

Diabetes screening and the NHS Health Check programme: Can we begin to address ethnic disparities?

Samuel Seidu, Melanie J Davies, Kamlesh Khunti

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Article points

1. The purpose of the NHS Health Check programme is to assess the risk of developing vascular or metabolic disease and to manage the risk factors of those identified at high risk to prevent disease progression and improve outcomes.
2. Lower rates of uptake of screening programmes have been reported among certain black and minority ethnic groups and in areas of socioeconomic deprivation, although significantly higher attendance in such groups has been reported in other studies.
3. Whatever the level of uptake, healthcare professionals can, and should, draw upon the available evidence to tackle the issue of ethnic disparities.

Key words

- Inequalities
- High risk
- Screening

Authors

Author details can be found at the end of the article.

The NHS Health Check programme, introduced in England in April 2009 for adults aged 40–74 years, serves as a good opportunity to identify people with type 2 diabetes and those at risk of diabetes. There are varying reports of the level of uptake of NHS Health Checks in different populations. The impact of differing levels of uptake are examined, in terms of potential workload and economic implications, and a strong case for the importance of addressing ethnic disparities through screening is made. The authors propose a potential alternative approach to adopt in areas where there is a population with relatively high socio-economic deprivation and a high proportion of residents from black and minority ethnic groups.

It is estimated that up to 850 000 people in the UK have diabetes but are unaware of the diagnosis (Diabetes UK, 2012). With the number of people diagnosed with diabetes now at 3 million (Diabetes UK, 2013), and still rising, it is imperative that significant effort is put into early identification of people with diabetes. The prevalence of screen-detected diabetes in some studies is estimated at 4.7% overall, rising to 7.4% in South Asian females and 9% in South Asian males (Khunti et al, 2013).

The NHS Health Check programme Purpose of the programme

The purpose of the NHS Health Check programme, introduced in England in April 2009 for adults aged 40–74 years, is to assess the risk of developing vascular or metabolic disease and to manage the risk factors of those identified at high risk to prevent disease progression and improve outcomes. The programme therefore serves as a good opportunity to identify people with type 2 diabetes and those at risk of diabetes (Department of Health, 2008a).

Variations in uptake of NHS Health Checks

There are varying reports of the level of uptake of NHS Health Checks in different populations. Although the Department of Health assumed a 75% uptake in their cost-effectiveness modelling (Department of Health, 2008b), rates as low as 29% have been reported in some areas (Richardson et al, 2008). Lower rates of uptake of screening programmes have been reported among certain black and minority ethnic (BME) groups and in areas of socioeconomic deprivation (Goyder et al, 2008).

Possible reasons for the low uptake in certain BME groups include cultural and economic barriers, as well as fatalistic acceptance of the cause and course of the diabetes. Whatever the contributing factors, such disparities will surely be worsened if screening for high risk selectively in these groups is not considered seriously. A more concerted call for, and recall of, these population groups where NHS Health Checks are concerned, coupled with strategies to prevent the onset of diabetes through diet and lifestyle changes that are culturally sensitive and population specific is therefore essential (Liptin et al, 1998).

Page points

1. The NICE (2012) public health guidance on risk identification and interventions for individuals at high risk recommends a two-step process of strategically targeting screening at those with highest risk.
2. In this process, an individual's risk of developing diabetes would be quantified initially using a suitable risk evaluation (by self-assessment or computerised scores) that does not require biochemical measurements.
3. It might be that a one-step approach with measurement of HbA_{1c} levels in all may be the better option to adopt in areas of high prevalence.
4. The £332 million annual cost of the programme from the economic modelling by the Department of Health will adequately fund the screening itself, but once these screen-detected cases are found, management of the condition and subsequent complications is going to greatly stretch the overburdened health system.

HbA_{1c} <42 mmol/mol
Followed up at 5-year intervals

HbA_{1c} 42–46 mmol/mol
Classified as being "at risk" of diabetes
Offered a structured self-management education programme
Invited back for repeat screening at 12-month intervals

HbA_{1c} ≥47 mmol/mol
Diagnosed with diabetes, after repeat testing for confirmation if asymptomatic
Removed from the call-and-recall NHS Health Check programme and managed through existing diabetes care pathways

Figure 1. A summary of the diabetes component of a one-step approach to screening presented by the authors as an option to run, in place of NHS Health Checks, for areas of high diabetes prevalence.

Conversely, another study reported significantly higher attendance for NHS Health Checks among people from South Asian (53.0%) or mixed (57.8%) ethnic backgrounds (Dalton et al, 2011). In this study, compared with the white population, people of South Asian or mixed ethnicity were significantly more likely to attend. The purported reasons for this observation were that the Health Check programme is mainly carried out in primary care, where people of South Asian origin may have a higher attendance (Goddard and Smith, 1998). Also, the study area had a high proportion of primary care health professionals of South Asian background, thus potentially fostering a cultural concordance between patients and clinicians, which has been linked to improved patient satisfaction (LaVeist and Nuru-Jeter, 2002).

This finding makes the programme a welcome intervention for reducing the disparities of diabetes prevalence and outcomes between the different populations.

In all individuals aged between 40 and 74 years without a diagnosed existing vascular disease, if they have a blood pressure ≥140/90 mmHg or a BMI ≥30 kg/m² (27.5 kg/m² in minority ethnic groups) then a test for diabetes, using either fasting plasma glucose or HbA_{1c}, is suggested. Recent observational studies have reported a 33.3% failure rate of identifying individuals of certain ethnicities (mainly South Asian) who either are at risk of developing or have diabetes when this approach is followed (Smith et al, 2013). Hence, a generic application of the programme to all populations could potentially lead to further widening of inequalities. Fine-tuning the programme to reflect various population needs is therefore a better option.

NICE public health guidance recommendation to target those at highest risk: A two-step approach

The NICE (2012) public health guidance on risk identification and interventions for individuals at high risk recommends a two-step process of strategically targeting screening at those with highest risk. In this process, an individual's risk of developing diabetes would be quantified initially using a suitable risk evaluation (by self-assessment

or computerised scores) that does not require biochemical measurements. Risk above an agreed threshold would prompt a blood test for fasting plasma glucose or an HbA_{1c} level, along with other tests required for cardiovascular risk assessment.

An alternative, one-step approach

It might be that a one-step approach with measurement of HbA_{1c} levels in all may be the better option to adopt in areas of high diabetes prevalence, especially where there is a population with relatively high socio-economic deprivation and a high proportion of residents from BME groups (Preiss et al, 2011). A non-fasting blood sample could be taken for HbA_{1c}, with the other required tests including lipids and plasma creatinine for cardiovascular disease and chronic kidney disease risk assessment. Individuals would then be classified as being at risk of diabetes if they had HbA_{1c} levels that were elevated but below the diabetes threshold (in the range of 42–46 mmol/mol [6.0–6.4%]) and would be offered structured self-management education programmes like Walking Away from Diabetes, as is already happening in Brighton and Hove (see <http://www.sussexcommunity.nhs.uk/services/servicedetails.htm?directoryID=16294> [accessed 04.03.13]). These individuals would then be invited back for repeat screening at intervals of 12 months. Those at low risk (HbA_{1c} <42 mmol/mol [6%]) would be followed up at 5-year intervals and those with HbA_{1c} ≥47 mmol/mol (6.5%) would be diagnosed with diabetes, after repeat testing for confirmation if asymptomatic (NICE, 2012). Finally, these people would be removed from the call-and-recall NHS Health Check programme and managed through existing diabetes care pathways. This is summarised in *Figure 1*.

Workload implications

A 75% uptake level of NHS Health Checks, as modelled by the Department of Health, would undoubtedly create a major impact on workload for healthcare assistants, nurses, laboratories and GPs. At this level of uptake, with 2.2 million people being screened it is estimated that between 84 038 and 89 231 people will be diagnosed with type 2 diabetes. Even if the uptake was around 45% (1.35 million people screened), between

51 567 to 54 755 people will be diagnosed, according to these estimates (Khunti et al, 2013).

In the UK, people of South Asian background are at a higher risk of developing type 2 diabetes and typically do so at about 5 years earlier than the white population (Yorkshire and Humber Public Health Observatory, 2006). The economic concepts of marginal analysis and profit maximisation dictate that it is prudent, from a health-system perspective, to consider an earlier screening age for such high-risk groups.

The £332 million annual cost of the programme from the economic modelling by the Department of Health will adequately fund the screening itself, but once these screen-detected cases are found, management of the condition and subsequent complications is going to greatly stretch the already overburdened health system. Structured self-education programmes – as recommended by NICE (2011) – are more costly for BME groups (Stone et al, 2008), and many places have no services in place for this.

Nevertheless, research from the US suggests that the initial uphill cost of interventions of this nature will be offset after 14 years, and that by 25 years there will be a saving realised of \$5.7 billion (approximately £3.7 billion*); Zhou et al, 2012).

It is hoped that a proportion of the suggested potential savings can be used to tackle the issue of inequalities. Moreover, the NICE (2012) guidance modelling showed that screening South Asian people aged between 25 and 49 years could potentially be cost saving.

Conclusion

The NHS Health Check programme provides an excellent opportunity for us to deal with the high prevalence of undiagnosed diabetes and to identify those at high risk. Some studies have reported a poor uptake in BME groups while others have shown higher uptake (explained by a cultural concordance between patients and physicians) within this group, but whatever the level we can, and should, draw upon the available evidence to tackle the issue of ethnic disparities.

The NICE (2012) public health guidance on “Preventing type 2 diabetes: Risk identification

and interventions for individuals at high risk” could help the NHS Health Check programme improve the detection of people who have diabetes or who are at risk of developing the condition. This undoubtedly will increase workload in primary care in the short term but the overall benefit for the entire population, from a health-system perspective, will hopefully more than compensate for this. For the programme to have a high uptake and make a difference, not only will increased funding for early detection be required, but the availability of prevention programmes like Walking Away from Diabetes has to be ensured. ■

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“For the programme to have a high uptake and make a difference, not only will increased funding for early detection be required, but the availability of prevention programmes like Walking Away from Diabetes has to be ensured.”

Author details

Samuel Seidu is the Locality Diabetes Lead for the Leicester Primary Care Group and is also an Honorary GP Lecturer and Research Associate at the Leicester Diabetes Centre.

Kamlesh Khunti is a GP, Leicester, a Professor of Primary Care Diabetes and Vascular Medicine, Leicester Diabetes Centre, and an advisor to the Department of Health’s National Screening Committee on Vascular Risk. He also chaired the recent NICE guidance on “Preventing type 2 diabetes: Risk identification and interventions for individuals at high risk”.

Melanie J Davies is a Professor of Diabetes Medicine, University of Leicester, an Honorary Consultant, University Hospitals of Leicester, a member of the UK National Screening Committee’s Vascular Board Executive Committee, and a Professional Member of the NICE Quality Standards for the Prevention of Diabetes Mellitus.

*Using an exchange rate taken at the time of writing.