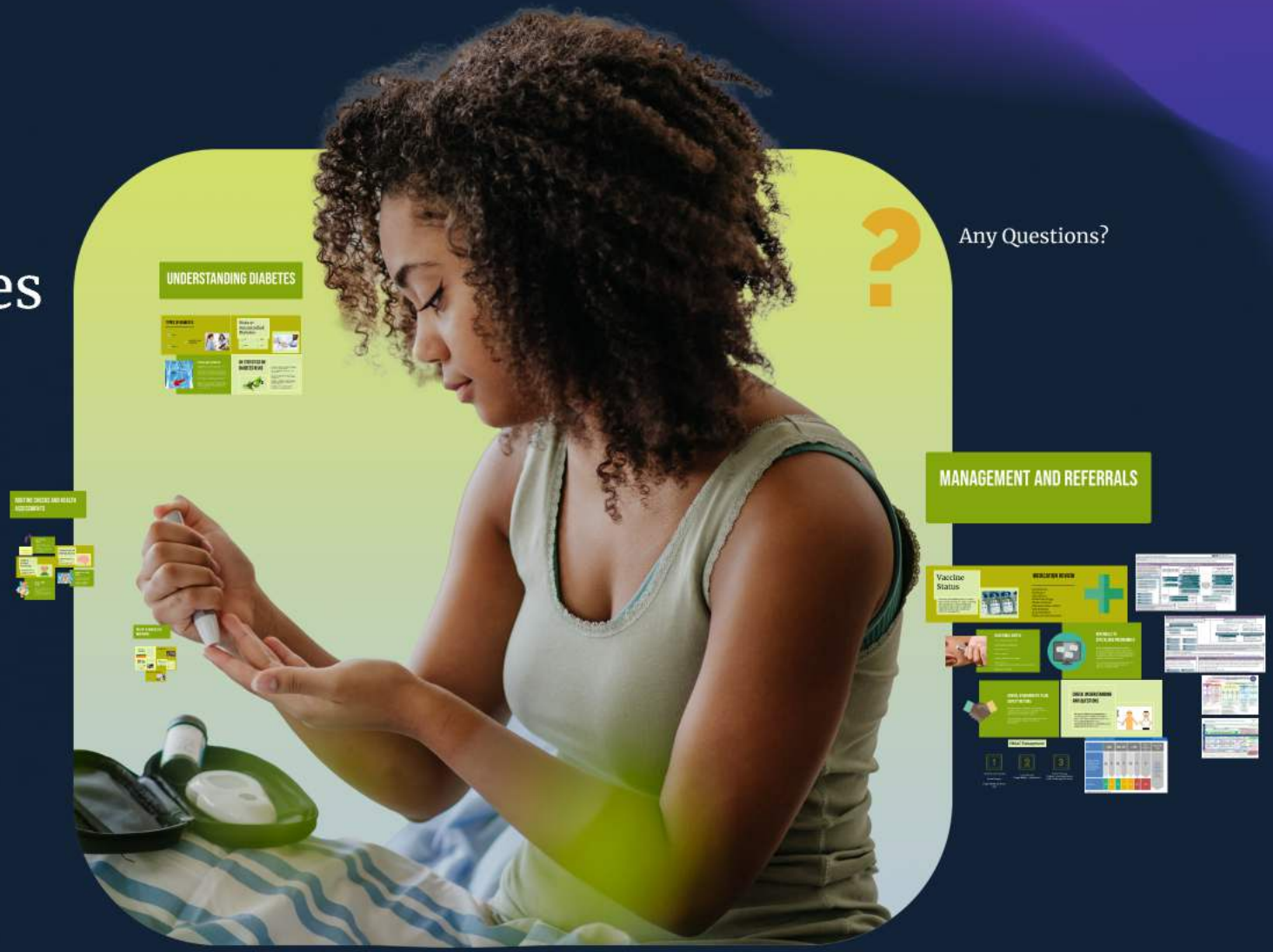

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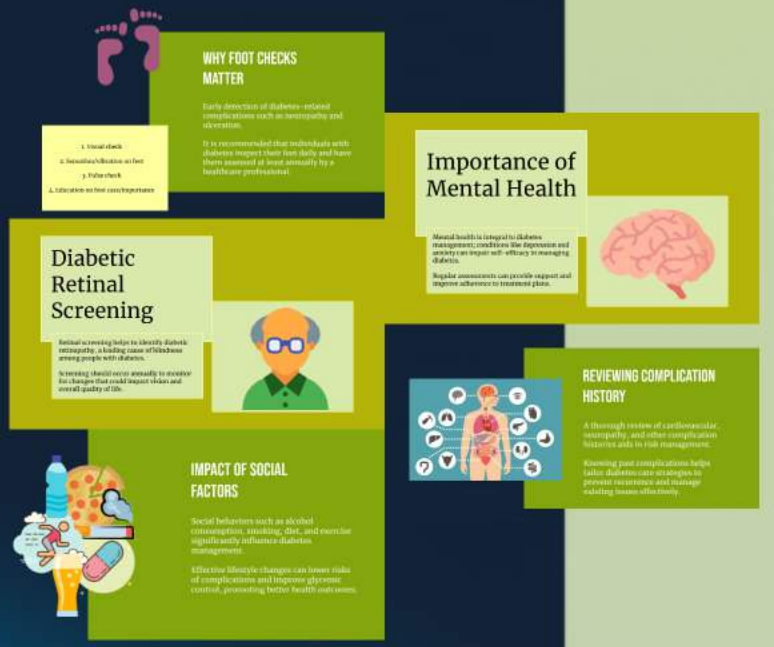
ROUTINE CHECKS AND HEALTH ASSESSMENTS



WHY FOOT CHECKS MATTER

Early detection of diabetes-related complications such as neuropathy and ulceration.

It is recommended that individuals with diabetes inspect their feet daily and have them assessed at least annually by a healthcare professional.

1. Visual check
2. Sensation/vibration on feet
3. Pulse check
4. Education on foot care/importance

Diabetic Retinal Screening

Retinal screening helps to identify diabetic retinopathy, a leading cause of blindness among people with diabetes.

Screening should occur annually to monitor for changes that could impact vision and overall quality of life.

IMPACT OF SOCIAL FACTORS

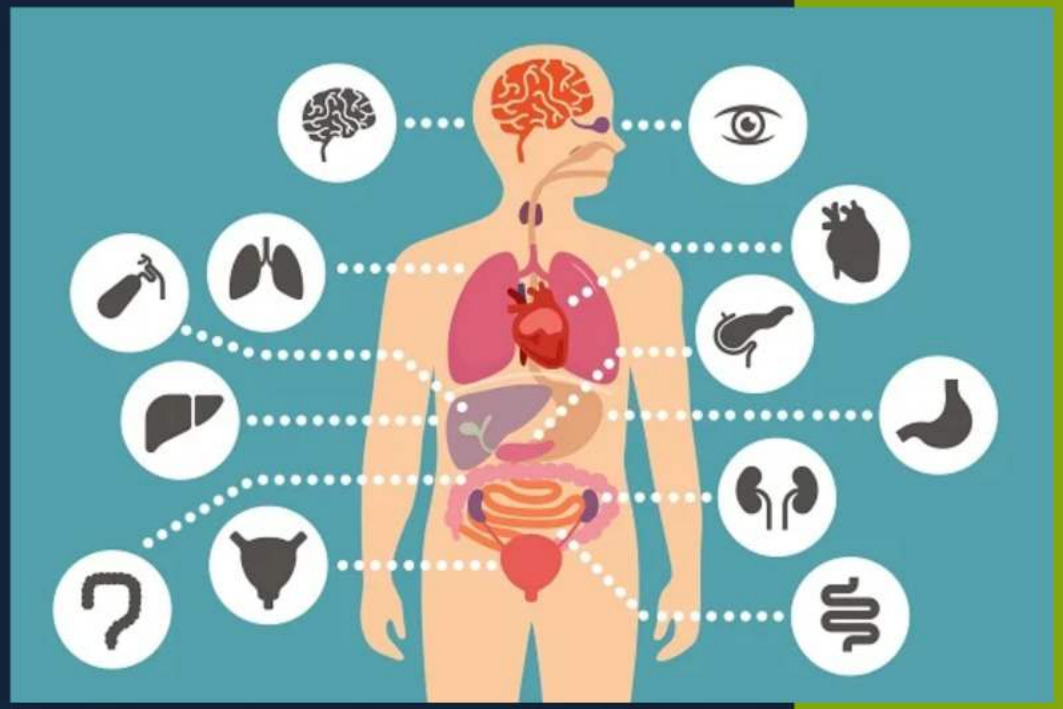
Social behaviors such as alcohol consumption, smoking, diet, and exercise significantly influence diabetes management.

Effective lifestyle changes can lower risks of complications and improve glycemic control, promoting better health outcomes.

Importance of Mental Health

Mental health is integral to diabetes management; conditions like depression and anxiety can impair self-efficacy in managing diabetes.

Regular assessments can provide support and improve adherence to treatment plans.



REVIEWING COMPLICATION HISTORY

A thorough review of cardiovascular, neuropathy, and other complication histories aids in risk management.

Knowing past complications helps tailor diabetes care strategies to prevent recurrence and manage existing issues effectively.

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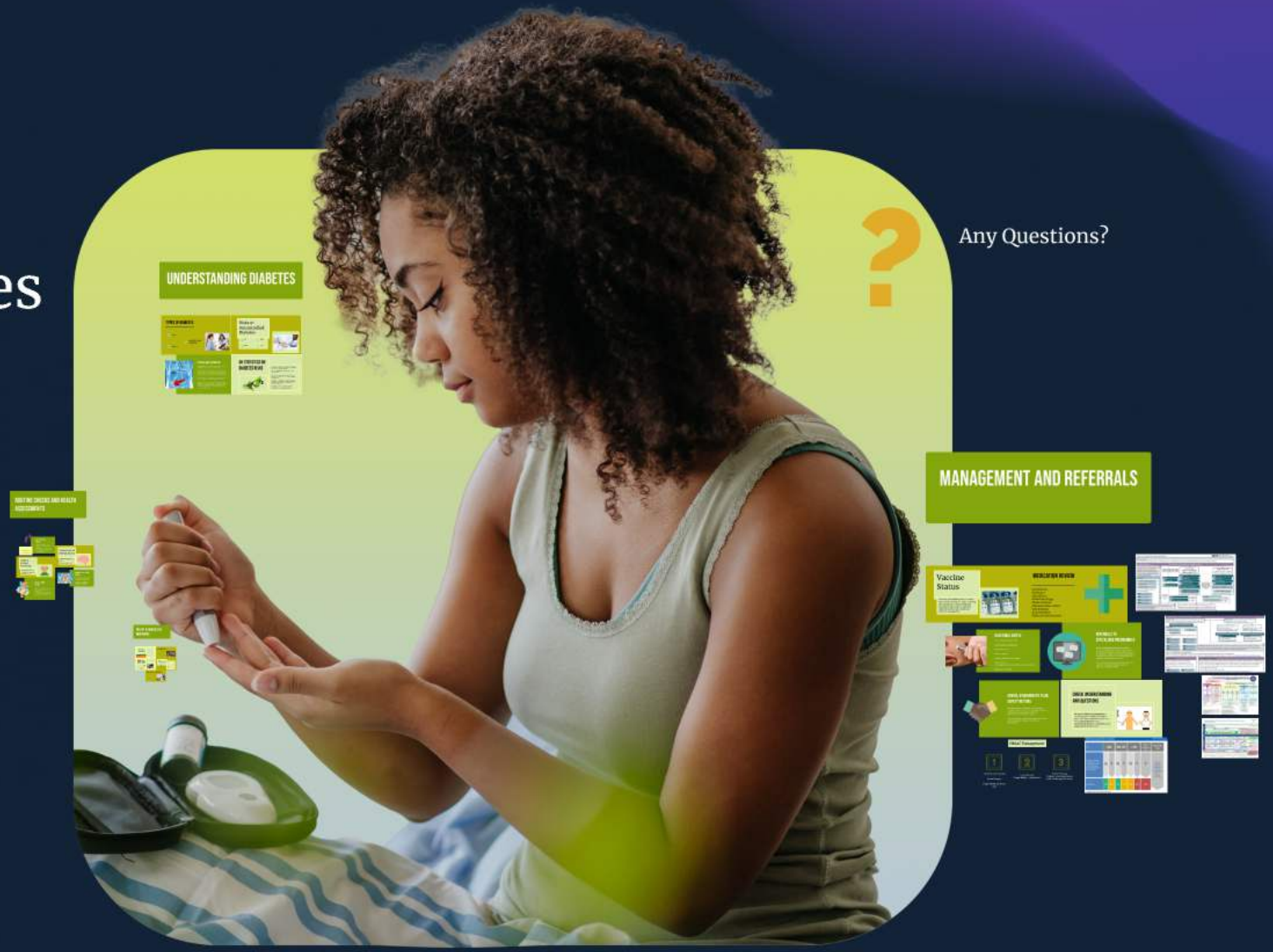

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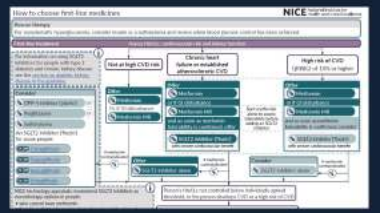
MANAGEMENT AND REFERRALS

Vaccine Status

Patients with diabetes should ensure vaccinations are up-to-date, including the annual Flu vaccine, Covid and Pneumococcal vaccine, to prevent infections which can complicate diabetes management.

MEDICATION REVIEW

- Compliance
- Tolerance
- Side effects
- MHRA Red Flags
- Mode of action
- Administration advice
- Safe disposal
- Sick Day Rules
- Medicine Optimisation



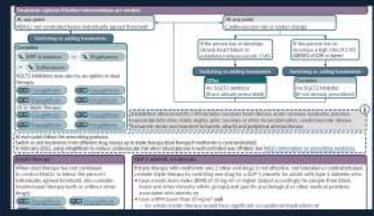
INJECTABLE SAFETY

- Self-testing glucose levels
- Insulin safe management
- Hypo awareness
- Needle disposal
- Correct needle size and strips
- Injection site - Lipohypertrophy and Lipoatrophy identification
- Injection technique

REFERRALS TO SPECIALISED PROGRAMMES

Referrals may be beneficial for patients, including diabetes education programs like DESMOND and DAFNE, diabetes prevention for pre-diabetes, diabetes remission programmes, mental health support, social prescriber and podiatry for specialised foot care.

Specialist referrals to the hospital diabetes team or community Diabetes nurse for complex or eligible patients.



ADVICE, MANAGEMENT PLAN, SAFETY NETTING

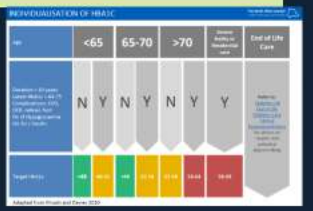
Tailoring patient advice involves discussing lifestyle changes, setting achievable goals, patient collaboration and planning follow-up appointments to monitor progress.

Customised plans can enhance patient autonomy and therefore their long-term diabetes management.

CHECK UNDERSTANDING AND QUESTIONS

To ensure effective management, checking patient understanding of their condition, treatment plan, and encouraging questions can significantly enhance compliance and engagement in their care.

HbA1C Management



1 Initial Drug Treatment

Monotherapy

Target HbA1c 48 mmol/mol.

2 Dual Therapy: Target HbA1c 53 mmol/mol

3 Triple Therapy: If Hba1c >58 mmol/mol or individually agreed target.

Vaccine Status

Patients with diabetes should ensure vaccinations are up-to-date, including the annual Flu vaccine, Covid and Pneumococcal vaccine, to prevent infections which can complicate diabetes management.

MEDICATION REVIEW

Compliance
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HbA1C Management

1

Initial Drug Treatment

Monotherapy:

Target HbA1c 48 mmol/mol.

2

Dual Therapy:
Target HbA1c 53 mmol/mol.

3

Triple Therapy:
If Hba1c >58 mmol/mol or individually agreed target.

INDIVIDUALISATION OF HBA1C

The North West London health and care partnership

Age	<65		65-70		>70		Severe frailty or Residential care	End of Life Care
Duration > 10 years Latest HbA1c > 64-75 Complications: CVD, CKD, retinal, foot Hx of Hypoglycaemia On SU / Insulin	N	Y	N	Y	N	Y	Y	**Refer to:** Diabetes UK End of Life Diabetes Care Clinical Recommendations for advice on targets and potential deprescribing
Target HbA1c	<48	48-53	<48	53-58	53-58	58-64	58-69	

Adapted from Khunti and Davies 2010

How to choose first-line medicines

NICE National Institute for Health and Care Excellence

Rescue therapy

For symptomatic hyperglycaemia, consider insulin or a sulfonylurea and review when blood glucose control has been achieved.

First-line treatment — Assess HbA1c, cardiovascular risk and kidney function

For information on using SGLT2 inhibitors for people with type 2 diabetes and chronic kidney disease see the section on diabetic kidney disease in the guideline.

Not at high CVD risk

Offer

- Metformin

Or if GI disturbance

- Metformin MR

If metformin contraindicated

Consider

- DPP-4 inhibitor ('gliptin') or
- Pioglitazone or
- Sulfonylurea

An SGLT2 inhibitor ('flozin') for some people:

- TA 390 Canagliflozin
- TA 390 Dapagliflozin
- TA 390 Empagliflozin
- TA 572 Ertugliflozin

NICE technology appraisals recommend SGLT2 inhibitors as monotherapy options in people:

- who cannot have metformin

Chronic heart failure or established atherosclerotic CVD

Offer

- Metformin

or if GI disturbance

- Metformin MR

and as soon as metfomin tolerability is confirmed, offer

- SGLT2 inhibitor ('flozin') with proven cardiovascular benefit

If metformin contraindicated

Offer

- SGLT2 inhibitor alone

Start metformin alone to assess tolerability before adding an SGLT2 inhibitor

High risk of CVD

QRISK2 of 10% or higher

Offer

- Metformin

or if GI disturbance

- Metformin MR

and as soon as metfomin tolerability is confirmed, consider

- SGLT2 inhibitor ('flozin') with proven cardiovascular benefit

If metformin contraindicated

Consider

- SGLT2 inhibitor alone

Person's HbA1c not controlled below individually agreed threshold, or the person develops CVD or a high risk of CVD

Treatment options if further interventions are needed

At any point
HBA1c not controlled below individually agreed threshold

→ **Switching or adding treatments**

Consider:

- DPP-4 inhibitor or Pioglitazone or Sulfonylurea

SGLT2 inhibitors may also be an option in dual therapy:

- TA 315 Canagliflozin
- TA 288 Dapagliflozin
- TA 336 Empagliflozin
- TA 572 Ertugliflozin

Or in triple therapy:

- TA 315 Canagliflozin
- TA 418 Dapagliflozin
- TA 336 Empagliflozin
- TA 583 Ertugliflozin

At any point
Cardiovascular risk or status change

- If the person has or develops chronic heart failure or established atherosclerotic CVD → **Switching or adding treatments**
  - **Offer**
    An SGLT2 inhibitor (if not already prescribed)
- If the person has or develops a high risk of CVD (QRISK2 of 10% or higher) → **Switching or adding treatments**
  - **Consider**
    An SGLT2 inhibitor (if not already prescribed)

Established atherosclerotic CVD includes coronary heart disease, acute coronary syndrome, previous myocardial infarction, stable angina, prior coronary or other revascularisation, cerebrovascular disease (ischaemic stroke and transient ischaemic attack) and peripheral arterial disease.

At each point follow the prescribing guidance.
Switch or add treatments from different drug classes up to triple therapy (dual therapy if metformin is contraindicated).
In February 2022, using ertugliflozin to reduce cardiovascular risk when blood glucose is well controlled was off label. See NICE's information on prescribing medicines.

Insulin therapy

When dual therapy has not continued to control HbA1c to below the person's individually agreed threshold, also consider insulin-based therapy (with or without other drugs).

- TA 288 Dapagliflozin
- TA 336 Empagliflozin

GLP-1 mimetic treatments

If triple therapy with metformin and 2 other oral drugs is not effective, not tolerated or contraindicated, consider triple therapy by switching one drug for a GLP-1 mimetic for adults with type 2 diabetes who:

- have a body mass index (BMI) of 35 kg/m² or higher (adjust accordingly for people from Black, Asian and other minority ethnic groups) and specific psychological or other medical problems associated with obesity **or**
- have a BMI lower than 35 kg/m² **and**:
  - for whom insulin therapy would have significant occupational implications **or**

GLUCOSE-LOWERING MEDICATION IN TYPE 2 DIABETES: OVERALL APPROACH

FIRST-LINE THERAPY IS METFORMIN AND COMPREHENSIVE LIFESTYLE (INCLUDING WEIGHT MANAGEMENT AND PHYSICAL ACTIVITY)
IF HbA_{1c} ABOVE TARGET PROCEED AS BELOW

TO AVOID CLINICAL INERTIA REASSESS AND MODIFY TREATMENT REGULARLY (3–6 MONTHS)

ESTABLISHED ASCVD OR CKD

NO

WITHOUT ESTABLISHED ASCVD OR CKD

ASCVD PREDOMINATES

EITHER/OR

- GLP-1 RA with proven CVD benefit[1]
- SGLT2i with proven CVD benefit[1], if eGFR adequate[2]

If HbA_{1c} above target

If further intensification is required or patient is now unable to tolerate GLP-1 RA and/or SGLT2i, choose agents demonstrating CV safety:

- Consider adding the other class (GLP-1 RA or SGLT2i) with proven CVD benefit
- DPP-4i if not on GLP-1 RA
- Basal insulin[4]
- TZD[5]
- SU[6]

HF OR CKD PREDOMINATES

PREFERABLY
SGLT2i with evidence of reducing HF and/or CKD progression in CVOTs if eGFR adequate[3]

OR

If SGLT2i not tolerated or contraindicated or if eGFR less than adequate[2] add GLP-1 RA with proven CVD benefit[1]

If HbA_{1c} above target

- Avoid TZD in the setting of HF

Choose agents demonstrating CV safety:

- Consider adding the other class with proven CVD benefit[1]
- DPP-4i (not saxagliptin) in the setting of HF (if not on GLP-1 RA)
- Basal insulin[4]
- SU[6]

COMPELLING NEED TO MINIMISE HYPOGLYCAEMIA

DPP-4i	GLP-1 RA	SGLT2i[2]	TZD
If HbA_{1c} above target			
SGLT2i[2] **OR** TZD	SGLT2i[2] **OR** TZD	GLP-1 RA **OR** DPP-4i **OR** TZD	SGLT2i[2] **OR** DPP-4i **OR** GLP-1 RA

If HbA_{1c} above target

Continue with addition of other agents as outlined above

If HbA_{1c} above target

Consider the addition of SU[6] **OR** basal insulin:

- Choose later generation SU with lower risk of hypoglycaemia
- Consider basal insulin with lower risk of hypoglycaemia[7]

COMPELLING NEED TO MINIMISE WEIGHT GAIN OR PROMOTE WEIGHT LOSS

EITHER/OR

- GLP-1 RA with good efficacy for weight loss[8]
- SGLT2i[2]

If HbA_{1c} above target

SGLT2i[2]	GLP-1 RA with good efficacy for weight loss[8]
If HbA_{1c} above target	

If triple therapy required or SGLT2i and/or GLP-1 RA not tolerated or contraindicated use regimen with lowest risk of weight gain

PREFERABLY

DPP-4i (if not on GLP-1 RA) based on weight neutrality

If DPP-4i not tolerated or contraindicated or patient already on GLP-1 RA, cautious addition of:

- SU[6]
- TZD[5]
- Basal insulin

COST IS A MAJOR ISSUE[9-10]

- SU[6]
- TZD[10]

If HbA_{1c} above target

TZD[10]	SU[6]
If HbA_{1c} above target	

- **Insulin therapy** basal insulin with lowest acquisition cost

OR

- Consider DPP-4i **OR** SGLT2i with lowest acquisition cost[10]

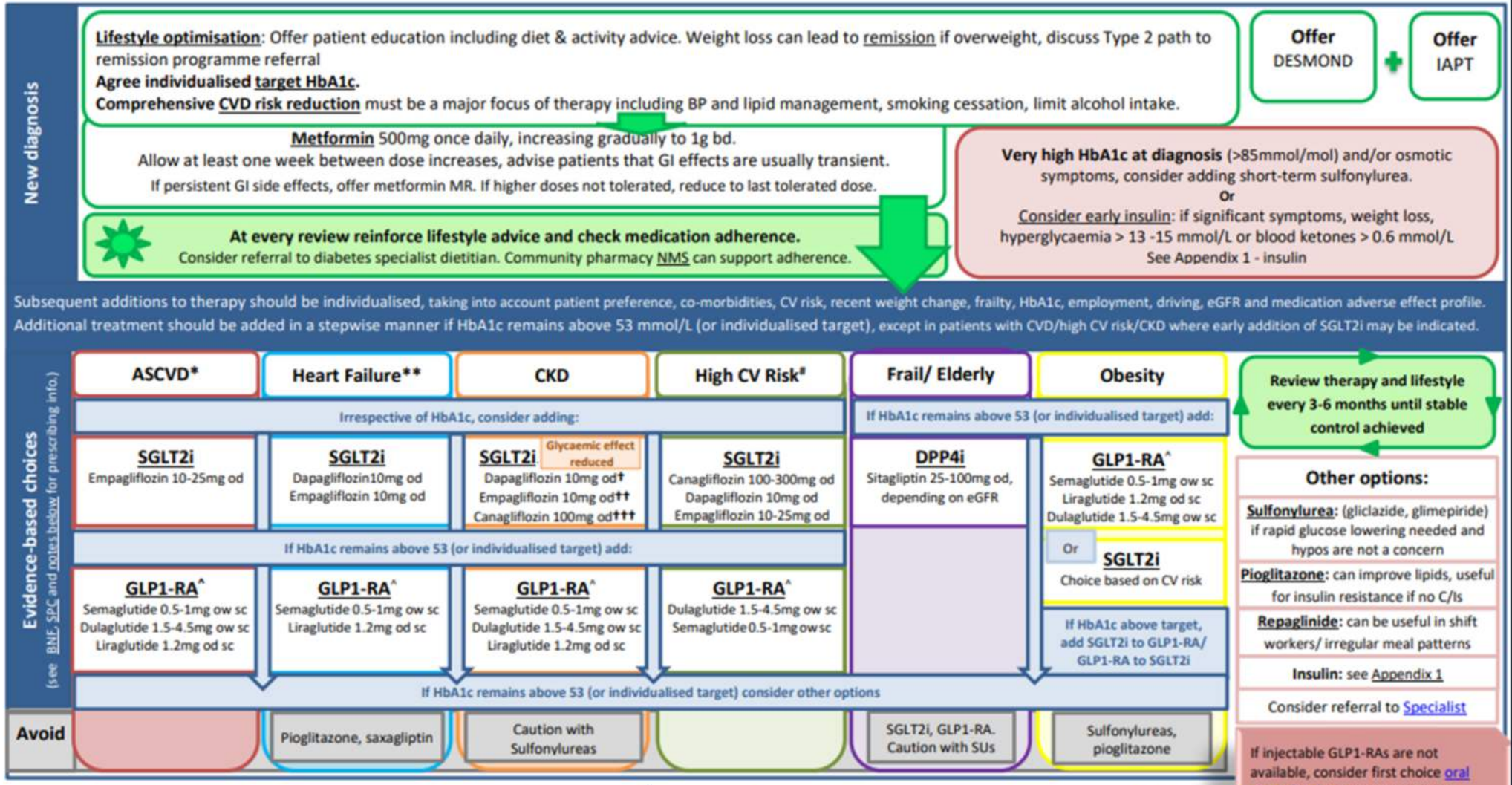
1. Proven CVD benefit means it has label indication of reducing CVD events. For GLP-1 RA strongest evidence for liraglutide > semaglutide > exenatide extended release. For SGLT2i evidence modestly stronger for empagliflozin > canagliflozin.
2. Be aware that SGLT2i vary by region and individual agent with regard to indicated level of eGFR for initiation and continued use
3. Both empagliflozin and canagliflozin have shown reduction in HF and reduction in CKD progression in CVOTs
4. Degludec or U100 glargine have demonstrated CVD safety
5. Low dose may be better tolerated though less well studied for CVD effects
6. Choose later generation SU with lower risk of hypoglycaemia
7. Degludec / glargine U300 < glargine U100 / detemir < NPH insulin
8. Semaglutide > liraglutide > dulaglutide > exenatide > lixisenatide
9. If no specific comorbidities (i.e. no established CVD, low risk of hypoglycaemia and lower priority to avoid weight gain or no weight-related comorbidities)
10. Consider country- and region-specific cost of drugs. In some countries TZDs relatively more expensive and DPP-4i relatively cheaper

Coventry and Warwickshire APC Type 2 Diabetes Algorithm for Glucose-lowering Treatment in Adults

(excluding patients who are pregnant)

Coventry & Warwickshire Area Prescribing Committee

Clinical Guideline



od once daily, ow once weekly, sc subcutaneous, CrCl creatinine clearance, SU sulfonylurea, C/i contraindication ^Maintenance dose range shown; for initiation doses/dose titration information see individual SPCs

*Patients with a diagnosis of atherosclerotic cardiovascular disease ** Particularly heart failure with reduced ejection fraction <45% †do not initiate if eGFR<15ml/min/1.73m² ††do not initiate if eGFR<20 ml/min/1.73m² †††do not initiate if eGFR <30 ml/min/1.73m² #Patients with LVH or retinopathy, or patients with diabetes for more than 10 years with one or more cardiovascular risk factor (age, smoking, hyperlipidaemia, obesity)

INJECTABLE SAFETY

Self-testing glucose levels

Insulin units management

Hypo awareness

Needle disposal

Correct needle size and strips

Injection site -
Lipohypertrophy and Cutaneous Amyloidosis

Injection technique

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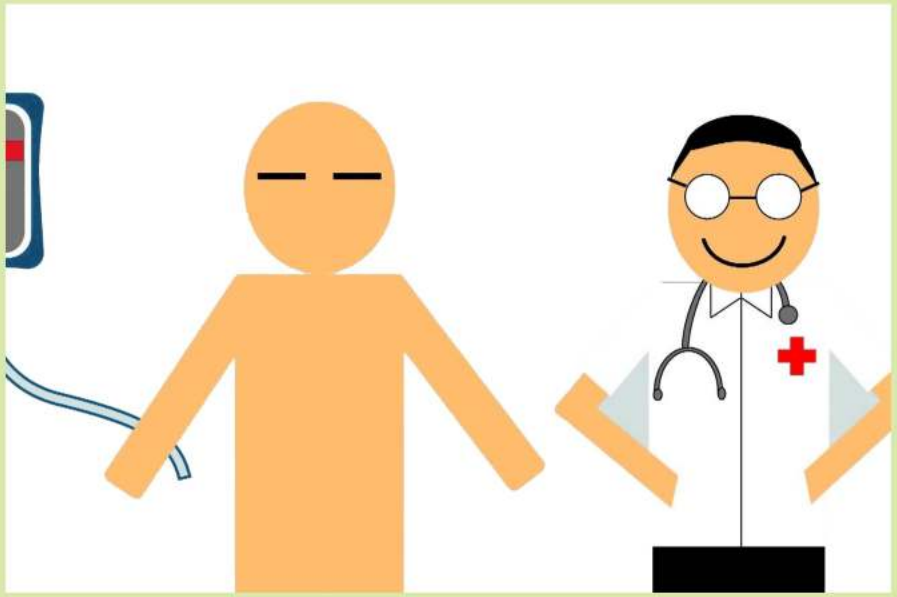

Any Questions?