Public Health England

Protecting and improving the nation's health

NHS Health Check programme

Literature review October 2014 to January 2015

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A review of NHS Health Check literature

1. Introduction

The NHS Health Check is a national programme that aims to prevent heart disease, stroke, diabetes and kidney disease, and to raise awareness of dementia both across the population and within high risk and vulnerable groups.

A key part of the programme's governance structure is the expert scientific and clinical advisory group (ESCAP). ESCAP provides an expert forum for the NHS Health Check policy, acting in an advisory capacity to support successful roll-out, maintenance, evaluation and continued improvement based on emerging and best evidence. In its first meeting ESCAP agreed to progress an initial, broad literature review to identify evidence relevant to the NHS Health Check programme. The methods and findings of that review are set out here.

2. Methods

Ovid Medline, Embase, Ovid Health Management Information Consortium (HMIC), Cumulative Index of Nursing and Allied Health Literature (CINAHL), Index to Theses, NHS Evidence, Google Scholar, Clinical Trials.gov and ISRCTN registry were searched for references relevant to the NHS Health Check programme and general health checks. Previous searches had identified references from between January 1996 and October 2014. This search identifies references from October 2014 to January (week 1), 2015, and uses the same search strategies, as below.

Table 1. Search strategy

Database	Search strategy
Ovid Medline and Embase	#1 nhs and health check* #2 national health service and health check* #3 health check program* #4 uk and health check* #5 united kingdom and health check* #6 england and health check* #7 universal health check* #8 general health check* #9 preventive health check* #10 #1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9

Ovid HMIC	1 "health check*".af. 2 health checks/ 3 1 or 2 4 limit 3 to yr="2014"
EBSCO CINAHL	(nhs and health check*) OR (national health service and health check*) OR (health check* program*) OR (uk and health check*) OR (united kingdom and health check) OR (england and health check*) OR (universal health check*) OR (general health check*) OR (preventive health check*)
Index to Theses	*health check**
NHS Evidence	*"nhs health check*"*
Google Scholar	*"nhs health check*"*, "*cardiovascular health check**", "*vascular health check**"
Clinical trials.gov and ISRCDN registry	*"health check"*

Citation abstracts were then read in order to determine whether or not they were relevant. Those citations considered relevant were categorised using a draft schema for publication/resource types, and are listed in section 4. Categorisation has been based on information provided by authors or indexers and has not been independently verified. No appraisal of individual resources has been undertaken. A conclusion or key statement is provided, as well as a link to the abstract or full text, if available. If the full text of an article is not freely available online, it may be available via the PHE knowledge and library service or OpenAthens.

3. Results

The number of references identified are shown in table 2.

Table 2. References published October 2014 to January (week 1) 2015, by database

Database	No. of hits	Exclusive
Medline	2	2
Embase	19	17
HMIC	6	6
CINAHL	12	11
Index to Theses	0	0
Total		36

From these 36 results, 2 were identified as being relevant to the NHS Health Check programme and 3 to general health checks. Additionally, a search of the web sources NHS Evidence, Google Scholar and the two trials registers, identified a further 8 references of relevance to NHS Health Checks and 12 to general health checks. One additional paper was identified by the NHS Health Check national programme manager for inclusion in the general health checks section.

In total, there were 26 relevant references – 10 on NHS Health Checks and 16 on general health checks.

References on the NHS Health Check programme

Cohort studies

Chang K, Millett C, Soljak M and Majeed A (2014). *National coverage of the English NHS Health Check programme.* European J Public Health Vol. 24, Supplement 2, 2014. First published online: 31 October 2014.

"*Four-year programme coverage was 21.4%, with regional breakdown ranging from 9.4% in Yorkshire and the Humber to 30.7% in the North East. Coverage was significantly higher in older patients than younger (AOR = 2.88 (2.49-3.31 in patients aged more than 70 years compared to 40-49 year olds), higher among patients with family history of premature CHD (AOR = 2.37 (2.22-2.53)), and lower for patients with African, Other Black and Chinese origin. There was no evidence of a deprivation gradient. Health Check attendees had a mean systolic blood pressure of 131.2 [131.05-131.51], mean diastolic blood pressure was 79.82 [79.68-79.96], mean body mass index was 27.4 [27.3-27.5] and mean cholesterol ratio was 4.16 [4.14-4.18]. In patients confirmed to be at high CVD risk (using the QRISK2 risk score) the percentage prescribed statins tripled (2.96 times in males and 3.54 in females) from before to after the Health Check*" p256
View extract

Gidlow C, Ellis N, Randall J et al (2014). *Method of invitation and geographical proximity as predictors of NHS Health Check uptake.* Journal of Public Health, Nov 26th 2014, pp. 1–7. doi:10.1093/pubmed/fdu092

"Within this predominantly urban cohort, geographical proximity to the Health Check location was not an important predictor of uptake. Use of verbal or telephone invitations did emerge as a strong positive predictor of attendance and should be considered as a way to improve Health Check uptake where postal invitations are typically used. Data presented provide further evidence for commissioners and deliverers of Health Checks around who does not attend, and suggest that a relatively simple change to recruitment methods could increase uptake" p6
View full text

Audit

Jackson L, Dixon R and Newboult K (2014). *CVD mortality: A retrospective audit of disease registers*. Primary Care Cardiovascular Journal, 2014. 7(3): p. 114-118.

"A retrospective audit of premature deaths (aged under 75) from cardiovascular disease (CVD) in Leeds showed that patients diagnosed with CVD and placed on disease registers lived on average eight years longer than patients who had not been diagnosed prior to their deaths. If innovations like the NHS Health Check can be used to identify CVD patients in a more equitable manner, there is likely to be a major impact in reducing premature mortality with the potential to reduce health inequalities for disadvantaged groups in the population" p114
View full text

Clark C and Fordham J (2014). *Costs of hypertension detection within the NHS Health Check programme compared to opportunistic detection*. North American Primary Care Research Group, 2014 NAPCRG Annual Meeting.

"Practice NHSHC [NHS Health Check] *uptake is low, but consistent with county-wide uptake (34%). Costs of diagnosing hypertension with NHSHCs are double those for an opportunistic approach. Replication of this finding from larger numbers of practices may challenge one of the cost-effectiveness assumptions of the NHSHC Programme. Primary care resources may be better utilised with opportunistic approaches to the detection of hypertension"* taken from abstract
View abstract

Reports

House of Commons Science and Technology Committee (2014). *National health screening: third report of session 2013/14*. October 2014.

"*Interventions that display all the hallmarks of being a systematic, population-based screening programme -like NHS Health Check - should not follow a "different route" bypassing the UK National Screening Committee's (UK NSC) evidence review process. To do so risks undermining the UK NSC's authority and, in the absence of the UK NSC's scrutiny, may give rise to serious questions about the quality of the evidence upon which the programme is based. We agree with the UK NSC Chair and recommend that, in the future, any programme that "looks like" a screening programme, regardless of the label it is given, should be subject to the UK NSC's evidence review process*" p22
View full text

Ongoing research

Griffin, S (2015). *Information and Risk Modification Trial (INFORM): A randomised trial to determine if communicating different forms of coronary heart disease risk information and lifestyle advice for risk reduction results in health-related behaviour change*. ISRCTN registry. ISRCTN17721237. 12th Jan 2015.

"*The NHS has initiated a programme of cardiovascular disease risk reduction (NHS Health Checks) based on assessment of cardiovascular disease risk for all those aged 40-74 years without pre-existing cardiovascular disease and related disorders. However, it is not clear how best to provide this information and whether it has any effect. In this study called INFORM, we will try to understand how people respond to receiving different types of risk information, and the impact that this information has…..*" taken from summary
View details
Chadborn T (2014). *Improving the outcomes of NHS Health Checks in Southwark: a randomised controlled trial.* ISRCTN registry. ISRCTN51870347. 15th Sept 2014.

"*Study hypothesis: That SMS text messages that provide feedback on activity, general motivation, and reminders of a re-test will reduce participants' risk of diabetes (measured by HbA1C score). A secondary hypothesis is that the group receiving the messages will have a higher average steps per day, and a higher*

usage rate" taken from summary
View details

Sutton S (2014). *A randomised controlled trial of the efficacy and cost-effectiveness of a very brief intervention to increase physical activity when delivered in a primary care setting*. ISRCTN registry. ISRCTN72691150. July 2014

"*During the NHS Health Check participants will be randomly allocated to receive either the NHS Health Check on its own or to receive the Health Check with the very brief intervention (VBI). The VBI includes a discussion on the physical activity recommendations and how the patient might increase their physical activity by encouraging the use of a pedometer to count steps and to set a plan for making small increases…..Three months following the Health Check all participants will be asked to wear an accelerometer (a small device that detects and measures movement) for 1 week and complete two questionnaires. We also wish to obtain the 10-year vascular risk score of all participants*" taken from summary
View details

Khunti K (2014). *Pharmacy based screening of high Risk Individuals using Stepwise Methods: The PRISM study*. ISRCTN registry. ISRCTN10605140. Feb 2014.

"*As part of this programme* [NHS Health Checks] *all people aged 40-75 are offered screening tests for diabetes, kidney disease and cardiovascular disease risk. These tests are usually carried out by a GP (doctor). We know that not all people eligible for these checks have taken up the invitation to have them. There is a significant proportion of the population who do not access healthcare through established routes and may be less likely to visit a GP or may not be registered with a GP at all…..We want to test whether community pharmacies are feasible sites for carrying out diabetes screening. We also want to find out whether having a fingerpick blood test with the result immediately available means people are more likely to follow up a pharmacists advice to see a GP compared to filling out a questionnaire which assesses diabetes risk without needing to have a blood test"* taken from summary
View details

Petersen S (2013). *Heart Attack Prevention Programme for You (HAPPY) London (HAPPYLondon).* Started June 2013. Queen Mary University of London, June 2013. Clinical Trials.gov identifier: NCT01911910.

"*General Practitioners invite 40 to 74 year-olds who have no known heart disease to take part in the NHS Health Check, which measures each person's individual risk of developing a heart attack or stroke and encourages them in a face-to-face meeting to take part in programmes to help them to give up smoking, lose weight etc. where necessary. In this new clinical trial the investigators will test whether computer-tailored electronic (e)-coaching via email and the internet can help people make the necessary changes in their lifestyle to reduce the risk of heart attacks and strokes*"
taken from summary"
View details

References relating to general health checks

Systematic reviews

Willis A, Rivers P, Gray LJ et al. *The effectiveness of screening for diabetes and cardiovascular disease risk factors in a community pharmacy setting*. PLoS One 2014 Apr 1;9(4):e91157.

"The findings of this review show that previous studies of opportunistic pharmacy based screening interventions have been successful in identifying a significant proportion of the population, both suffering from and at high risk of CVD or T2DM. We have shown that more recent screening strategies have identified a higher number of high risk individuals referred to their practitioner for follow up. However the review has also shown that a high proportion of those individuals found to be at high risk of CVD or T2DM do not attend a follow up appointment with their practitioner.It is vital that future screening interventions are designed to minimise this drop out in order to maximise both the financial and health related gains from increased investment and interest in future screening interventions in pharmacies worldwide" p8
View full text
View DARE abstract

Randomised controlled trials

Cooper SA, Morrison J, Allan LM et al. (2014). *Practice nurse health checks for adults with intellectual disabilities: a cluster-design, randomised controlled trial*. The Lancet Psychiatry. Volume 1, No. 7, p511–521, December 2014.

"*Health checks given by practice nurses to adults with intellectual disabilities produced health-care improvements that were more conducive to longer-term health than standard care given to this population. The intervention* [health checks plus standard care] *dominated standard care, being both cheaper and more effective. Health-check programmes might therefore be indicated for adults with intellectual disabilities*" taken from the abstract
View abstract

Liira H, Engberg E, Leppävuori J et al. (2014). *Exercise intervention and health checks for middle-aged men with elevated cardiovascular risk: A randomized controlled trial*. Scand J Prim Health Care. 2014 Dec;32(4):156-62.

"*Our pragmatic trial of an exercise intervention and health checks in a municipal health centre was able to change the exercise habits of middle-aged men in all study groups. We recruited men with at least two cardiovascular risk factors and low levels of PA* [physical activity]*. After one year, 19% of these sedentary men had increased their PA frequency to at least three times a week. There were no differences between the study groups in PA…..Although men increased the frequency of exercise, we found no effects on health outcomes, metabolic syndrome, or individual cardiovascular outcomes*" p161
View full text

Cohort studies

Murray KA, Murphy DJ, Clements SJ et al. (2014). *Comparison of uptake and predictors of adherence in primary and secondary prevention of cardiovascular disease in a community-based cardiovascular prevention programme (MyAction Westminster*). Journal of Public Health. 36(4):644-650, December 2014.

"*This study demonstrated relatively high rates of uptake and adherence for both HRI* [high multifactorial risk] *and CVD* [cardiovascular disease] *patients. The high uptake rates for HRI are particularly promising given that these individuals are asymptomatic. The findings suggest that beliefs about treatment are predictors of adherence for both populations. Older age also predicted adherence for HRI but not for the CVD patients and the belief that the illness was caused by alcohol also predicted adherence for the CVD patients but not for HRI. These findings could be used to guide research examining whether interventions targeting beliefs about treatment in turn enhance retention rates to primary and secondary prevention programmes*" p649
View abstract

Fischbacher CM, Muirie J, McCartney G et al. (2014). *Using routine data to monitor population level interventions: the example of the Keep Well health check programme in Scotland.* European J Public Health, Volume 24, Issue suppl 2, 257, first published online: 31 October 2014.

"*These data provide evidence against any large population impacts on CVD from targeted health check programmes. It is not clear whether this apparent lack of health impact is due to insufficient programme intensity, difficulties with population engagement or incomplete adherence in the target population*" taken from abstract
View abstract

Cross-sectional studies

Korhonen P, Kautiainen H and Mantyselka P (2014). *Screening for cardiovascular risk factors and self-rated health in a community setting: a cross-sectional study in Finland*. Br J Gen Pract. 2014 Oct; 64(627):e611-5.

"*A targeted screening programme identified 462 middle-aged people with cardiovascular risk factors without previously diagnosed chronic disease in a Finnish community in 2005-2006…..The prevalence of previously undiagnosed disease was: hypertension 113/462 (24% [95% confidence interval {CI} = 21% to 29%]), diabetes 19/462 (4% [95% CI = 2% to 6%]), renal insufficiency 23/462 (5% [95% CI = 3% to 7%]), and peripheral arterial disease 17/462 (4% [95% CI = 2% to 5%])…..Out of the screen-detected apparently healthy cardiovascular risk subjects, one in three had undiagnosed hypertension, diabetes, peripheral arterial disease, or renal insufficiency*" taken from the abstract
View abstract

Lalor E et al (2014). *Free Communications 6: Preventive strategies, public awareness quality improvement public awareness of risk of stroke: Know your numbers program provides 'free' risk assessments including blood pressure and diabetes*. International Journal of Stroke, 2014. 9: p. 28-29. Conference abstract

"*1,740 pharmacies and community sites in New South Wales, Queensland and Victoria offered BP measurement and AUSDRISK (self-administered questionnaire providing a score estimating 5-year risk of developing type 2 diabetes)…..146,676 KYN registrants were obtained (59% female, 82% aged >45 years, 13% history of diabetes). About half (46%) without a history of diabetes, had a high AUSDRISK score (12+). Further, 49% had a high BP (= 140/90 mmHg) reading or a high AUSDRISK score. Three-quarters of registrants with high AUSDRISK scores and high BP were referred to a doctor by KYN pharmacies. 49% of high risk individuals were unaware of their risk status for BP*" taken from the abstract
View abstract

Hoebel J, Starker A, Jordan S et al. (2014). *Determinants of health check attendance in adults: findings from the cross-sectional German Health Update (GEDA) study.* BMC Public Health. 2014 Sep 4; 14:913.

"*Overall, the findings of this study suggest that population groups with a higher risk of adverse health, such as the socioeconomically disadvantaged, smokers, and physically inactive people, are less likely to attend health checks than their counterparts with a more favourable risk factor profile. Therefore, those who potentially could benefit most from secondary prevention measures appear to be particularly difficult to engage with medical health checks offered in the primary care setting. This should be taken into more account when designing and implementing secondary prevention programmes at the population level*" p10
View full text

Nahar- Madhu R, Bhawani M, Shrikant S et al. (2014). *Gender Bias in Preventive Cardiovascular health checks at a tertiary care hospital*. Indian Heart Journal November 2014 66 Supplement 2:S73. Conference abstract.

"*As compared with women, significantly more men participated in cardiac check up program (Odds ratio 4.87, 95% CI 4.70-5.04) as well as other health check up programs (Odds ratio 2.19, 95% CI 2.07-2.30)…… Significantly lower proportions of women participate in cardiovascular health-check program at a tertiary care hospital. This may suggest lower awareness of heart disease risk among women*" taken from the abstract

No freely available abstract or full text.

Groenenberg I, Crone M, van Dijk S et al. (2014). *The added value of three invitation strategies on reach and participation of a multicultural population with a lower socioeconomic status in the Dutch cardiometabolic health check*. European J Public Health, Volume 24, Issue suppl 2, 335-336, first published online: 31 October 2014.

"*An expensive face-to-face invitation has no added value in increasing reach and participation of vulnerable groups in a cardiometabolic health check over postal and subsequent telephone invitations*" taken from the abstract
View abstract

Qualitative research

Groenenberg I, Crone MR, van Dijk S et al. (2015). *'Check it out!' Decision-making of vulnerable groups about participation in a two-stage cardiometabolic health check: A qualitative study.* Patient Educ Couns. 2015 Feb;98(2):234-44.

"*A multi-strategy approach, including a face-to-face strategy, may be important in increasing uptake, especially when combined with an awareness campaign and/or a more community involved GP. Written or verbal translations must be provided for non-native participants….. Regarding the second stage, i.e. inviting people to attend PCs* [prevention consultations] *for further testing, negative emotional responses and defensive coping strategies have to be taken into account…..GPs or other healthcare professionals should explore these emotions and fears regarding further testing...."* p241
View abstract

Godefrooij M, Spigt M, van der Minne W et al. (2014). *Implementing cardiometabolic health checks in general practice: a qualitative process evaluation*. BMC Fam Pract. 2014 Jul 6;15:132.

"*In this study we evaluated the most important issues that arose during the implementation of a cardiometabolic health check in primary care. We found that GPs were enthusiastic about offering a health check. They preferred systematic screening over case-finding, both in terms of yield and workload. The level of patient participation was high and most participants were enthusiastic about the health check being offered by their GP. Despite their enthusiasm, the GPs realized that they lacked experience in the design and implementation of a structured, large-scale prevention programme. This resulted in suboptimal instruction of the involved practice nurses and medical receptionists, an aggressive recruitment strategy and shortcomings in communicating the outcomes of the health check as well as in the provided follow-up programmes*" p6
View full text

Bonner C, Jansen J, McKinn S et al. (2014). *Communicating cardiovascular disease risk: an interview study of General Practitioners' use of absolute risk within tailored communication strategies.* BMC Family Practice 2014, 15:106

"*GPs in this study described tailoring their communication approach based on their perception of each patient's risk, motivation and anxiety, resulting in three distinct CVD risk communication strategies: 'positive', 'scare tactic', and 'indirect'. The findings demonstrate how alternative formats for absolute risk can be useful within each of these communication strategies. Providing GPs with different ways to explain absolute risk, in order to achieve different communication aims, may improve their use of absolute CVD risk assessment in practice*" p7
View full text

Service evaluation

NHS Health Scotland (2014). *The impact of Keep Well: An evaluation of the Keep Well programme from 2006 to 2012.* Edinburgh: NHS Health Scotland; 2014.

"*The underlying programme theory for Keep Well* [a programme inviting individuals

aged between 40 and 64 living in areas of high deprivation to attend a health check], *that a reduction in CVD would be achieved through identifying high-risk individuals and then providing brief advice on changing risk behaviours (diet, physical activity, smoking and alcohol) and prescribing a range of relevant medications, may be flawed. The evidence base for such a health check approach (targeted or otherwise) at the time of programme development was equivocal and where it was supportive was drawn from single interventions in a trial environment rather than effectiveness evidence from targeted health checks. This evidence has become less supportive over time. Where such a high degree of uncertainty is present, and where (as in Keep Well) the intervention does not lend itself to short-term process measures as valid proxies for the desired outcomes, a substantial programme such as Keep Well should be implemented in the context of a controlled trial, with comparison groups, considering options such as cluster randomisation or stepped wedge designs*" p7
View full text

Diagnostic test studies

Pullan NJ (2014). *HbA1c for diagnosis; How is it being used in practice*? Clinical Chemistry and Laboratory Medicine, 2014. 52 (11): p. eA243. Conference abstract W46.

"*During a two month period, 2189 first-time HbA1c requests were made. Of the 100 results examined closely, 96 appeared to be for DM* [diabetes mellitus] *diagnosis. Almost 40% of the requests examined were received simultaneously with a request for glucose analysis; the discordance rate between the glucose and HbA1c results for diagnosis or exclusion of DM was 21%.....Although simultaneous analysis of HbA1c and glucose for the diagnosis or exclusion of DM has not been recommended by WHO or UKEWG* [UK Expert Working Group]*, a large proportion of clinicians are using this approach, which will lead to diagnostic dilemmas*"
View abstract

Ongoing research

Maindal HT, Støvring H and Sandbaek A (2014). *Effectiveness of the population-based Check your health preventive programme conducted in primary care with 4 years follow-up [the CORE trial]: study protocol for a randomised controlled trial*. Trials 2014, 15:341.

"*The objective of the 'Check your health' [CORE] trial is to investigate effectiveness on health outcomes of a preventive health check offered at a population-level to all individuals aged 30–49 years, and to establish the cost-effectiveness…..The trial will be conducted as a pragmatic household-cluster randomised controlled trial involving 10,505 individuals. All individuals within a well-defined geographical area in the Central Denmark Region, Denmark (DK) were randomised to be offered a preventive health check (Intervention group, n = 5250) or to maintain routine access to healthcare until a delayed intervention (Comparison group, n = 5255). The programme consists of a health examination which yields an individual risk profile, and according to this participants are assigned to one of the following interventions: (a) referral to a health promoting consultation in general practice, (b) behavioural programmes at the local Health Centre, or (c) no need for follow-up*" taken from abstract
View full text