

# 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 type 2 diabetes (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>
  - non-diabetic hyperglycaemia** (HbA<sub>1c</sub> 42–47 mmol/mol<sup>[3]</sup>)
  - impaired fasting glucose** (fasting plasma 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 cardiovascular disease (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>

- A risk assessment should be offered using a validated computer-based risk assessment tool, which can use routinely available data from individuals' electronic health records such as QDiabetes-2018
- 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 body mass index (BMI) >23kg/m<sup>2</sup>, there is no need to use a risk assessment tool and instead directly offer HbA<sub>1c</sub> blood test.

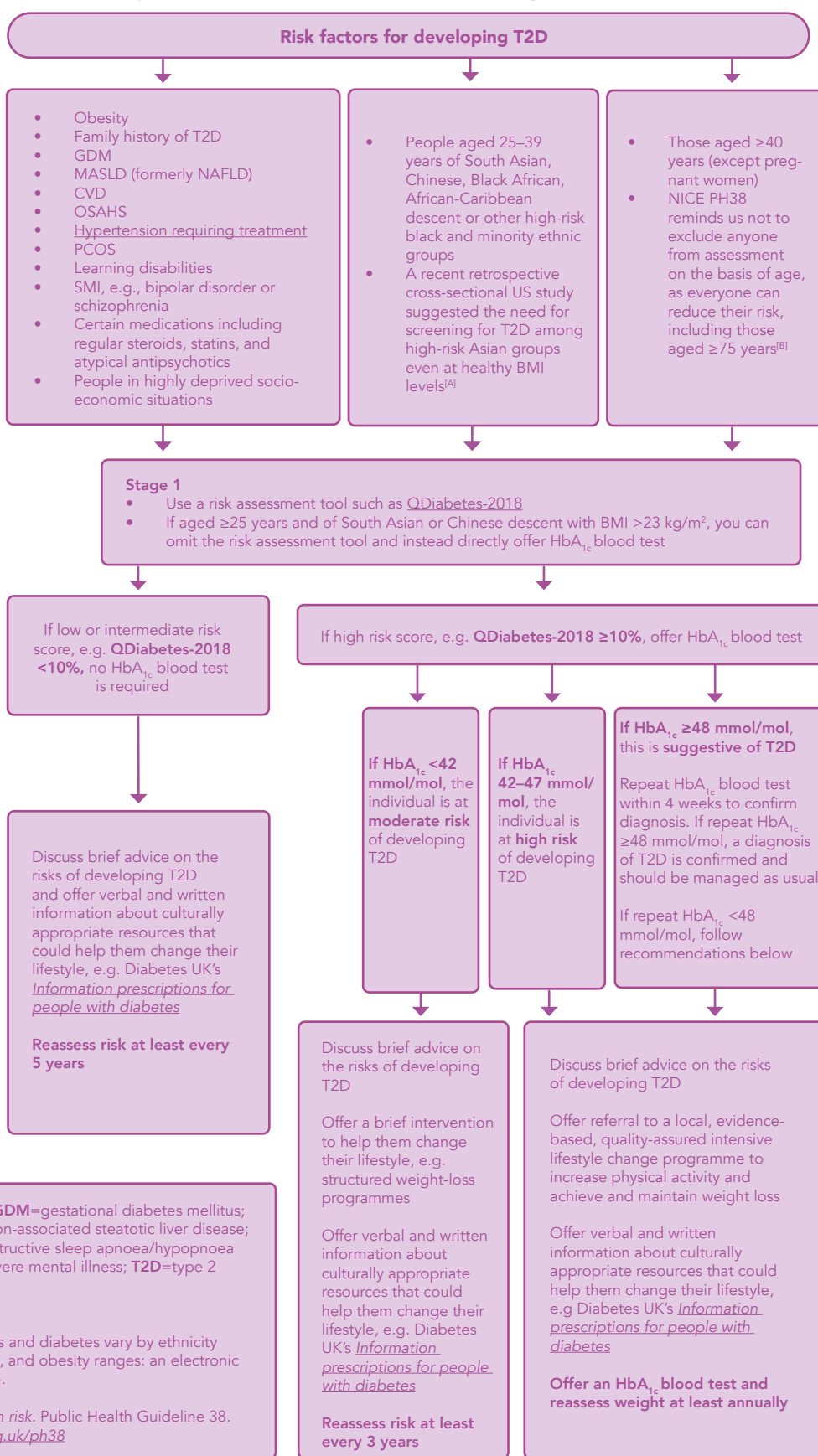
**BMI**=body mass index; **CVD**=cardiovascular disease; **GDM**=gestational diabetes mellitus; **HbA<sub>1c</sub>**=haemoglobin <sub>A1c</sub>; **MASLD**=metabolic dysfunction-associated steatotic liver disease; **NAFLD**=non-alcoholic fatty liver disease; **OSAHS**=obstructive sleep apnoea/hypopnoea syndrome; **PCOS**=polycystic ovary syndrome; **SMI**=severe mental illness; **T2D**=type 2 diabetes.

### References

[A] Vicks W, Lo J, Guo I et al. Prevalence of prediabetes and diabetes vary by ethnicity among U.S. Asian adults at healthy weight, overweight, and obesity ranges: an electronic health record study. *BMC Public Health* 2022; **22**: 1954.

[B] NICE. *Type 2 diabetes: prevention in people at high risk*. Public Health Guideline 38. NICE, 2012 (updated 2017). Available at: [www.nice.org.uk/ph38](http://www.nice.org.uk/ph38)

## Matching Interventions to Risk in People with Prediabetes



## Special Populations of Note

### Gestational Diabetes

- Women with a history of gestational diabetes mellitus (GDM) are almost 10 times more likely to develop T2D over their lifetime than women without a history of GDM<sup>[7]</sup>
- For women previously diagnosed with GDM and whose blood glucose levels return to normal after birth, NICE recommends:<sup>[8]</sup>
  - lifestyle advice (including weight management, diet, and exercise)
  - offer a FPG 6–13 weeks after delivery to exclude T2D (HbA<sub>1c</sub> should not be used until 3 months postpartum). Practically, this can be part of the 6-week postnatal check
    - if FPG <6.0 mmol/l, there is a low probability of T2D. Lifestyle advice should be reinforced and ensure under recall for **lifelong annual HbA<sub>1c</sub>** to check for progression to T2D
    - if FPG 6.0–6.9 mmol/l, 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, a diagnosis of T2D is likely, and Matching Interventions to Risk flowchart should be followed.

### Polycystic Ovary Syndrome

- Women living with polycystic ovary syndrome (PCOS) are 1.4 times more likely to develop T2D over their lifetime than women without PCOS<sup>[9]</sup>
- This increased risk is **independent of baseline bodyweight**;<sup>[9]</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>[10]</sup>

### People Living with Severe Mental Illness

- People living with severe mental illness (SMI) are 1.3 times more likely to develop T2D over their lifetime than people without SMI<sup>[9]</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>[11]</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>[12]</sup>
- For all people in the 'red zone' as depicted in the *Lester UK adaptation: positive cardiometabolic health resource* 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 we use our 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>
  - HbA<sub>1c</sub> continues to rise despite participation in an intensive lifestyle change programme
  - 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>[13]</sup>
- Review co-existing risk factors such as blood pressure, lipids, and smoking status.

## 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?](#)

### For Healthcare Professionals

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