University of Salford

Evidence of improved uptake of Health Checks

Rapid Review

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2014

Review aim:

1. To identify from existing reviews the key factors that influence uptake of health screening, including demographic, social, cultural and behavioural influences.
2. To review the international evidence (relating to systems and patients) to assess:
    a. which factors influence uptake of Health Checks
    b. which factors increase or inhibit uptake of Health Checks

Summary of findings:

Seven papers (five studies) met the inclusion criteria regarding reporting information around uptake or increasing uptake within CVD screening/Health Checks. All of these were studies from England. There is limited evidence of the demographic and health factors that impact on NHS Health Check uptake and from a systems perspective those GP practices that are most successful at attracting people to take up the Health Check were small. From this review a number of recommendations can be made (*see page 18-19*) around potential ways of increasing uptake of NHS Health Checks in Salford. However, it is also suggested more qualitative research is needed to understand the views of those invited to and who have had Health Checks in relation to some of the issues raised through this review.

Funding for this review was provided by 'Haelo':

Haelo[1] is an innovation and improvement centre which hosts improvement experts, clinicians, improvement fellows and researchers. We are a joint venture between Salford Royal NHS Foundation Trust, Salford Clinical Commissioning Group, and other collaborations. Haelo's core purpose is to support its partners to improve health and healthcare through action, measurement and evaluation.

Please cite this report as follows:

Cooper, A.M., & Dugdill, L. (2014). *Evidence of improved uptake of Health Checks: Rapid Review*. University of Salford

[1] http://www.haelo.org.uk/about-us/

Background:

Factors that influence patient uptake of screening:

Understanding the factors that predict screening uptake are vital in order to maximise the effectiveness of such programmes: these include demographic variables (social, cultural, political, and economic factors); health system based factors (reach and capacity of the screening programme, referral mechanisms etc.) and thirdly patient orientated factors such as knowledge, attitudes and beliefs towards health, cues to action, educational status, socio-economic status and ethnicity. In respect of breast and cervical cancer screening uptake for example; older age (>50 for breast cancer), lower educational status, lower socio-economic status, being single or divorced, belonging to an ethnic minority group or living in a rural location, have been widely reported as having an association with lower uptake of breast and cancer screening (Chiu, 2004; Sutton and Rutherford, 2005; Thomas et al., 2005).

Known barriers to screening uptake in patients include lack of knowledge regarding the health condition and their risk status, anticipated embarrassment of the screening procedure, perception of pain related to screening or fear/anxiety related to the test results (Jepson et al., 2000), cultural barriers, fatalism towards health outcomes, low level of perceived effectiveness of the screening procedure, lack of recommendation by a physician, male staff performing the screening, as well as lack of time, and lack of transport or costs involved in attending screening (Munn, 1993; Ahmad et al., 2001; Eisner et al., 2002; Sutton and Rutherford, 2005). Health professionals' knowledge of the screening processes and procedures are also vital for promoting screening uptake. Social support from family or a GP, and knowing a friend who has been for screening, are also influential predictors of screening uptake (Winkler et al., 2008).

Definition of Health Checks in the NHS:

NHS Health Checks in the UK are currently targeted at adults at risk of developing "*heart disease, stroke, diabetes, kidney disease and some forms of dementia*" aged 40-75, once every five years (NHS, 2013[2]). The NHS check presently includes:

- Family health history, smoking and drinking behaviour.
- Height, weight, sex, ethnicity and age.
- Blood pressure.
- Cholesterol level check.
- BMI (weight in kilograms/height in metres^2).

For those aged 65-74 they are provided "with general information about dementia, how to reduce your risk of developing it and where to find more information about it and the type of support services available in your area". The Health Check is aimed at those who have no diagnosis of heart disease, stroke, kidney disease or diabetes and provides an assessment of their risk. Support, advice and appropriate treatment are provided in respect of risk reduction and management.

[2] NHS, 2013 http://www.nhs.uk/Planners/NHSHealthCheck/Pages/NHSHealthCheckwhat.aspx

Background on Health Checks in the NHS:

The Department of Health economic modelling document assumed that 75% of those invited would attend for a Health Check; however, this was based on uptake of the National Breast Screening Programme (National Health Service [NHS] Health and Social Care Information Centre, 2006). The challenges of encouraging uptake of vascular screening programmes are manifold and it is recognised that because many of the risk factors for vascular disease are asymptomatic, many of the potential beneficiaries are reluctant to present for screening either because they are unaware of their risk (Forde et al., 2009) or because of individual views regarding the purpose of screening (Thorton, 2010). Notwithstanding this, vascular health screening programmes are known to show low response rates to invitations.

A recent Cochrane review that aimed to quantify the effectiveness of the health checks with respect to mortality and morbidity concluded that, from the 14 included trials, they did not reduce morbidity (Krogsbøll et al., 2012). Within the included studies, the reporting of follow-up tests, referrals, new medication or any subsequent surgery where needed was very poor; only one trial reported the number of new diagnoses. The health checks advocated in many of the included studies were, however, much broader than the focus of the NHS Health Check (cardiovascular risk, diabetes and with fewer tests), so caution should be used in generalising these results. The authors also note that those who take up screening tend to not always be the ones that are most in need of preventative checks (highest risk).

The Public Health England 'NHS Health Check Implementation Review and Action Plan' (2013) identified improving uptake as one of the 10 issues and actions (Issue 3). Within the report they recognised that raising awareness and improving engagement with the public as key areas to achieving this aim. They also highlighted that one way to potentially improve uptake was to focus on the mechanism by which people were invited to take the Health Check;

> "…*research has shown that adapting invitations to support improved uptake from a very big local population groups is pivotal to success*" (p20)

This will be supported by the creation of a good practice case study repository and working with local teams to look at the impact of '*behavioural insight and marketing interventions*'. Further to this within Public Health England priorities for 2013/14 the first identified priority includes an around implementing the Health Check programme.

Chipchase, Waterall & Hill (2012) conducted interviews with 10 participants who had received an NHS Health Check six weeks previously. They found that prior to their invitation the participants had no awareness of Health Checks and thought they were 'health MOTs' but did not realise it was also specifically for CVD health screening. The participants felt that more information with the invitation would be beneficial. In terms of their health in a positive sense many felt that the Health Check had made them think more about their own health and that the appointment had made them aware of looking after their health. In relation to the results, participants felt that they needed to be related to a context they

could understand and greater explanations of the results (e.g. written results, information sheets etc). The main theme that arose for attending Health Checks was for reassurance around not having CVD or reassurance from mixed/negative results in respect to support, ensuring they were in good health and getting a check. Chipchase, Waterall & Hill (2012) concluded that understanding of Health Checks is low and "*it is important that commissioners and clinicians work together to ensure that the programme is being delivered and received as a CVD lifestyle prevention programme, rather than a general health MOT or clinical assessment*" (p28).

Comparisons of Health Check data:

The table below presents a comparison of Health Check data from 2013-2014 NHS Health Check statistics for both the Greater Manchester region but also For England.

Code	**C = A[3]-B[4]**	**D**	**E**	**F = D/C*100**	**G = E/C*100**	**H = E/D*100**
Explanation	**Eligible population**	**No. of NHS Health Checks offered**	**No. of NHS Health Checks received**	**% of NHS Health Checks offered**	**% of NHS Health Checks received**	**% uptake of NHS Health Checks**
Greater Manchester	726,243	62,979	37,588	8.7	5.2	59.7
Salford[5]	43,615	3973	1749	9.1	4	44
Tameside (Benchmark area)	66,109	3081	1841	4.7	2.8	59.8
Manchester (lowest uptake in GM)	103,657	8072	3353	7.8	3.2	41.5
Stockport (Highest uptake in GM)	87,746	10,317	7702	11.8	8.8	74.7
England	15,308,022	1,327,112	647,063	8.7	4.2	48.8
North of England	4,374,206	356,548	190,603	8.2	4.4	53.5
South of England	4,156,361	319,184	122,673	7.7	3	38.4

[3] A = Total population aged 40-74
[4] B = Estimated ineligible population (i.e. on a disease register)
[5] NHS Health Check 2014
http://www.healthcheck.nhs.uk/interactive_map/north_of_england/greater_manchester/?la=Salford&laid=87

Method:

Inclusion Criteria:

Due to the timings of the review, papers were restricted to English Language only, but were not restricted by country. The population of interest is adults of any ethnicity or gender. The setting for studies can be in primary care, the community and occupational settings. Papers focused on key chronic conditions that are having the biggest impact on society (e.g. dementia, cardiovascular disease, cardio metabolic disease or risk factors).

To ensure the review was transferable papers needed to have a relevant health care context and population demographics to the UK – i.e. the findings are transferable to the UK setting.

Exclusion criteria:

Studies conducted with specific populations with known risk factors or diseases were excluded as they are ineligible for Health Checks and already monitored; articles focusing on adults under 30 years of age; papers over 10 years old and papers where the outcomes were not transferable to the NHS setting.

Databases:

A copy of the search can be found in *Appendix 1*, the key areas of the search were Health Checks, the timing of Health Checks, and the aim of Health Checks, the target population, location and health areas covered by Health Checks.

The following databases were searched as part of the review:

- The Cochrane central register of controlled trials
- Medline and PsycINFO via OVID
- HMIC Health Management Information Consortium via OVID
- CINAHL & Academic Search Premier via EBSCO

Searching other resources:

Reference lists of included studies where search and citation tracking was carried out (web of knowledge) to try and ensure all eligible studies have been obtained through the search.

Selection of studies and data extraction:

The two authors independently assessed the eligibility of studies from their titles and abstracts for inclusion in the review. Where it was unclear, the full text of the article was assessed.

Relevant data from included studies was extracted together by both authors. Information included key study characteristics, details specific to Health Checks, details around improvement of uptake and success of Health Checks.

Within this review only papers from the last 10 years were included; this resulted in the removal of 90 papers after initial screening. Additionally within *Appendix 4* we have included a selection of reference which relate to Health Checks in a more general sense.

Analysis outline:

Through the screening process it was evident that most of the studies related to colorectal cancer screening; as such, the evidence relating to improving uptake of colorectal cancer screening is presented in a separate section of the results, with transferable points for other areas extracted.

For the analysis three areas that are likely to impact on the uptake of reviews were considered as sub sections:

- Factors relating to the systems (e.g. who does the check, what is the capacity of the system and recall etc.)
- Factors relating to the individual patient (e.g. ethnicity, transport, knowledge, attitudes and beliefs towards screening etc.)
- Country differences (e.g. social, cultural and implementation of Health Checks)

Results:

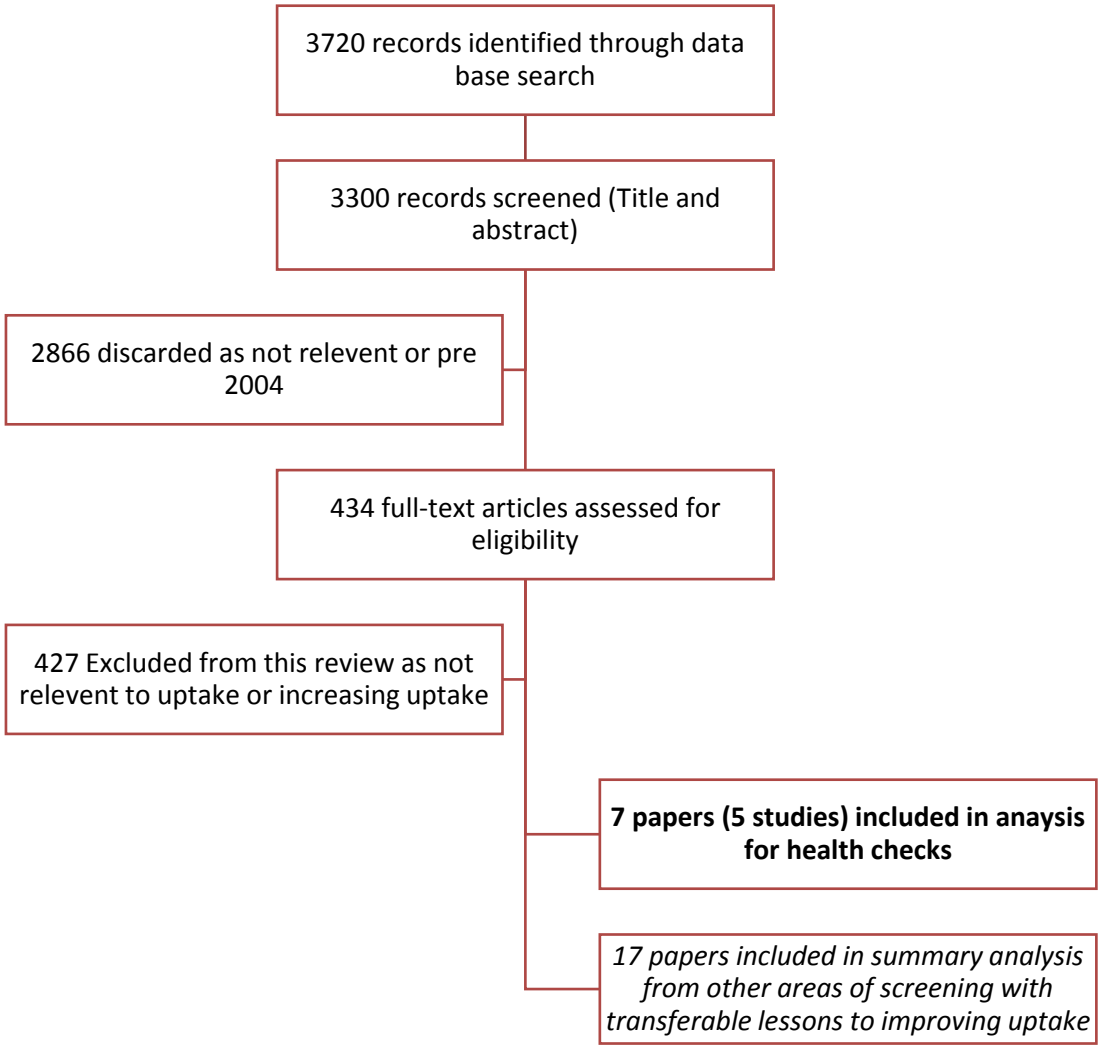

Figure 1 Review flow diagram

Summary of evidence on the uptake of Health Checks:

Seven papers (5 studies) met the inclusion criteria regarding reporting information around uptake or increasing uptake within CVD screening/Health Checks. All of these were studies from England: the three papers from Artac et al., (2013 a, b, c) reported on the NHS Health Check screening programme in Hammersmith and Fulham, London; the studies by Cochrane et al., (2012) and Kumar et al., (2011) included data on increasing uptake and understanding attendee profiles in NHS Health Check in Stoke-On- Trent; Dalton et al., (2011) reported on attendee profiles for NHS Health Checks in Ealing, London; and the final included paper by Lambert et al., (2011) contained results from the NHS Health Check in inner city Birmingham, UK, which targeted men and assessed how invitation mode and delivery mode (GP based/alternative provider based) influenced screening uptake.

Evidence on NHS Health Checks pertains to **uptake** rather than **increasing uptake.** In terms of uptake the included papers reported uptake (defined as completing the full programme of screening checks), which varied between 44.8% in Ealing, London (Dalton et al., 2011); 39.7% (Artac et al., 2013a) for Health Checks in Hammersmith and Fulham to 24.3% uptake in inner city Birmingham (Lambert et al., 2011). Artac et al.'s paper (2013b) also reported that the uptake was higher in year 1 (32.7% had all components of Health Check completed) than year 2 (20% had all components completed); and significantly higher in older patients (aged 65-74 years), and women. In both years (1 and 2), uptake was lower in smokers, younger patients and patients with no ethnicity record. It is worth noting that Artac et al. (2013 a) also reported that 56.9% of patients had an incomplete Health Check in year 1, suggesting that following up patients and getting all tests completed may be an onerous workload and complicated for general practices to organise and track to completion. Artac et al. (2013b, c) also concluded that for high risk patients, modest yet significant risk reduction in CVD was achieved through the NHS Health Check despite a coverage of only 8.2% (defined as number of people who received Health Check/number who were eligible) compared with the government required projection of 18% coverage.

Dalton et al., (2011) reported on the uptake of the NHS Health Check in Ealing (a deprived and culturally diverse setting), London (44.8%): "*attendance was significantly lower among younger patients (19.2% in those aged 35-54 years); and smokers (40.1%)*" (p424) thus corroborating the later findings of Artac et al., (2013). Uptake was significantly higher for those of south Asian background (53.0%) or mixed ethnic background (57.8%); those with hypertension and those from smaller GP practices (Dalton et al., 2011). Younger women rather than men were more likely to attend also. It was suggested that the good uptake in south Asian patients may have been due to relatively large number of 'same ethnicity' GPs in the area, which may have led to greater patient satisfaction. People living in the more deprived areas were just as likely to attend as patients living in the least deprived area (although the study setting contained very few areas in the least deprived quintile, therefore this finding has to be treated with caution).

A further study by Kumar et al., (2011) in Stoke on Trent, assessed the attendee profiles and cost implications of the NHS Health Check. They compared two modes of delivery of the Health Check: a drop-in clinic or a booked appointment versus a booked appointment alone. The overall uptake of the Health Check was 32%: the offer of drop-in did not have any deleterious effect on uptake and was more cost-effective to implement. Estimated CVD risk was often inaccurate and not found to be the best way of targeting people for the Health Check screening programme.

The study by Lambert et al., (2011) targeted men in inner-city Birmingham, England. The aim was to assess the effectiveness of GP provision versus alternative provider of the Health Check. Patients were invited either by letter or telephone to undertake a Health Check at their GP practice or an alternative provider (if the GP had not agreed to do the screening). The alternative provider included at the pharmacist (evenings and weekends) and also involved non healthcare settings e.g. screening in football stadia. Overall uptake was 24.3%; screening uptake was higher for GP screening (26.8%) compared with alternative provider screening (19.7%). Uptake was higher for single-handed GPs compared with multiple partner GP practices. Other predictors of screening uptake were having ethnicity, phone number and smoking status recorded on patient records (may indicate a more efficient administration system within the practice).

The RCT study by Cochrane et al., (2012) based in Stoke-on-Trent, England, compared the normal NHS Health Check with an ‘enhanced’ model designed to give additional lifestyle support for behaviour change through motivational interviewing. The uptake to this trial was 33% which is commensurate with normal Health Check screening uptake rates as reported above. Both intervention groups showed a decrease in CVD risk but there was no significant difference between the normal compared with the ‘enhanced’ Health Check model of delivery.

Details of included studies relating to Health Check uptake:

No.	Author	Year	Country	Topic	Age	Aim	Intervention	Outcomes	Key recommendation around improving screening uptake
1	Artac et al.	2013a	UK (Hammersmith & Fulham)	*"Effectiveness of a national cardiovascular disease risk assessment program"* (NHS Health Check)	Adults 40-74	"*To assess whether the NHS Health Check was associated with a reduction in estimated CVD risk in a deprived, culturally diverse setting*" after 1 year (p130)	NHS Health Check	Uptake for a full Health Check was 39.7% (56.9% partial Health Check) in year 1.	Need to ensure understanding of population being targeted through qualitative work to inform promotion and materials for Health Checks.
2	Artac et al.	2013b	UK (Hammersmith & Fulham)	*"Uptake of NHS Health Check in an urban area"*	Adults 40-74	To assess uptake of Health Check	NHS Health Check	"*Uptake was 32.7% in Year 1 and 20.0% in Year 2*" (p426). Higher in older adults (65+).	Study findings question the effectiveness of running Health Checks outside of GPs in terms of uptake. Need to promote Health Checks with

No.	Author	Year	Country	Topic	Age	Aim	Intervention	Outcomes	Key recommendation around improving screening uptake
									populations (e.g. men) who are less likely to attend.
3	Artac et al.	2013c	UK (Hammersmith & Fulham)	"*Primary care and population factors associated with Health Check coverage*" (p431)	Adults 40-74	To assess if the NHS Health Check system was associated with a reduction in CVD risk in attendees after 1 year	NHS Health Check	Health check coverage[6] was 8.2% (Lower than 18% government projection aim for 2011/12, range 0-29.8%, p.434) *"… coverage was significantly higher in PCTs in more deprived areas in adjusted and unadjusted analyses.*	Need to ensure services are received equitably across all groups at high risk and incorporate a multi-disciplinary strategy

[6] In the article by Artac et al (2013) this is calculated as Number of people on PCT who received the Health Check divided by the number who were eligible (p432, 434).

No.	Author	Year	Country	Topic	Age	Aim	Intervention	Outcomes	Key recommendation around improving screening uptake
								Health *Check coverage was significantly lower in PCTs with a larger population size, higher proportion of population aged 40–74 years and with more primary care staff in unadjusted analyses."* (p435)	
4	Cochrane et al.	2012	UK (Stoke-on-Trent)	NHS Health Check	Mean age 63.9 group 1 and 63.3 group 2	To assess population changes in CVD risk factors over the 1st year of using two modes of NHS Health Check	Group 1 - NHS Health Check 2 - enhanced NHS Health Check including an additional support for lifestyle change (motivational	The enhanced part did not improve outcomes but both groups showed a significant decrease in average	Shows that added initiatives with NHS Health Checks doesn't appear to increase uptake

No.	Author	Year	Country	Topic	Age	Aim	Intervention	Outcomes	Key recommendation around improving screening uptake
						delivery (RCT)	interviewing)	population CVD risk. Uptake to the trial was only 33% (p. 9).	
5	Dalton et al.[7]	2011	UK (Ealing)	NHS Health Check	Aged 35-74	To understand demographic profile of patients attending Health Checks (*using data from medical records*)		Overall uptake was 44.8% for invited high risk patients "*Uptake was lower among younger men but higher among patients from south Asian (AOR[8] ¼ 1.71 [1.29–2.27] compared with white) or mixed ethnic backgrounds*	Understand target population and tailoring expectation of uptake according to practice and demographic characteristics.

[7] Dalton et al 2011 http://fampra.oxfordjournals.org/content/28/1/34.full.pdf+html and Dalton et al 2013 http://cpr.sagepub.com/content/20/1/142.full.pdf+html
[8] Adjusted odds ratio

No.	Author	Year	Country	Topic	Age	Aim	Intervention	Outcomes	Key recommendation around improving screening uptake
								(AOR ¼ 2.42 [1.50–3.89]), and patients registered with smaller practices (AOR ¼ 2.53 [1.09–5.84] ,3000 patients compared with 3000–5999). The percentage of patients confirmed to be at high risk of CVD prescribed a statin increased from 24.7 to 44.8%." (p422) "*No evidence*	

No.	Author	Year	Country	Topic	Age	Aim	Intervention	Outcomes	Key recommendation around improving screening uptake
								of poorer uptake among deprived and ethnic minority groups" (p427).	
6	Kumar et al.	2011	UK (Stoke on Trent)	NHS Health Check (analysis of attendees and non attendees)	Age 50-74	To outline cost implications and attendee profiles	Data analysis of cost effectiveness /attendee comparison of 2 modes of delivery (drop-in clinic or booked app alone) within two practices	Across the practices uptake was 30.9% but there was a higher uptake in screening of those with a greater CVD risk (p195).	Consider flexible ways of delivery – drop in is more cost effective but did not affect uptake rates compared to booked appointment.
7	Lambert et al.	2011	Birmingham (inner city), UK	NHS Health Check targeting men	Age 40+	To assess the effectiveness of the programme to increase screening and diagnoses rates for CVD,	NHS Health Check letter/or telephone for CVD assessment at their own GP practice if	Overall uptake was 24.3%; screening uptake was higher for GP screening (26.8%) compared	Single handed GPs may be worth targeting first when looking to increase uptake and then consideration of multiple providers/locations

No.	Author	Year	Country	Topic	Age	Aim	Intervention	Outcomes	Key recommendation around improving screening uptake
						chronic kidney disease and diabetes	available or an alternative provider if not available in their GP practice. Alternative provision was at the pharmacist (evening and weekends) including non-healthcare settings e.g. football stadia.	with alternative provider screening (19.7%) (p75). Uptake was higher for single-handed GPs compared with multiple partner GP practices. Other predictors of screening uptake were having ethnicity, phone number and smoking status recorded on patient	to augment uptake.

No.	Author	Year	Country	Topic	Age	Aim	Intervention	Outcomes	Key recommendation around improving screening uptake
								records (may indicate a more efficient admin system within the practice).	

Reported patient characteristics to be considered in relation to increasing screening uptake:

A number of papers included in this study reported characteristics of populations that were both more and less likely to attend both Health Checks and other forms of screening. A summary of the key point is presented below; from this it is recommended that it is ensured materials are suitable/tailored for different populations and that there is likely to be a need to engage with discussion with different populations of attendees and non-attendees to understand barriers and facilitators to engaging in the NHS Health Check programme.

Health Checks:

As mentioned above, Dalton et al., (2011) reviewed the uptake to the NHS Health Check in deprived and culturally diverse settings (main focus Ealing). They found that overall uptake levels within the first year only reached 45% (Department of Health estimates 75%); with rates being significantly lower for younger men and smokers. Unlike in other areas of screening and some other studies Dalton et al., (2011) found uptake was higher among patients from South Asian or mixed ethnic backgrounds compared to white backgrounds. They suggest that the increase uptake by South Asians for Health Checks compared to other screening may be due to them being linked to GPs of similar ethnic origin. They also found that older patients had the highest attendance rate, which is likely as with other screening, to be as a result of their increased engagement with GPs. They concluded that "*targeting limited resources to increase uptake, improve risk communication and adherence to interventions in high-risk populations may be more cost-effective and increase the population benefits of this programme*" (p428).

In order to better understand how this correlates to Salford a breakdown of data would be needed, but also it is suggested that groups of attendees and non-attendees from different populations are consulted in the design of materials used to invite people to Health Checks to ensure they are suitable for different populations. Using a stepwise process targeting those who are engaged with the health professions are likely to attend, then targeting those in other populations.

Transferable lessons from other areas of screening:

Although these papers are not NHS Health Checks there are a number of transferable lessons to increase uptake of NHS Health Checks. A number of papers relating to colorectal cancer screening, found for men and women, having a personal physician increased uptake, but self-reported good health was associated with lower attendance (Carlos et al., 2005a; Carlos et al., 2005b).

Within diabetes screening, Ealovega et al., (2004) found opportunistic screening was more likely to occur for people in certain groups (older age groups, women, people who were overweight/obese, were in non-white ethnic groups, glucose intolerance, hypertension, dyslipidemia and had a history of diabetes). Their explanation for this was that this may be a reflection of the fact they are engaged with the medical profession and used to attending clinics etc. This is further supported by Shah & Booth (2009) who reported those who

regularly used medical services were more likely to attend diabetes education centres, and those who attended these centres were more likely to engage with other screening. This transfers to NHS Health Checks in the need to differ targeting of materials to regular engagers with the NHS and more symptomatic disengaged attendees, as well as the need to improve identification of these groups.

Ethnicity has also been found be a factor in screening uptake rates. Szczepura et al., (2008) looked at rates of breast and bowel cancer screening in South Asian communities in the UK, finding that the considerably lower rates of screening in these populations is not attributed to deprivation, age or gender. Translating this to NHS Health Checks, GPs need to account for ethnicity and it is suggested to engage with different communities to see how they would suggest increasing uptake and also to understand their views around NHS Health Checks.

A study by Bartys et al., (2005) looked at CVD screening programmes and inequality, found it was not only uptake that was affected but also aspects relating to systems. Completeness of records of screening/risks was significantly lower for women and South Asians than for men and Caucasians and those who were unemployed.

The ADDITION study was a multi-national study (Anglo-Danish-Dutch) relating to diabetes screening that has been running for since 2000. Initially this is a screening programme and then those who are found to have diabetes are informed and invited into the trial[9]. Although not Health Checks there are a number of transferable lessons as outlined by Graffy et al., (2010) around three key factors that facilitate screening (p.392):

- "*Systems*" (e.g. efficient systems for identification & invitations, flexibility in appointments, reminders by GPs for non-attenders when next seen)
- "*Staff contributions*" (e.g. training, admin support, staff able to see outcomes of screening on patients)
- "*Patient Perspectives*" (e.g. previous care experience may impact attendance, the need for primary care teams to shape patients perception about the areas targeted by the NHS Health Checks)

Further to this Graffy et al., (2010) also outline five issues that they found need to be addressed to implement diabetes screening, but are also transferable to NHS Health Checks (p.392):

- "*Anticipated workload*"
- "*Team roles*"
- "*Information management*" (e.g. call, recall, monitoring systems and effective searching systems for patients in need of Health Checks)
- "*Explaining results and follow up*" (e.g. who will do this and how will this be done, what arrangements will be made for follow up if required)

[9] Treatment guidelines - http://www.addition.au.dk/files/The_Addition_Study,%20How%20to%20keep%20intervention%20at%20maximum,%20august%202010.pdf The main study protocol - http://www.addition.au.dk/Protocol%20-%20ADDITION.pdf

- "*Deciding whether to integrate with routine care*" (e.g. is it possible to better integrate Health Checks to avoid multiple trips to GPs)

Sargeant et al., (2010) in another ADDITION study paper suggest a stepwise approach but also the need for potentially more than one method at different stages, ideas which could transfer to help increase uptake of Health Checks:

> "*High attendance rates can be achieved by targeted stepwise screening of individuals assessed as high risk by data routinely available in general practice. Different strategies may be required to increase initial attendance, ensure completion of the screening programme, and reduce the risk that screening increases health inequalities."* (p. 995)

Park et al., 2008 conducted a trial that supported the results of the ADDITION study but was not directly linked (this study was an "*individually-randomised controlled trial to assess the psychological impact of screening for diabetes at six weeks*" p9). They reported an overall attendance rate across the complete step-wise programme as 77%. The attendees and non-attendees did not differ significantly for age, sex or BMI, but where "*more likely to have been prescribed either antihypertensive or steroid medication*" (p4). Of note Park et al., (2008) propose that attendees "*were more likely to have already been labelled with a chronic disease (such as hypertension) and had become used to returning regularly to the practice for monitoring, testing and treatment, and this in turn made them more motivated or less anxious about attending for screening for diabetes*" (p7). This may also be relevant to the design of methods to increase screening and target different sub groups of the population. It was also found through this study that the invitation to screening led to a change in anxiety; again being able to accommodate this and support those who feel anxious about screening is also of relevance to increasing uptake.

As can be seen in *Appendix 2* a number of studies were identified through the search around increasing uptake of screening in other areas; this was mainly in relation to colorectal cancer screening. From these a number of areas of good practice and things to be aware of around increasing uptake can be identified:

- Having a health care assistant conduct pre-appointment discussions around screening and being able to log screening request
- Ensure there is linking of staff responsible for Health Checks in practices with the GP through the electronic record system, to improve continuity
- There is a need to ensure interventions are both tailored to the literacy levels of the populations and have cultural relevance
- The method of communication needs to be appropriate and targeted in order to get people to engage (qualitative preliminary investigation with people can help to ascertain how they would prefer/receive communication)
- Having a same gender clinician may increase potential interest in taking up screening but other mechanisms of support are required to translate this into actual attendance figures

- A GP endorsed letter and more explicit procedural leaflet has been shown to increase participation in bowel cancer screening, highlighting the importance of personalisation by a named GP the participant has seen
    - The initial point of contact has the most impact, and the way the GP corresponds with their population is an important part of getting people to attend screening
- Incentivising GPs for screening has been shown to have some impact; as such there may be a case for linking or trying to link Health Checks and screening to QOF indicator framework (potentially e.g. CVD-PP2?)
- Screening in other areas has shown that most of the benefit is likely to come at the initial stage so this phase is key to get the information and wording correct to ensure uptake rates are increased
- Automated screening invitation systems are worth investigating however they involve an initial setup cost and need to be audited to ensure they are fit for purpose
- Increasing information about health risk and choice alone may not be sufficient to increase uptake in screening, so the information provided to patients prior to Health Checks is vital to increasing uptake

Discussion/Conclusion:

In conclusion, there is limited evidence of the demographic and health factors that impact on NHS Health Check uptake: with older age; higher CVD risk; non-smoker; and female being the key predictors. Ethnic minorities have been shown to successfully take up Health Checks in areas where there are sufficient GPs of ethnic concordance. From a systems perspective those GP practices that are most successful at attracting people to take up the Health Check were small and more research is required to fully understand the reasons behind this; but it is likely to be related to the quality and continuity of care the patient may be receiving in these smaller practices, which leads to higher patient satisfaction and compliance with the screening invitation. Alternative Health Check provision for men such as provision of community based Health Checks can work but may not achieve as high an uptake as GP-based provision.

Recommendations:

- Audit local data in terms of Health Check uptake rates to understand population (and sub groups) that are, and are not attending, to help identify key target groups locally.
- Undertake qualitative research with a broad range of individuals from the target population who have attended, and not attended, in order to understand about barriers and facilitators to Health Checks in Salford.
- Target high risk (if risk data are reliable, see Kumar et al., 2011), older, female, non-smokers first as they are the groups that evidence suggests are most likely to attend.
- Target those eligible patients who are already good GP practice attenders (as with Dalton et al., 2011 who reported good uptake rates for South Asian patients).
- Tailor information to different population groups to ensure relevance, and address key aspects identified as pertinent to those population groups.
    - In support of this Public Health England (2013) recommend that "*adapting invitations to support improved uptake from local populations groups is pivotal to success*". Within Action 2 of the 'NHS Health Check implementing review and action plan' (2013) they report that support will be provided to local authorities to help improve uptake through activities such as marketing interventions, establishing effectiveness of different methods of recruitment etc.
- Ensure messages are delivered in the most cost-effective way for the age and demographic of the audience (e.g. text messaging etc. as suggested for testing in the improvement pilot to be implemented in Salford).
- Men may be less likely to attend (see Artac et al., 2013 a, b c); therefore provision for men to undertake Health Checks in alternative, appropriate settings (e.g. using the mobile unit (bus) currently in operation in Salford in a greater number of areas).
    - Community settings such as sport stadia may be an innovative alternative to requiring a practice-based visit, although may not yield as high an uptake as those men who visit the GP (see Lambert et al., 2011).
    - As mentioned above, implementing focus groups with men's groups may help to identify mechanisms that can help to break down the barriers men

have to attending general practice for simple health screening. Occupational routes to screening may be an interesting alternative pathway.

- Large GP practices were shown in the study by Dalton et al., (2011) to be less effective at engaging patients in the NHS Health Check. This may be due to lack of continuity of care in a large practice whereby the patient lacks certainty regarding the GP they are going to see.
    - Consequently a targeted invitation from the patient's preferred GP, or a given choice of GP, may be more appealing to the patient and may improve uptake by removing some of the fear/embarrassment screening sometimes evokes.
- In order to maximise effectiveness of the NHS Health Check, coverage as well as uptake needs to be considered and there may be implications in terms of workload capacity of the general practice system to deliver the required coverage per year, unless further investment is made.
    - Investigation may be needed to determine if this is achievable and how this can be achieved through Salford's current invitation system using a 'tombola birthday system' where monthly invitation numbers can vary greatly between practices, or the need for a different method of invitation.
- Good systems are required for:
    - internal tracking of patient data (ethnicity, smoking status etc., see Lambert et al., 2011) as those patients with known characteristics were more likely to attend for Health Checks
    - for internal tracking of screening tests in general practice as many partial Health Checks (as reported in the study by Artac et al., 2013 a, b, c) may result in ineffective follow up care

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Appendices:

Appendix 1 – Medline via Ovid Search

1. (health exam* or health evaluation* or screening or check up or checkup or check-up or health testing or check)
2. (Health Check* or healthcheck*)
3. mass screening/ or screen*
4. Physical examination/
5. Annual medical
6. Wellness check
7. Care check
8. Medical adj5 (check or check up or check-up or physical or exam* or screen)
9. Preventive* adj5 (check or check up or check-up or physical or exam* or screen)
10. screening
11. Or/1-12
12. Annual or year*
13. Periodic
14. Multiphasic
15. programme
16. routine
17. or14-18
18. prevent*
19. exp Preventive Health Services/
20. Risk assessment/
21. Primary prevention/
22. Risk factors/
23. or/20-24
24. Adult/
25. Middle age*
26. Elderly
27. Old age
28. Or/26-30
29. Primary care
30. (Community or communities) adj5 (services or centres or centers or nursing)
31. General pract* or GP or doctor or physician
32. (Work or workplace or work-place or work site or work-site)
33. Or/31-34
34. Exp cardiovascular diseases/
35. Exp digestive system diseases/
36. Exp endocrine system diseases/
37. Exp musculoskeletal diseases/
38. Exp lung diseases/
39. Diabet* or cardio* or heart or disease or copd
40. Dementia
41. 13and 19 and 25 and 30 and 35

Appendix 2 - Increasing uptake of screening

Author	Year	Country	Topic	Aim	Intervention	Outcomes	Transferability to UK primary care	Key recommendation around improving screening uptake
Baker et al.	2009	USA	Colorectal Cancer screening	Improving screening rates in primary care through the use of a medical assistant	*Phase 1* – computerised reminder to GP during patient consultation *Phase 2* – Physician education regarding prioritisation of screening and its organisation *Phase 3* – Medical assistant carries out preliminary discussion of screening with patient prior to GP consolation and place on records if they have requested any.	*Phase 1* – no immediate effect on uptake *Phase 2* – increase in referrals for preceding month from 6% to 7.5% *Phase 3* – showed a large and sustained increase in referral rate. Mean monthly referral rate 13.4% (P<0.01)	Practical process of phasing, so the intervention would appear to be transferable to a UK practice setting. All who were in the age for a Health Check but were there for a GP appointment were talked to by the medical assistant	Having a health care assistant conduct pre-appointment discussions around screening and being able to log screening request Linking staff responsible for Health Checks in practices with the GP through the record system

Author	Year	Country	Topic	Aim	Intervention	Outcomes	Transferability to UK primary care	Key recommendation around improving screening uptake
Denberg et al.	2010	USA	Colorectal Cancer screening	To assess the impact of offering women (50-69) a choice of female endoscopist on colonoscopy screening uptake	Two groups – women who were offered a female endoscopist both via written invitation and telephone invitation (medical assistant made up to 4 calls) and women who were not. Personalised information letters which summarised the benefits of screening recommending colonoscopy but outlined other options, all included a phone number of a medical assistant	"*Women who received an FE invitation were more likely to request an FE than patients who received no invitation (44.2% and 4.8%, respectively, P _ .001), but women who requested an FE were not more likely to undergo an [screening colonoscopies] than those who did not*." (p1014)	Assigning a same gender practitioner would be potentially feasible.	Having a same gender clinician may increase potential interest in taking up screening but other mechanisms of support are required to translate this into actual attendance figures.

Author	Year	Country	Topic	Aim	Intervention	Outcomes	Transferability to UK primary care	Key recommendation around improving screening uptake
					to help arrange screening.			
Green et al.	2013	USA	Colorectal Cancer screening	To test whether electronic health records, automated mailings and steeped increase in screening support improve adherence when compared with usual care	*Usual care* – services to promote CRC screening (evidence based guidelines, patient handouts, annual tailored birthday letter which linked to immunization and other screening/long-term care tests – p303). *Usual care + automated care* – as above, automatically generated mailing (letter and information pamphlet about	"*Compared with usual care, a centralized, EHR-linked, mailed CRC screening program led to twice as many persons being current for screening over 2 years. Assisted and navigated interventions led to smaller but significant stepped increases compared with the automated intervention*	The interventions in this study are potentially transferable to UK primary care practice setting	Need to be aware of ensuring intervention is both tailored to the literacy and cultural relevance

Author	Year	Country	Topic	Aim	Intervention	Outcomes	Transferability to UK primary care	Key recommendation around improving screening uptake
					test and screening options) *Usual care + automated care + assisted care* – as above plus automated support and telephone assistance from a medical assistant to help complete screening. *Usual care + automated care + assisted care + navigated care* – as above plus received support from a registered nurse who directly contacted patient who had called with questions or request around	*only*." (p302)		

Author	Year	Country	Topic	Aim	Intervention	Outcomes	Transferability to UK primary care	Key recommendation around improving screening uptake
					alternative screening procedures. Medical assistants contacted those who had not requested anything; assessed screening risk and provided counselling to assist patient screening intent.			
Hewitson et al.	2011	England	Colorectal Cancer screening	To test the "*effectiveness of a GP letter encouraging participation and a more explicit leaflet explaining*" (p475) the foetal occult blood test	*Letter* – GP endorsement letter recommended the test, offered support with questions and emphasised the importance of being aware of bowel cancer screening. Outlined	"*Both the GP's endorsement letter and the enhanced procedural information leaflet, each increased participation above usual care by*	Has the same primary care set up as South of England study	A GP endorsed letter and "*more explicit procedural leaflet*" (p475) can both increase participation in bowel cancer screening

Author	Year	Country	Topic	Aim	Intervention	Outcomes	Transferability to UK primary care	Key recommendation around improving screening uptake
					key messages from UK research. *Enhanced procedural leaflet* – addressed potential barriers, included messages reinforcing the effectiveness and rational for screening and motivation components designed to include self-efficacy. *4 groups* – GP endorsement letter only, Enhanced procedural leaflet, Letter plus Enhanced procedural leaflet and usual care	*about 6% – the GP's endorsement letter from 52.3 to 58.1%...the leaflet from 52.2% to 58.2%. The return rate in people receiving both interventions was 61.2%, suggesting the effect of both interventions is additive (i.e., the absolute difference of GP's letter 5.6% and leaflet 5.9%,*		There is a need to link or try to link Health Checks and screening to QOF indicator framework (potentially e.g. CVD-PP2?)

Author	Year	Country	Topic	Aim	Intervention	Outcomes	Transferability to UK primary care	Key recommendation around improving screening uptake
						together is 11.5%).” (p.477) *“The proportion of people participating in screening was higher for those receiving a signed GP’s endorsement letter (64.9%) in comparison with people who received the non-signed (on behalf of the practice) endorsement letter (54.1%).”* (p477)		

Author	Year	Country	Topic	Aim	Intervention	Outcomes	Transferability to UK primary care	Key recommendation around improving screening uptake
						Issue raised – less ½ GP practices provided a GP signature which suggested lack of engagement		
Kearins et al.	2009	England	Breast cancer screening	To test how an invitation management initiative improves uptake of breast cancer screening in an urban UK primary care trust	Targeted at persistent non-attenders (missed more than 1 breast cancer screening app) – these "*women were sent a standard invitation letter with a timed appointment*" (p82), if a phone number was available they revived a phone	Improvement in uptake was mostly achieved at the first stage of the initiative (e.g. 1st app letter, phone call and in some cases a home visit). 26.5% of women being screened at their first	Has the same primary care set up as South of England study	Most of the benefit is likely to come at the initial stage so this phase is key to get the information and wording correct Follow up support, done in the correct manner, make a different to some women

Author	Year	Country	Topic	Aim	Intervention	Outcomes	Transferability to UK primary care	Key recommendation around improving screening uptake
					call following the routine letter. The purpose of the call was to check if the women intended to attend, if she had any questions and to change the app provided if required. A reminder call was made 1 day prior to the appointment. When no call was possible a home visit was made by a public heath researcher. A limit of 5 calls was made at each stage.	appointment (at a population level increase of 2.4%). 8% did not attend the first app but where screened at the second stage (at population level increase 0.7%). 10 women were glad to be reminded about attending and receive more information about the process. 23 of the 228 (10%)		

Author	Year	Country	Topic	Aim	Intervention	Outcomes	Transferability to UK primary care	Key recommendation around improving screening uptake
						who declined screening invitation reacted angrily to the call or home visit and asked to removed from the NHS screening programme.		
Leffler et al.	2011	USA	Uptake of colonoscopy.	To test the effectiveness of an automated 7 step reminder system versus standard care.	2 groups standard care or "*newly developed follow-up system that included a letter to the primary care provider, 2 letters to the patient, and a telephone call to patients who had not yet scheduled an examination by the procedure due*	44.7% of the intervention arm compared with 22.6% of standard care received the screening exam.	Would be possible to transfer the design of the follow-up programme	Automated screening invitation systems are worth investigating however involve an initial setup cost and need to be audited to ensure they are fit for purpose.

Author	Year	Country	Topic	Aim	Intervention	Outcomes	Transferability to UK primary care	Key recommendation around improving screening uptake
					date" (p. 1166)			
Mann et al. Marteau et al.	2009 2010	Cambridgeshire and Suffolk, England	Uptake of diabetes screening in primary care	*"To compare the effect of an invitation promoting informed choice for screening with a standard invitation on attendance and motivation to engage in preventive action"* (p. 1)	The informed choice letter contained greater information around risk, complications, and consequences of treatment and screening in addition to the standard letter which tells of common facts about diabetes and risk.	No significant difference in uptake found for the enhanced letter compared with normal letter, and no differences by socio-economic quintile were reported. However, lower SES groups were less likely to attend overall.	Has the same primary care set up as South of England study	Increasing information about health risk and choice alone may not be sufficient to increase uptake in screening.
Zajac et al.	2010	Australian	Colorectal Cancer screening	"*To investigate the effect of general practice and*	*Invitation 1* – "*invitation sent on central screening service letter head signed by the*	Endorsement by the practice "*significantly enhanced in the GP2 (39%,*	The use of letters from a practice endorsing the screening is	The initial point of contact has the most impact and the way the GP corresponds

Author	Year	Country	Topic	Aim	Intervention	Outcomes	Transferability to UK primary care	Key recommendation around improving screening uptake
				general practitioner endorsement for foetal occult blood test based screening on maintenance of screening participation over four screening rounds" (p. 19)	*screening coordinator without any indication the persons GP was involved*" (p20) *Invitation 2 –* "*invitation sent on central screening service letter head signed by the screening coordinator and endorsed impersonally by the participant medical practice by stating*" (p20) that they supported the screening *Invitation 3 –* "*invitation sent on the invitees medical practice*	*42%, 45% and 44%) and GP3 groups (42%, 47%, 48% and 49%) relative to the ER group (33%, 37%, 40% and 36%). The analyses also indicated that 60–69 year olds were most likely to participate in all rounds (relative risk [RR] 1.49, 1.39, 1.43 and 1.25), and men were generally less likely to participate than*	likely to have an impact but greater participation can be achieved by getting the GP to provide endorsement.	with their population is an important part of getting people to screening

Author	Year	Country	Topic	Aim	Intervention	Outcomes	Transferability to UK primary care	Key recommendation around improving screening uptake
					letter head indicating the screening was endorsed by the practice" (p20) and signed by the GP they had the most contact with. "*The invitational kit included: (a) a bowel cancer information sheet; (b) a brief questionnaire confirming personal details and preferred doctor for follow-up; and (c) a faecal immunochemical test (FIT).*" (p20) Across the 4 rounds different	*women in all screening rounds (RR 0.86, 0.84, 0.80 and 0.83).*" (p19)		

Author	Year	Country	Topic	Aim	Intervention	Outcomes	Transferability to UK primary care	Key recommendation around improving screening uptake
					screening test were used and a 6 week reminder was sent if initial collection card had not been received.			
Zapka et al.	2004	USA	Colorectal Cancer screening	Test the effectiveness "*of an educational video mailed to patients homes before a physical examination*" (p.683)	Usual care – physical examination Intervention –"*The intervention consisted of a 15-minute video titled "Say Yes to the Test." Development was guided by the PRECEDE/PROCEED model for health promotion planning (44) and the behavioral model of utilization (45), incorporating elements of social*	No effect of video on overall rate of CRC screening and did not increase screening on sigmoidoscopy. But if the person had viewed the video the rate of screening sigmoidoscopy increased significantly, so they reported it was a useful	Video or alternative communication could be developed and use around screening type	Method of communication has got to be appropriate and targeted in order to get people to engage (suggest so preliminary work with people to ascertain how they would prefer/receive communication)

Author	Year	Country	Topic	Aim	Intervention	Outcomes	Transferability to UK primary care	Key recommendation around improving screening uptake
					cognitive theory (46, 47)." (p684 - 685) Each of the packs contained a letter signed by the primary care physician encouraging the person to view the video.	tool.		

Appendix 3 – Other Health Check references not referring to uptake or increasing uptake

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