

# Identifying People at High Risk of Type 2 Diabetes

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## What Is Prediabetes?

- Prediabetes refers to raised blood glucose levels above normal but not above the diagnostic threshold for T2D. **HbA<sub>1c</sub> values of 42–47 mmol/mol indicate prediabetes<sup>[1]</sup>** and a **single test** is sufficient. People living with prediabetes have an increased risk of developing T2D
- Depending on what test is used, prediabetes can also be referred to as:<sup>[2]</sup>
  - **nondiabetic hyperglycaemia** (HbA<sub>1c</sub> 42–47 mmol/mol<sup>[3]</sup>)
  - **impaired fasting glucose** (FPG ≥6.1 and <6.9 mmol/l<sup>[4]</sup>)
  - **impaired glucose tolerance** (2-hour oral glucose tolerance test ≥7.8 and <11.1 mmol/l<sup>[4]</sup>)
- **Prediabetes is associated with an increased risk of all-cause mortality and CVD in the general population and in those with atherosclerotic CVD.<sup>[5]</sup>** This has implications for the screening and management of prediabetes in the primary and secondary prevention of CVD<sup>[5]</sup>
- **Prediabetes is more than just dysglycaemia.** A recent prospective cohort study found that reversion to normoglycaemia in those with prediabetes was only associated with lower risks of death and a longer life expectancy when accompanied by significant lifestyle change such as high levels of physical activity, not smoking, and maintaining a healthy bodyweight.<sup>[6]</sup>

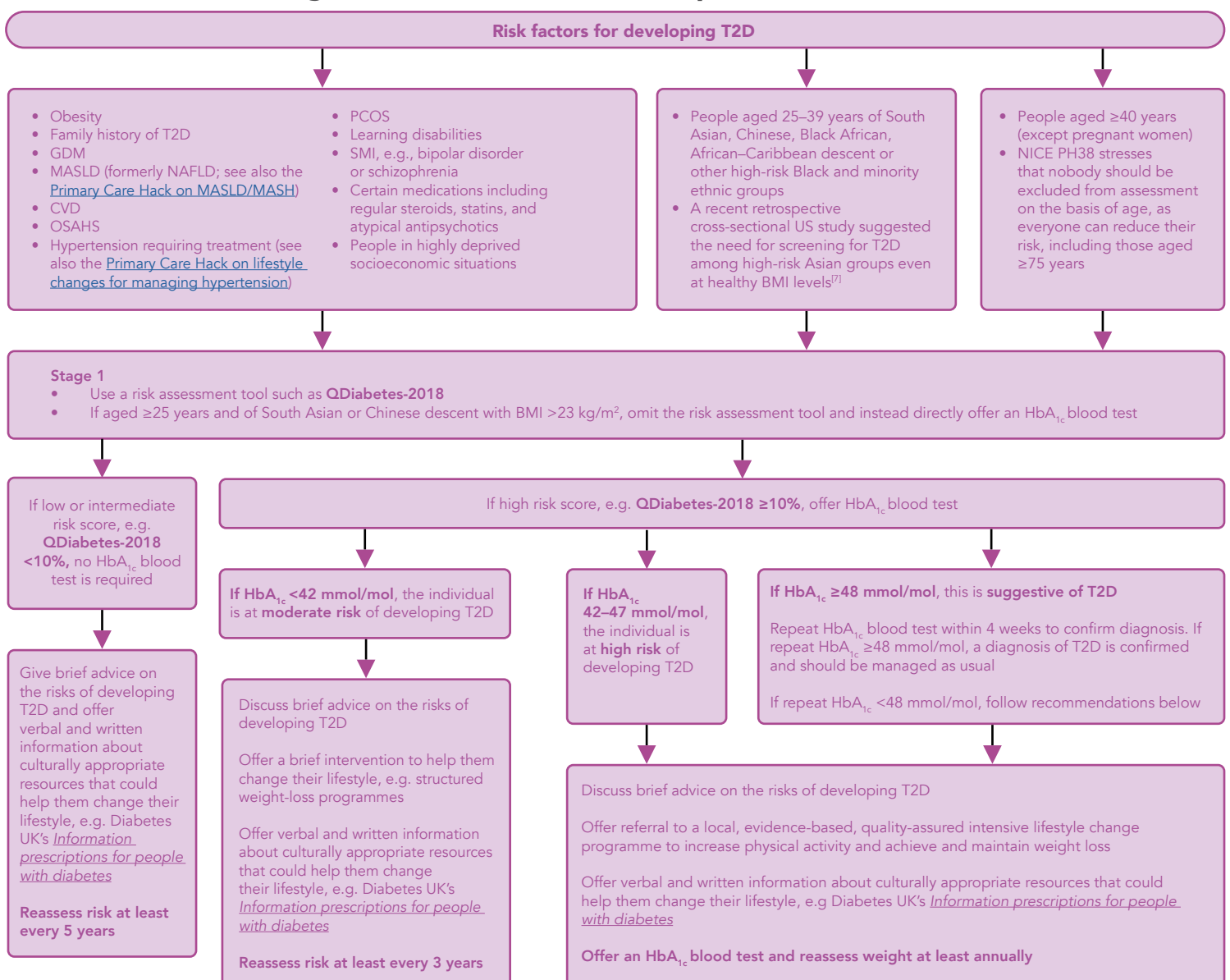
## Identifying Those at High Risk of T2D

NICE PH38 recommends a **two-stage strategy to identify people at high risk of T2D** (and those with undiagnosed T2D)<sup>[4]</sup>

1. A **risk assessment** should be offered using a validated computer-based risk assessment tool that can use routinely available data from individuals' electronic health records, such as [QDiabetes-2018](#)
2. For those with high risk scores for developing T2D (e.g., QDiabetes score ≥10%), a **blood test for HbA<sub>1c</sub>** should be offered

Additionally, if aged ≥25 years and of South Asian or Chinese descent with BMI >23 kg/m<sup>2</sup>, there is no need to use a risk assessment tool; instead, directly offer an HbA<sub>1c</sub> blood test.

## Matching Interventions to Risk in People with Prediabetes<sup>[4][7][8]</sup>



## Special Populations of Note

### People Living with an Eating Disorder

- The prevalence of T2D is higher in people with binge eating disorder than the general population<sup>[9]</sup>
- Additional caution should be taken discussing prediabetes and weight loss with people who are living with or suspected to have an eating disorder, as weight-loss interventions may be contraindicated and may exacerbate the condition.<sup>[9]</sup>

### Gestational Diabetes

- **Women with a history of GDM are almost 10 times more likely to develop T2D** over their lifetime than women without a history of GDM<sup>[10]</sup>
- For women previously diagnosed with GDM and whose blood glucose levels return to normal after birth, NICE and SIGN both recommend:<sup>[11][12]</sup>
  - o lifestyle advice (including weight management, diet, and exercise)
  - o **offer an FPG 6–13 weeks after delivery** to exclude T2D (HbA<sub>1c</sub> should not be used until 3 months postpartum but can be used if an FPG has not been carried out by 13 weeks). Practically, this can be part of the 6-week postnatal check
    - **if FPG <6.0 mmol/l** (HbA<sub>1c</sub> <39 mmol/mol), there is a low probability of T2D. Lifestyle advice should be reinforced; ensure they are under recall for **lifelong annual HbA<sub>1c</sub>** to check for progression to T2D
    - **if FPG 6.0–6.9 mmol/l**

(HbA<sub>1c</sub> 39–47 mmol/mol), the individual is at high risk of developing T2D and the *Matching Interventions to Risk* flowchart should be followed

– **if FPG ≥7.0 mmol/l**

(HbA<sub>1c</sub> ≥48 mmol/mol), a diagnosis of T2D is likely and the *Matching Interventions to Risk* flowchart should be followed.

### Polycystic Ovary Syndrome

- **Women living with PCOS are 1.4 times more likely to develop T2D** over their lifetime than women without PCOS<sup>[3]</sup>
- This increased risk is **independent of baseline bodyweight**;<sup>[13]</sup> NICE recommends assessing glycaemic status with an HbA<sub>1c</sub> blood test at baseline in **all** women living with PCOS. Thereafter, glycaemic assessment should take place **every 1–3 years lifelong**, depending on the presence of other risk factors for developing T2D.<sup>[14]</sup>

### People Living with Severe Mental Illness

- **People living with SMI are 1.3 times more likely to develop T2D** over their lifetime than people without SMI<sup>[3]</sup>
- The [Lester UK adaptation: positive cardiometabolic health resource](#) 2023 update gives recommendations relating to monitoring physical health in people living with SMI such as psychosis and schizophrenia.<sup>[15]</sup> The aim of this resource is to help reduce the **health inequality of a 15–20-year mortality gap** in people living with SMI<sup>[16]</sup>
- For all people in the 'red zone' as depicted

in the *Lester UK adaptation* intervention framework for people experiencing psychosis and schizophrenia, including those with HbA<sub>1c</sub> ≥42 mmol/mol: **don't just screen, intervene!**

- Care should always be person-centred, tailoring discussion to the needs of the person to enable shared decision-making. Refer for investigation, diagnosis, and treatment as appropriate
- For those at high risk of T2D (HbA<sub>1c</sub> of 42–47 mmol/mol), offer referral to an evidence-based lifestyle change programme. If ineffective, offer metformin modified release if safe and appropriate. Aim for HbA<sub>1c</sub> <42 mmol/mol.

### Metformin

- NICE recommends using clinical judgement on whether (and when) to offer metformin to support lifestyle changes in people at risk of T2D with rising HbA<sub>1c</sub> blood tests. Consider metformin if:<sup>[4]</sup>
  - o HbA<sub>1c</sub> continues to rise despite participation in an intensive lifestyle change programme
  - o the individual is unable to participate in a lifestyle change programme, particularly if BMI is >35 kg/m<sup>2</sup>
- If commencing metformin, **start low and go slow**, e.g. 500 mg once daily and increase gradually as tolerated to 2000 mg daily. If the individual is intolerant of standard-release metformin, consider using modified-release metformin<sup>[4]</sup>
- Prescribe metformin for 6–12 months initially. Check HbA<sub>1c</sub> at 3-month intervals and stop metformin if no benefit is seen.<sup>[4]</sup>

## Managing Prediabetes—Key Interventions

- By making changes to diet, increasing physical activity, and losing weight, **around half of cases of T2D can be prevented or delayed**<sup>[17]</sup>
- Review coexisting risk factors such as blood pressure, lipids, and smoking status
- Pharmacological interventions, most notably incretin therapies, may be appropriate as an adjunct to a reduced-calorie diet and increased physical activity for weight management in adults with overweight or obesity<sup>[18]</sup>—see also the [Primary Care Hack on liraglutide, semaglutide, and tirzepatide for managing overweight and obesity in primary care](#)
- Bariatric and metabolic surgery may also be appropriate for certain individuals; referral for MDT assessment is recommended if a person

has prediabetes, has received optimal nonsurgical weight-management treatment, has a BMI >35 kg/m<sup>2</sup> (or 32.5 kg/m<sup>2</sup> in people with a South Asian, Chinese, other Asian, Middle Eastern, Black African, African-Caribbean, or Arab family background), and agrees to adhere to the requirements for long-term follow up<sup>[19]</sup>

- Also see *Metformin*, above
- In the SURMOUNT-1 trial, 3 years of treatment with tirzepatide in people living with obesity and prediabetes resulted in significant and sustained weight reduction (nearly 20% with tirzepatide 15 mg) and 90% fewer new diagnoses of T2D compared to placebo.<sup>[20]</sup>

## Clinical Coding

- SIGN recommends a more uniform approach to coding in primary care of those at high risk of T2D:<sup>[8]</sup>
  - o consider maintaining a register of people at high risk of developing T2D and offering then an annual review. This annual review should also cover any coexisting cardiometabolic long-term conditions
  - o a single read code (**C11y500—'pre-diabetes'**) is recommended for all cases of prediabetes, including impaired glucose tolerance, impaired fasting glucose, and nondiabetic hyperglycaemia
  - o the additional recall code is recommended to ensure that these individuals are properly followed up (**66Az—'high risk of diabetes annual review'**).

## Useful Resources

### For Patients

- Diabetes UK: [Prediabetes](#)
- Diabetes UK: [Weight loss and diabetes](#)
- Diabetes UK: [Type 2 diabetes—know your risk](#)
- [QDiabetes-2018 risk calculator](#)
- Diabetes Research Centre: [Could you have type 2 diabetes?](#)
- Diabetes Scotland: [Your guide to type 2 diabetes](#)
- [NHS Lose Weight website](#).

### For Healthcare Professionals

- Diabetes UK: [Information prescriptions for healthcare professionals](#)
- [UK Chief Medical Officers' physical activity guidelines](#)
- Gardner M, Wang J, Hazlehurst J et al. Risk of progression from prediabetes to type 2 diabetes in a large UK adult cohort. *Diabet Med* 2023; **40**(3): e14996.
- Public Health Scotland: [Challenging weight stigma learning hub](#)
- [Babysteps](#) online programme for GDM.

BMI=body mass index; CVD=cardiovascular disease; FPG=fasting plasma glucose; GDM=gestational diabetes mellitus; HbA<sub>1c</sub>=glycated haemoglobin; MASH=metabolic dysfunction-associated steatohepatitis; MASLD=metabolic dysfunction-associated steatotic liver disease; MDT=multidisciplinary team; NAFLD=nonalcoholic fatty liver disease; NICE=National Institute for Health and Care Excellence; OSAHS=obstructive sleep apnoea/hypopnoea syndrome; PCOS=polycystic ovary syndrome; PH=Public Health Guideline; SIGN=Scottish Intercollegiate Guidelines Network; SMI=severe mental illness; T2D=type 2 diabetes.