Identifying People at High Risk of Type 2 Diabetes

Medscape UK X Guidelines
Primary Care Hacks

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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_{1c} values of 42–47 mmol/mol indicate prediabetes**[1] 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:[2]
  - **non-diabetic hyperglycaemia** (HbA_{1c} 42–47 mmol/mol[3])
  - **impaired fasting glucose** (fasting plasma glucose [FPG] ≥6.1 and <6.9 mmol/l[4])
  - **impaired glucose tolerance** (2-hour oral glucose tolerance test ≥7.8 and <11.1 mmol/l[4])
- **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.**[5] This has implications for the screening and management of prediabetes in the primary and secondary prevention of CVD[5]
- **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.[6]

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):[4]

1. 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
2. For those with high-risk scores for developing T2D (e.g., QDiabetes score ≥10%), a blood test for HbA_{1c} should be offered

Additionally, if aged ≥25 years and of South Asian or Chinese descent with body mass index (BMI) >23kg/m², there is no need to use a risk assessment tool and instead directly offer HbA_{1c} blood test.

Matching Interventions to Risk in People with Prediabetes

Risk factors for developing T2D

- Obesity
- Family history of T2D
- GDM
- MASLD (formerly NAFLD)
- CVD
- OSAHS
- Hypertension requiring treatment
- PCOS
- Learning disabilities
- SMI, e.g., bipolar disorder or schizophrenia
- Certain medications including regular steroids, statins, and atypical antipsychotics
- People in highly deprived socio-economic situations

- People aged 25–39 years of South Asian, Chinese, Black African, African-Caribbean descent or other high-risk black and minority ethnic groups
- A recent retrospective cross-sectional US study suggested the need for screening for T2D among high-risk Asian groups even at healthy BMI levels[A]

- Those aged ≥40 years (except pregnant women)
- NICE PH38 reminds us not to exclude anyone from assessment on the basis of age, as everyone can reduce their risk, including those aged ≥75 years[B]

Stage 1
- Use a risk assessment tool such as QDiabetes-2018
- If aged ≥25 years and of South Asian or Chinese descent with BMI >23 kg/m², you can omit the risk assessment tool and instead directly offer HbA_{1c} blood test

If low or intermediate risk score, e.g. **QDiabetes-2018 <10%,** no HbA_{1c} blood test is required

Discuss brief advice on the risks of developing T2D and offer verbal and written information about culturally appropriate resources that could help them change their lifestyle, e.g. Diabetes UK's *Information prescriptions for people with diabetes*

Reassess risk at least every 5 years

If high risk score, e.g. **QDiabetes-2018 ≥10%,** offer HbA_{1c} blood test

If HbA_{1c} <42 mmol/mol, the individual is at **moderate risk** of developing T2D

Discuss brief advice on the risks of developing T2D

Offer a brief intervention to help them change their lifestyle, e.g. structured weight-loss programmes

Offer verbal and written information about culturally appropriate resources that could help them change their lifestyle, e.g. Diabetes UK's *Information prescriptions for people with diabetes*

Reassess risk at least every 3 years

If HbA_{1c} 42–47 mmol/mol, the individual is at **high risk** of developing T2D

Discuss brief advice on the risks of developing T2D

Offer referral to a local, evidence-based, quality-assured intensive lifestyle change programme to increase physical activity and achieve and maintain weight loss

Offer verbal and written information about culturally appropriate resources that could help them change their lifestyle, e.g Diabetes UK's *Information prescriptions for people with diabetes*

Offer an HbA_{1c} blood test and reassess weight at least annually

If HbA_{1c} ≥48 mmol/mol, this is **suggestive of T2D**

Repeat HbA_{1c} blood test within 4 weeks to confirm diagnosis. If repeat HbA_{1c} ≥48 mmol/mol, a diagnosis of T2D is confirmed and should be managed as usual

If repeat HbA_{1c} <48 mmol/mol, follow recommendations below

BMI=body mass index; **CVD**=cardiovascular disease; **GDM**=gestational diabetes mellitus; **HbA_{1c}**=haemoglobin $_{A1c}$; **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 l 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*

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[7]
- For women previously diagnosed with GDM and whose blood glucose levels return to normal after birth, NICE recommends:[8]
  - lifestyle advice (including weight management, diet, and exercise)
  - **offer a FPG 6–13 weeks after delivery** to exclude T2D (HbA_{1c} 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_{1c}** 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[3]
- This increased risk is **independent of baseline bodyweight**;[9] NICE recommends assessing glycaemic status with an HbA_{1c} blood test at baseline in **all** women living with PCOS. Subsequently, glycaemic assessments should be conducted **every 1–3 years for life**, depending on the presence of additional risk factors for developing T2D.[10]

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[3]
- 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.[11] The aim of this resource is to help reduce the **health inequality of a 15–20-year mortality gap** in people living with SMI[12]
- 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_{1c} ≥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_{1c} 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_{1c} <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_{1c} blood tests. Consider metformin if:[4]
  - HbA_{1c} 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/m²
- 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[4]
- Prescribe metformin for 6–12 months initially. Check HbA_{1c} at 3-month intervals and stop metformin if no benefit is seen.[4]

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**[13]
- 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.

For references, visit this Primary Care Hack online at **medscape-uk.co/Hack-prediabetes**