GP Commissioning

Opportunistic health checks in a retail environment

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Key message

Opportunistic health checks in a retail environment are able to reach traditionally hard-to-reach groups. Follow-up rates post-opportunistic consultation are high.

Why this matters to us

As cardiovascular disease continues to increase in terms of disease burden and mortality, primary care physicians should be thinking more creatively in offering disease prevention and subsequent health promotion.

ABSTRACT

Cardiovascular disease remains common and accounts for many deaths, but primary cardiovascular risk factors are consistently underdiagnosed in the UK. NHS health checks are being implemented nationally in the next five years, targeting those aged 40 to 74 years, and many primary care trusts have commissioned health checks to be carried out opportunistically as an outreach programme in public places to aid uptake and improve access. However, there is little published evidence on the effectiveness and subsequent follow-up rates in such a model. This service evaluation verifies the effectiveness of primary cardiovascular screening in a supermarket setting in south east London. Eight consecutive Saturday clinics were carried out at the entrance of a local supermarket offering opportunistic health screening including blood pressure, random glucose, body mass index and screening spirometry. The primary outcomes are rate of uptake of the service, the proportion of participants with previously undiagnosed cardiovascular risk factors that were identified from the screening, and the subsequent rate of follow-up. Over the eight-week

period, 1024 participants (457 males, 44.6%; 567 females 567, 55.4%) undertook the screening. Four hundred and twenty-two participants (41.2%) required follow-up for abnormal readings. Of these, 325 (76.4%) were abnormal readings in participants with previously unknown disease (raised blood glucose, 95 participants (9.3%); raised blood pressure, 172 participants (16.8%); FEV1 < 80%, 93 participants (9.1%)). Using the NHS health check age range, 34.3% of raised blood pressure measurements and 38.9% of raised blood glucose measurements would not have been picked up. The cost per patient was £19, the cost per abnormal finding was £43.66. Opportunistic health screening targeting particular groups of individuals appears to be highly effective in identifying significant pathology. The main limitation of this pilot was that cholesterol measurement was not performed and therefore full cardiovascular risk assessment could not be offered.

Keywords: cardiovascular disease, cancer screening, health check, health screening, opportunistic, outreach, supermarket

Introduction

Cardiovascular disease currently affects the life of over 4 million people in England¹, causing 36% of deaths, over 170 000 a year. Cardiovascular disease is responsible for 20% of all hospital admissions.¹ Data from NHS comparators show an average underdiagnosis rate of 50% for major cardiovascular risk factors.² Provisional modelling by the Department of Health in England suggests that up to 9500 heart attacks and strokes, and 2000 deaths could be prevented each year by primary cardiovascular screening and subsequent risk management in people between the ages of 40 and 74.¹ Assessment contains a brief history, including family history, examination of blood pressure and a blood test of glucose and cholesterol levels. Screening carried out in supermarkets showed promising results with high follow-up rates.³ Perceived benefits of increased uptake of primary cardiovascular risk factor screening should lead to earlier intervention, lifestyle changes and ultimately reduce morbidity and mortality. Health screening can then be incorporated into a wider context of health promotion and disease prevention. The aim of this service evaluation is to analyse the effectiveness of primary cardiovascular screening in a supermarket setting in Thamesmead, south east London.

Methods

Health checks took place at the entrance of a supermarket in south east London on eight consecutive Saturdays between 10 a.m. and 2 p.m., with three clinicians present, targeting participants aged 40–74 years. The pilot was a self-referral service where participants were recruited as they walked through the store. They were approached by trained staff, the objective of the consultation was explained and consent obtained. Participants completed an initial screening questionnaire (relevant past medical history, smoking status, age, family history, GP) and weight and height were measured. The participants were then streamed to the next available clinician. Blood pressure, FEV1 (for smokers) and finger-prick random glucose were performed. The readings were interpreted by clinicians, and advice setting out the individual's level of vascular risk was given. Those who had been identified as at elevated risk for cardiovascular disease or chronic obstructive pulmonary disease (COPD) were advised to see their registered GP for follow-up. A copy of the results was given to the participant, an additional copy was faxed to GP in the next working week. Participants were then asked to complete a satisfaction questionnaire.

Participants who were found to benefit from lifestyle advice were immediately signposted to on-site health trainers for a further tailored programme.

Data on follow-up rates was collated by contacting registered practices at six months to see whether participants who were advised to see their GP have attended, investigations performed and whether medical treatment was initiated.

Random blood glucose via finger prick test was performed due to the timing of the pilot (between 10 a.m. and 2 p.m.). No assumption of fasting glucose was made or enforced. There is no current established guidance of what level of random serum blood glucose is considered to be at risk of diabetes or impaired glucose tolerance. The service provider chose that any level > 7.8 mmol is raised and participants were advised to seek further follow-up with their own registered GP with the rationale that this is the level for impaired glucose tolerance in an oral glucose tolerance test.⁴ Blood pressure > 140 mmHg systolic or 90 mmHg diastolic (or both) is raised⁵ and participants were advised to follow-up with own GP for further readings and investigations. Handheld spirometry was performed for smokers, and a reading of FEV1 < 80% of predicted based on the participant's age, gender, height and ethnicity was explained as being reduced. The findings were then illustrated with the support of a visual tool of the effect of smoking on lung age with an emphasis on health gains if the participant embarked on smoking cessation.

The data was collated into an Excel spread sheet by an administrator on the next working day with each participant given a number to maintain anonymity. The data was then evaluated by the Public Health Department in NHS Greenwich and separately by authors.

Results

The health checks took place over eight Saturdays (16 May 2009 to 5 July 2009) between 10 a.m. and 2 p.m. and 1024 participants were seen, 457 (44.6%) males and 567 (55.4%) females. The average number of patients seen was 128 per session (126–129). No participants were turned away or refused service, and no participants were seen more than once.

Overall, 663 (64.7%) participants were between the ages of 40 and 74 years, within the NHS vascular checks target age range; 317 (31%) participants were younger than the NHS target range and 44 (4.3%) were older (Figure 1). Overall, 434 (42.4%) participants were overweight (BMI of 25–29.9), 284 (27.7%) were obese (BMI 30–39.9), 35 (3.4%) had a BMI over 40.

Figure 1 Age range of participants. Pale grey: NHS health check target. Dark grey: outside NHS health check target

In 422 participants (41.2%), 458 abnormal readings were measured, 38 participants (3.7%) had more than one abnormal reading. Of the abnormal readings, 131 were in 97 participants with previously known conditions; 327 abnormal readings were found in 325 (31.8%) participants with previously undiagnosed conditions.

Elevated blood glucose

There were 122 participants (11.9%) with elevated random serum blood glucose > 7.8 mmol. Of these, 30 were known to be diabetic (24.5%), whereas 92 participants were not previously diagnosed (75.5%). Among the participants with previously undiagnosed high blood glucose, 37 were outside the NHS health check age range (Figure 2), and were especially from the ethnic groups white, black Caribbean, black African and Pakistani.

Elevated blood pressure

There were 248 participants (24.2%) with elevated blood pressure. Of these, 173 (69.8%) had no past medical history of hypertension, whereas 75 (30.2%) were known to be hypertensive (of 189 participants (39.7%) with a past medical history of hypertension). Among the participants with previously undiagnosed hypertension, 59 were outside the NHS health check age range (Figure 2). Forty-seven percent of the black African ethnic group with elevated blood pressure measurements were younger than 40 years (9.2% of all the black African group screened).

Reduced FEV1 ($< 80\%$ predicted)

In total, 357 hand-held spirometry measurements were performed, 193 of these were self-disclosed smokers, the other 164 participants had seen lung age being advertised on posters or leaflets or seen other

Figure 2 Abnormal readings and age group of participants with previously undiagnosed conditions

participants having this test performed and requested to have it done. However, 14 (6.8%) smokers declined this particular intervention. There were 88 participants (8.6%) with reduced FEV1 values. Of these, 26 (29.5%) were known to suffer from COPD or asthma, whereas 62 (70.5%) had no past medical history of obstructive lung disease. Among the participants with previously undiagnosed respiratory conditions and a decreased FEV1, 18 participants were outside the NHS health check age range (Figure 2).

Cancer screening

Questions were asked as to whether the participants recalled their screening being up to date. Of those who were eligible for cancer screening, 42/203 (20.7%) females aged 50–70 years remembered their breast screening as being out of date, 130/503 (25.8%) women aged 20–64 years remembered their cervical cancer screening being out of date, and 99/129 participants (76.7%) aged 60–69 years recalled that their bowel screening was out of date (Figure 3).

Follow-up

Of the 422 participants with abnormal readings, 41 (9.7%) were not registered with a GP or had left the practice with which they were registered. We were not able to trace whether they subsequently received follow-up elsewhere. Of the 97 participants with raised readings in previously known conditions such as diabetes, hypertension, COPD and asthma, 84 (86.6%) had a follow-up with their GP by six months, 82 (84.9%) had further investigations including blood tests, and 64 (66.0%) had their medications amended. Of the 325 participants with previously undiagnosed

conditions and abnormal readings, 32 (9.8%) were not registered with a GP or had left the practice. At six months, 210 (64.6%) had seen their GP as advised, of these, 208 (64.0%) had further investigations, and then 155 went on to have medications (47.7%). Overall, 83 (25.5%) of those who were advised to have a follow-up had not seen their GP at six months. Their registered GPs were aware of these readings and logged these onto their medical records (Figure 4).

Cost

The total budget for this project was £19 998, so each health check cost £19.53. The price for each participant with abnormal readings was £47.38, was for each participant with previously unknown conditions was £61.53.

Participants feedback

All participants were approached to complete a post-consultation feedback and 860 (83.98%) completed the anonymous feedback form. Of these, 80.2% were very satisfied, 8.0% satisfied, 1.1% neither satisfied nor dissatisfied, 1.0% dissatisfied and 9.7% very dissatisfied. The dissatisfied and very dissatisfied participants' main issues were a lack of privacy, the consultation tables were next to each other.

Discussion

This service evaluation was performed in order to analyse whether outreach models of health screening were effective. A literature search showed only one

Figure 3 Cancer screening uptake of pilot population compared to national cancer uptake^{6,7}

Figure 4 Follow-up of patients with previously unknown conditions

published study on cardiovascular screening in a supermarket setting.³ Underscreening of cardiovascular risk factors has been documented in England,² the USA⁶ and United Arab Emirates.⁷ A survey from NHS Comparators² revealed significant underdiagnosis of cardiovascular disease across England with an average underdiagnosis across London of 48% of hypertensive patients⁸ and undertreatment of 26.1% of hypertensive patients with blood pressure remaining > 150/90 mmHg.⁸ There is a similar underdiagnosis of obesity of 58% across England, 62% across London and 28% underdiagnosis of diabetes in London.² In this pilot, the blood pressure of 39.6% of known hypertensive patients was not adequately controlled.

Follow-up rates were slightly higher than in the study of Strychar *et al.*³ This may be attributed to supporting staff being briefed to particularly invite the rather 'hard to reach' population involved (overweight or obese, black African men), as identified by the service provider's Joint Strategic Needs Assessment.⁹ That also partly explains the higher than national rate of overweight and obese people (73.5% locally, 61% nationally¹⁰), and the higher proportion of ethnic minorities, in particular black African and black Caribbean participants. The 1024 participants seen were more than the 400 originally expected. The time required for each consultation was shortened mainly because supporting staff took information from participants prior to consultation with clinicians.

This pilot identified a high proportion of participants with abnormal readings and no past medical history (31.7%). If the NHS health check age range¹ is used for screening, 35% of people with previously undiagnosed conditions would have been missed, mainly those younger than 40 years of age. There was a large gap in patients eligible for bowel screening between the local population and the national average. Commissioners can use the data for interventions to increase uptake locally by means of social marketing.

Because of funding limitations, random glucose was chosen as a screening tool for diabetes. A better choice of screening for this outreach model would be to use near patient testing of HbA1c. Also because funding limitations, a full cardiovascular screen could

not be performed as there was a lack of cholesterol testing. This would, however, lengthen the time of the consultation because an average near patient testing of cholesterol including total cholesterol and HDL takes at least 10 minutes. Another limitation on the data is that a participant's disease state is based on their recollection and disclosure of their past medical history which may be affected by recall bias. The nature of the outreach model meant that participants with known conditions including hypertension (189 participants, 18.5%), diabetes (77 participants, 7.5%), coronary heart disease (36 participants, 3.5%) and previous CVA (10 participants, 0.97%) had a health check performed. However, for the NHS health check, it was clear that this would be only a primary cardiovascular prevention and these participants would not have been eligible.

Conclusion

This pilot helped to inform commissioners about the effectiveness of opportunistic health checks. The outreach model is particularly effective in targeting groups that have been locally identified as having higher health needs. There was a high number of abnormal readings in previously healthy individuals. A high proportion of these may be missed if the age range indicated by NHS health checks was followed in this particular area. Participants were very satisfied with the health checks and the follow up rate was high.

CONFLICT OF INTEREST

None declared

REFERENCES

- 1 Department of Health. *Putting Prevention First*. London: Department of Health, 2008. www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_083822 (accessed 16 March 2009).

- 2 NHS Comparators. *NHS Comparators*. 2009. <https://www.nhscomparators.nhs.uk/NHSComparators/CommissionerQuery.aspx> (accessed 19 March 2009).
- 3 Strychar IM *et al.* A supermarket cardiovascular screening program: analysis of participants' solicitation of follow-up care. *American Journal of Preventive Medicine* 1994; 10(5):283–9.
- 4 World Health Organisation. *Definition and Diagnosis of Diabetes Mellitus and Intermediate Hyperglycaemia*. Geneva: WHO, 2006. www.who.int/diabetes/publications/Definition%20and%20diagnosis%20of%20diabetes_new.pdf
- 5 National Institute of Clinical Excellence. *NICE Guidelines in Hypertension: management in hypertension in adults in primary care*. London: NICE, 2006.
- 6 Mullins CD *et al.* Health disparities: a barrier to high-quality care. *American Journal of Health-System Pharmacy* 2005;62(18):1873–82.
- 7 Abdulle AM *et al.* Under-treatment and under diagnosis of hypertension: a serious problem in the United Arab Emirates. *BMC Cardiovascular Disorders* 2006;6:24.
- 8 London Health Observatory. *Practice profile*. 2009. www.lho.org.uk/PracProf/Default.aspx?pct=5H1 (accessed 19 March 2009).
- 9 NHS Greenwich. *Joint Strategic Needs Assessment*. 2010. www.greenwich.nhs.uk/documents/2151.pdf (accessed 16 April 2010).
- 10 The Information Centre. *Statistics on Obesity, Physical Activity and Diet in England*. 2010. www.ic.nhs.uk/pubs/opad10 (accessed 11 August 2010).

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