

TNT estimates to implement recommended interventions to prevent type 2 diabetes in at risk people

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Please note that the estimates are rough and should be interpreted with caution.

Table 4a

| Time needed to improve the outcome for one person | Time needed to provide the intervention for all eligible in a practice of 2000 people | Time needed as proportion of time available |
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| <p>47h of GP time, 105 h of nurse time, and 86 h for professionals outside of the GP practice, for one fewer person to progress from HbA1c 42-47 mmol/mol to > 48 mmol/mol in 5 years.</p> <p>Not possible to estimate for mortality, CVD-mortality, or any other outcome since there is no evidence of a beneficial effect for those outcomes.</p> | <p>103 h for the GP, 230 hours for the nurse, and 190 h for professionals outside of the GP practice, per year, would be needed to provide the intervention to all eligible in a GP practice of 2000 people.</p> | <p>9% of total GP time available with patients (for all causes), and 20% of total nurse time available with patients (for all causes) would be needed to implement the recommendations</p> |

How TNT estimates were derived (more details available in Table 4b below):

Based on NICE guideline available here: <https://www.nice.org.uk/guidance/ph38>

Risk identification:

Stage 1

GPs: 1 minute for 20% of the population per year

Other: 2 + 2 + 10 minutes for 41% of the total population per year

Stage 2

GP: 1 minute for 20% of the total population per year

Nurses: 4 minutes for 20% of the total population per year

In a practice of 2000 patients:

GPs: 800 minutes = **13 h per year**

Nurses: 1600 minutes = **27 h per year**

Others: 11424 minutes = **190 h per year**

Interventions

Low risk:

Nurses: 10 minutes for 20% of the total population (in the first year of 5)

Moderate risk:

GPs: 25 minutes for 5% of the total population (in the first year of 5)

Nurses: 2.5 h for 5 % of the total population (in the first year of 5)

High risk:

GPs: 25 minutes for 5% of the total population (in the first year of 5)

Nurses: 4 hours for 5% of the total population (in the first year of 5)

Above cut off:

GPs: 25 minutes for 3.3% of the total population (in the first year of 5)

Nurses: 4 hours for 3.3% of the total population (in the first year of 5)

In a practice of 2000 patients:

GPs: 2500 minutes (25 minutes x 5% of 2000 or 100 people = 2500 minutes) or 42 h for moderate and 42 h for high risk; 1650 minutes (25 minutes x 3.3% of 2000 or 66 people = 1650 minutes) or 28 h for above cut-off =

Total for GPs: 112 h for the first year of 5 = **23 h per year on average**

Nurses: 4080 minutes or 68 h for low risk, 250 h for moderate risk, 400 h for high risk, 240 h for above cut-off = 958 h for the first year of 5 = **192 h per year on average**

Reassessment:

Low risk:

Nurses: 10 minutes for 20.4% of the total population every 5th year = 4.1% of the total population per year (for year 2-5)

Moderate risk:

GPs: 25 minutes for 5% of the total population every 3rd year = 1.7% of the total population per year (for year 2-5)

High risk:

GPs: 25 minutes for 5% of the total population per year (for year 2-5)

Above cut off:

GPs: 25 minutes for 3.3% of the total population per year (for year 2-5)

In a practice of 2000 patients:

GPs: 850 minutes or 14 h for moderate risk, 2500 minutes or 42 h for high risk, 1650 minutes or 28 h for above cut-off = 84 h per year for years 2-5 = **67 h per year on average**

Nurses: 820 minutes equals 14 h for low risk = 14 h per year for years 2-5 = **11 hours per year on average**

Overall

GPs: 13+23+67 = **103 h per year**

Nurses: 27+192+ 11 = **230 hours per year**

Others: **190 h per year**

Since the evidence review for the NICE guideline did not provide clearly defined absolute risk reductions, we used the corresponding Cochrane reviews ("Screening for type 2 diabetes" and "Diet, physical activity or both for prevention or delay of type 2 diabetes mellitus and its associated complications in people at increased risk of developing type 2 diabetes mellitus"). Generally, these seemed to reach the same conclusions as the NICE review; there was no evidence of a beneficial effect on any measured outcome from screening for diabetes. There was no evidence of a beneficial effect of intense lifestyle interventions for people at high risk (ie impaired glucose tolerance (IGT), impaired fasting blood glucose (IFG) or both) on mortality or CVD-mortality. There was an effect on proportion of participants with impaired glucose tolerance (IGT), impaired fasting blood glucose (IFG) or both at baseline developing glucose levels above cut-off for a diabetes diagnosis with a follow-up of max 6 years (mean 3.8 years): absolute risk reduction: from 257 to 146 per 1000: ARR 11 %: NNT approx. 9.

This evidence applies approximately to those defined as high risk in the NICE guideline (5% of total population). According to our estimates, 103 h per year per GP is needed to implement the intervention for all eligible in a population of 2000 people. Of those, 100 people are at high risk (corresponding to 5% of the population), of which 11 will achieve outcome (due to NNT 9) = 9.4 h per year in 5 years (i.e., 47 h) for one more person to achieve the outcome. Corresponding numbers for nurses are 230 hours per year per nurse for 2000 people - 100 people at high risk – of which 11 will achieve outcome = 21 h per year in 5 years (i.e., 105 h) for one more person to achieve the outcome. And corresponding numbers for other healthcare professionals are 190 h per year per other healthcare professional for 2000 people - 100 people at high risk – of which 11 will achieve outcome = 17 h per year in 5 years (i.e., 86 h) for one more person to achieve the outcome.

Cochrane reviews available here:

<https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD005266.pub2/full?highlightAbstract=screen%7Cscreening%7Cdiabet%7Cdiabetes>

<https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD003054.pub4/full?highlightAbstract=prevent%7Cpreventing%7Cdiabet%7Cdiabetes>

Table 4b

| Recommendation | | Category of healthcare personnel | Time needed to provide the intervention to each person | Population eligible | Proportion of total population | Time needed per personnel category for all eligible |
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| Risk identification (stage 1) | GPs and other primary healthcare professionals should use a validated computer-based risk-assessment tool to identify people on their practice register who may be at high risk of type 2 diabetes. The tool should use routinely available data from patients' electronic health records. If a computer-based risk-assessment tool is not available, they should provide a validated self-assessment questionnaire, for example, the Diabetes Risk Score assessment tool. This is available to health professionals on request from Diabetes UK . | GPs | Not estimated by NICE. Our estimate: if the computer-based risk-assessment tool is used, receiving the score, evaluating it, and deciding what to do with the derived information will likely take at least 1 minute per person identified. If the validated self-assessment questionnaire is used instead – the time would likely be much longer. | Not estimated by NICE. All adults would be eligible for screening – but if the screening is done “automatically”, the GP would only need to spend time on the ones identified as “at risk”. According to other estimates in this guideline – those defined as “high risk” constitute at least 20.4% of the total population. | 20.4% | GPs: 1 minute for 20.4% of the population per year |
| | GPs and other primary healthcare professionals should not exclude people from assessment, investigation or intervention on the basis of age, as everyone can reduce their risk, including people aged 75 years and over. | GPs | | | | Included in estimate above |
| | Pharmacists, opticians, occupational health nurses and community leaders should offer a validated self-assessment questionnaire to adults aged 40 and over, people of South Asian and Chinese descent aged 25 to 39, and adults with conditions that increase the risk of type 2 diabetes, other than pregnant | Other | Not estimated by NICE. Our estimate: 2 minutes. | Defined by NICE as 40.8% of the total population (see below). | 40.8% | Other: 2 minutes for 40.8% of the total population per year |

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| | <p>women. Or they should tell people how to access specific, validated online self-assessment tools, such as the Diabetes Risk Score featured on the Diabetes UK website.</p> <p>Particular conditions can increase the risk of type 2 diabetes. These include: cardiovascular disease, hypertension, obesity, stroke, polycystic ovary syndrome, a history of gestational diabetes and mental health problems. People with learning disabilities and those attending accident and emergency, emergency medical admissions units, vascular and renal surgery units and ophthalmology departments may also be at high risk. NICE's guideline on non-alcoholic fatty liver disease notes that it increases the risk of type 2 diabetes.</p> | | | | | |
| | <p>Pharmacists, opticians, occupational health nurses and community leaders involved in risk assessments should advise people with a high risk score to contact their GP or practice nurse for a blood test. The aim is to check if they have type 2 diabetes or to confirm their level of risk and discuss how to reduce it.</p> | Other | | | | Included in estimate above |
| | <p>All providers of risk assessments should explain to those attending for a type 2 diabetes risk assessment the implications of being at high risk and the consequences of developing the condition.</p> | Other | Not estimated by NICE. Our estimate: 2 minutes. | Defined by NICE as 40.8% of the total population (see below). | 40.8% | Other: 2 minutes for 40.8% of the total population per year |
| | <p>All providers of risk assessments should discuss with those attending for a type 2 diabetes risk assessment how to prevent or delay the onset of the condition. This includes being more physically active, achieving and maintaining a healthy weight, eating less fat and eating more dietary fibre. They should also tell people where to get advice and support to maintain these lifestyle changes in the long term.</p> | Other | Not estimated by NICE. Our estimate: 10 minutes. | Defined by NICE as 40.8% of the total population (see below). | 40.8% | Other: 10 minutes for 40.8% of the total population per year |
| Risk identification (stage 2) | <p>Trained healthcare professionals should offer venous blood tests (fasting plasma glucose [FPG] or HbA1c) to adults with high risk</p> | GPs or nurses | Not estimated by NICE. Our estimate: 5 minutes. We believe it is | Defined by NICE as 20.4% of the total population | 20.4% | GP: 1 minute for 20.4% of total population |

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| | <p>scores (stage 2 of the identification process). They should also consider a blood test for those aged 25 and over of South Asian or Chinese descent whose body mass index (BMI) is greater than 23 kg/m². The aim is to:</p> <ul style="list-style-type: none"> - determine the risk of progression to type 2 diabetes (a fasting plasma glucose of 5.5 to 6.9 mmol/l or an HbA1c level of 42 to 47 mmol/mol [6.0 to 6.4%] indicates high risk) or - identify possible type 2 diabetes by using fasting plasma glucose, HbA1c or an oral glucose tolerance test (OGTT), according to World Health Organization (WHO) HbA1c criteria. | | <p>most reasonable to assume that this will sometimes be done by a GP, but in most cases by a nurse. We therefore split the time to 1 minute for GPs, and 4 minutes for nurses.</p> | | | <p>Nurses: 4 minutes for 20.4% of total population</p> |
| | <p>Ensure HbA1c tests, including point-of-care tests, conform to expert consensus reports on appropriate use and national quality specifications (see NHS Diabetes website and WHO guidance on using HbA1c for diagnosing diabetes). The tests should only be carried out by trained staff.</p> | Unclear | | | | <p>Not included in our estimates</p> |
| <p>People at low risk</p> | <p>For people at low risk (that is, those who have a low or intermediate risk score), tell the person that they are currently at low risk, which does not mean they are not at risk – or that their risk will not increase in the future. Offer them brief advice.</p> | Nurses | <p>Nurses: 10 minutes</p> <p>Brief advice is estimated by NICE to take 5-15 min. Since “brief advice” constitutes a wide range of advice on a broad range of lifestyle factors (see below), it seems unlikely that this can be done in less than 15 minutes. But to not risk overestimating – we will assume that this takes 10 minutes. We assume that this will in</p> | <p>50% of those eligible for risk assessment are estimated by NICE to be found to have low or intermediate risk. Those eligible are also estimated by NICE as follows: 40,8% of the total population (38.2% of the population are above 40 y, and another 2.6% are people aged 25 to 39 of South Asian, Chinese, African-Caribbean, black African and other high-risk black and</p> | <p>At least 20.4% of the total population</p> | <p>Nurses: 10 minutes for 20.4% of the total population (in the first year of 5)</p> |

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| | | | most cases be delivered by the nurse. | minority ethnic groups, except pregnant women). This estimate is an underestimate since we do not include “adults with conditions that increase the risk of type 2 diabetes” since we could not find an estimate of how many these are. | | |
| | <p>As part of brief advice:</p> <ul style="list-style-type: none"> - Discuss people's risk factors and how they could improve their lifestyle to reduce overall risk. - Offer encouragement and reassurance. - Offer verbal and written information about culturally appropriate local services and facilities that could help them change their lifestyle. Examples could include information or support to: improve their diet (including details of any local markets offering cheap fruit and vegetables); increase their physical activity and reduce the amount of time spent being sedentary (including details about walking or other local physical activity groups and low-cost recreation facilities). The information should be provided in a range of formats and languages. | Nurses | | | | Included in estimate above |
| Moderate risk | <p>For people with a moderate risk (a high risk score, but with a fasting plasma glucose less than 5.5 mmol/l or HbA1c of less than 42 mmol/mol [6.0%]):</p> <ul style="list-style-type: none"> - Tell the person that they are currently | GPs or nurses | <p>GPs: 25 minutes Nurses: 2.5 hours</p> <p>Time not specified by NICE. Our</p> | <p>Estimated by NICE to be 12% of those eligible. Those eligible are 40.8% of the total population (see above)</p> | 5% of the total population | <p>GPs: 25 minutes for 5% of the total population</p> <p>Nurses: 2.5 h for 5 % of</p> |

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| | <p>at moderate risk, and their risks could increase in the future. Explain that it is possible to reduce the risk. Briefly discuss their particular risk factors, identify which ones can be modified and discuss how they can achieve this by changing their lifestyle.</p> <ul style="list-style-type: none"> - Offer them a brief intervention to help them change their lifestyle: give information about services that use evidence-based behaviour-change techniques that could help them change, bearing in mind their risk profile. Services cited could include walking programmes, slimming clubs or structured weight-loss programmes. (See recommendations 1.11.1 to 1.14.3.) - Discuss whether they would like to join a structured weight-loss programme. Explain that this would involve an individual assessment and tailored advice about diet, physical activity and behaviour change. Let them know which local programmes offer this support – and where to find them. | | <p>estimate: 25 minutes for the initial advice (which we assume will in most cases be delivered by the GP) – and another 2.5 hours for the brief intervention and the weight-loss programme (which we assume will in most cases be delivered by the nurse) (could be delivered in groups – and the estimate is therefore reduced).</p> | | | <p>the total population (in the first year of 5)</p> |
| High risk | <p>For people confirmed as being at high risk (a high risk score and fasting plasma glucose of 5.5–6.9 mmol/l or HbA1c of 42 to 47 mmol/mol [6.0 to 6.4%]):</p> <ul style="list-style-type: none"> - Tell the person they are currently at high risk but that this does not necessarily mean they will progress to type 2 diabetes. Explain that the | GPs or nurses | <p>GPs: 25 minutes Nurses: 4 hours</p> <p>Time not specified by NICE. Our estimate: 25 minutes for the initial advice (which we assume will</p> | <p>Estimated by NICE to be 12% of those eligible. Those eligible are 40.8% of the total population (see above)</p> | 5% of the total population | <p>GPs: 25 minutes for 5% of the total population Nurses: 4 hours for 5% of the total population (in the first year of 5)</p> |

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| | <p>risk can be reduced. Briefly discuss their particular risk factors, identify which ones can be modified and discuss how they can achieve this by changing their lifestyle.</p> <ul style="list-style-type: none"> - Offer them a referral to a local, evidence-based, quality-assured intensive lifestyle-change programme (see recommendations 1.8.1 to 1.10.2). In addition, give them details of where to obtain independent advice from health professionals. | | <p>in most cases be delivered by the GP).</p> <p>For the intensive lifestyle-change programmes – it is specified by NICE to include at least 16 hours of contact face-to-face with clinician, either in groups or one-to-one. We therefore estimate 4 hours for each person (which we assume will in most cases be delivered by the nurse) and judge this to be a conservative estimate.</p> | | | |
| People above cut-off for diabetes | <p>For people with possible type 2 diabetes (fasting plasma glucose of, 7.0 mmol/l or above, or HbA1c of 48 mmol/mol [6.5%] or above, but no symptoms of type 2 diabetes):</p> <ul style="list-style-type: none"> - Carry out a second blood test. If type 2 diabetes is confirmed, treat this in accordance with NICE's guideline on managing type 2 diabetes. Ensure blood testing conforms to national quality specifications. - If type 2 diabetes is not confirmed, offer them a referral to a local, quality-assured, intensive lifestyle-change programme (see recommendations 1.8.1 to 1.10.2). | GPs or nurses | <p>GPs: 25 minutes Nurses: 4 hours</p> <p>Time not specified by NICE. Our estimate: At least the same workload as for those with HbA1c 42-47 mmol/mol, i.e., 25 minutes for initial advice (which we assume will in most cases be delivered by the GP) and 4 hours for intensive lifestyle-change programme (which we assume will in most cases be delivered by a nurse).</p> | Estimated by NICE to be 8% of those eligible. And those eligible are 40.8% of the total population (see above). | 3.3% of total population | <p>GPs: 25 minutes for 3.3% of the total population</p> <p>Nurses: 4 hours for 3.3% of the total population (in the first year of 5)</p> |
| Reassessing risk | <p>Keep an up-to-date register of people's level of risk. Introduce a recall system to contact and invite people for regular review, using the two-stage strategy (see recommendations 1.1.3 and 1.1.4).</p> | GPs or nurses | | | | Not included in our estimates |

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| | Offer a reassessment based on the level of risk. Use clinical judgement to determine when someone might need to be reassessed more frequently, based on their combination of risk factors (such as their body mass index [BMI], relevant illnesses or conditions, ethnicity and age). | GPs or nurses | | | | Not included in our estimates |
| | For people at low risk (with a low or intermediate risk score) offer to reassess them at least every 5 years to match the timescales used by the NHS Health Check programme. Use a validated risk-assessment tool. | GPs or other healthcare professional | Nurses: 10 minutes If all those considered at low risk at first assessment are considered at low risk also at all further assessment – the same amount of time will be needed. | 20.4% of total population every 5 th year – which means 4.1% of the total population each year | 4.1% of total population | Nurses: 10 minutes for 4.1% of the total population (for year 2-5) |
| | For people at moderate risk (a high risk score, but with a fasting plasma glucose less than 5.5 mmol/l, or HbA1c less than 42 mmol/mol [6.0%]), offer to reassess them at least every 3 years | GPs or nurses | GPs: 25 minutes If all those considered at moderate risk at first assessment are considered at moderate risk also at all further assessments – the same amount of time will be needed. However – it is unlikely that the same person will attend weight programmes every third year, we therefore only count time for GPs (and no time for the weight management programme). | 5% of the total population every 3 rd year – which means 1.7% of the total population each year | 1.7% of the total population | GPs: 25 minutes for 1.7% of the total population (for year 2-5) |
| | For people at high risk (a high risk score and fasting plasma glucose of 5.5 to 6.9 mmol/l, or HbA1c of 42 to 47 mmol/mol [6.0 to 6.4%]), offer a blood test at least once a year (preferably using the same type of test). Also offer to assess their weight or BMI. This includes people without | GPs or nurses | GPs: 25 minutes If all those considered at high risk at first assessment are considered at high risk also at all further assessment – | 5% of the total population each year | 5% of the total population | GPs: 25 minutes for 5% of the total population, per year (for year 2-5) |

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| | <p>symptoms of type 2 diabetes whose:</p> <ul style="list-style-type: none"> - first blood test measured fasting plasma glucose at 7.0 mmol/l or above, or an HbA1c of 48 mmol/mol (6.5%) or greater, but - whose second blood test did not confirm a diagnosis of type 2 diabetes. | | <p>the same amount of time will be needed. However, it is unlikely that the same person will attend intense lifestyle change programmes each year, we therefore only count time for GPs (and no time for the lifestyle change programme).</p> | | | |
| | <p>At least once a year, review the lifestyle changes people at high risk have made. Use the review to help reinforce their dietary and physical activity goals, as well as checking their risk factors. The review could also provide an opportunity to help people 'restart', if lifestyle changes have not been maintained.</p> | <p>GPs or nurses</p> | | | | <p>Included in above estimate.</p> |