1 **Why do people not attend NHS Health Checks? A systematic review and**
2 **qualitative synthesis.**
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21

22 **ABSTRACT**

23

24 **Background:** The NHS Health Check programme is one of the largest prevention initiatives
25 in England. Effectiveness depends on uptake. When introduced in 2009 it was anticipated
26 that all those eligible would be invited over a five-year cycle and 75% would attend. So far in
27 the current cycle from 2013-2018, 33.8% of those eligible and 48.5% of those invited have
28 attended. Understanding the reasons why some people do not attend is important to maximise
29 the impact of the programme.

30 **Aim:** To review why people do not attend NHS Health Checks.

31 **Design:** A systematic review and thematic synthesis of qualitative studies.

32 **Data sources:** An electronic literature search of Medline, Embase, Health Management
33 Information Consortium , Cumulative Index of Nursing and Allied Health Literature, Global
34 Health, PsycInfo, Web of Science, OpenGrey, the Cochrane Library, NHS Evidence, Google
35 Scholar, Google, Clinical Trials.gov and the ISRCTN registry from 01/01/96 to 09/11/16 and
36 manual screening of reference lists of all included papers.

37 **Inclusion criteria:** Primary research reporting the views of people who were eligible for but
38 had not attended an NHS Health Check.

39 **Results:** Nine studies met the inclusion criteria. Reasons for not attending included lack of
40 awareness or knowledge, misunderstanding the purpose of the Health Check, aversion to
41 preventive medicine, time constraints, difficulties with access to general practices, and doubts
42 regarding pharmacies as appropriate settings.

43 **Conclusions:** The findings particularly highlight the need for improved communication and
44 publicity around the purpose of the NHS Health Check programme and the personal health
45 benefits of risk factor detection.

46

47

48 **Key words:** NHS Health Check, uptake, non-attendance, systematic review, qualitative
49 synthesis

50 **HOW THIS FITS IN**

51 Attendance at NHS Health Checks is lower than anticipated when the programme was
52 introduced. Understanding the reasons why some people do not attend is important to
53 maximise the impact of the programme. A number of studies have been published in this
54 area. This review synthesises the findings from those studies and highlights a need for clearer
55 and more targeted communication, clarification of the distinction between prevention and
56 treatment and appointments for NHS Health Checks and those for routine and urgent care,
57 and promotion of pharmacies and community venues as appropriate settings.

58 **BACKGROUND**

59 The NHS Health Check programme was introduced in England in 2009. Within this
60 individuals aged 40-74 years without pre-existing cardiovascular disease (CVD), kidney
61 disease, type 2 diabetes, or dementia are offered an assessment of their risk of developing
62 such conditions and access to lifestyle and health advice to reduce that risk. The risk
63 assessment includes questions about alcohol use, physical activity and smoking status,
64 measurement of weight, height and blood pressure, and blood tests for cholesterol, diabetes if
65 they have a body mass index over 30 (or over 27 if South Asian) or a blood pressure over
66 140/90, and creatinine to assess kidney function in those with a blood pressure over 140/90.
67 Individuals are then given their estimated risk of developing CVD in the next 10 years and
68 provided with lifestyle advice for prevention of CVD and dementia. Where appropriate,
69 referrals to specialist lifestyle services or follow-up with their general practitioner (GP) to
70 discuss medication is also advised. It is now a mandated service with NHS Health Checks
71 offered in a variety of settings, including general practices, pharmacies, and community-
72 settings.
73
74 When the programme was introduced it was anticipated that all those eligible would be
75 invited over a five-year cycle and 75% would attend[1]. The most recent published data from
76 Public Health England (PHE) show that so far in the current cycle from 2013-2018,
77 10,735,566 (69.7%) of the total eligible population of 15,402,612 have been invited and
78 5,209,468 (33.8%) have attended[2], giving an overall proportion of those invited who have
79 taken up the invitation of 48.5%. This ranges both between and within regions of the country,
80 for example, within Yorkshire in 2015-16, uptake varied from 8% to 89% between areas.
81
82 As the potential benefits of the programme depend upon people receiving NHS Health
83 Checks, understanding this variation and why some people do not attend is important.
84 Quantitative studies have shown that older people, women, those from the most deprived
85 areas and non-smokers are more likely to have had an NHS Health Check, but that older
86 people and those from the least deprived areas are more likely to take-up an invitation if
87 offered[3–8]. The aim of this study was to systematically review and synthesise the published
88 qualitative literature exploring why people have not attended NHS Health Checks in order to
89 better understand these variations in uptake at an individual level.
90

91 **METHODS**

Search strategy

We used existing searches that had been conducted by PHE in Medline, Embase, Health Management Information Consortium (HMIC), Cumulative Index of Nursing and Allied Health Literature (CINAHL), Global Health, PsycInfo, the Cochrane Library, NHS Evidence, Google Scholar, Google, Clinical Trials.gov and the ISRCTN registry from 1 January 1996 to 9 November 2016 supplemented with our searches in Web of Science and Open Grey over the same period. The OAIster database was unavailable at the time of the search. Full details of the search strategy for each of the databases are given in Supplementary file 1. All included terms relating to ‘health check’, ‘NHS Health Check’ and ‘cardiovascular disease’.

Study selection

Identified studies were selected for inclusion in a two-stage process. First, an information scientist at PHE conducted initial searches and identified all studies relevant to the NHS Health Check. Second, we repeated this process for the searches in Web of Science and OpenGrey. We then reviewed all articles identified as relevant to NHS Health Checks at full text level against the specific inclusion criteria for this study. We included studies which included participants eligible for an NHS Health Check but who had not attended and which included qualitative data. We excluded editorials, commentaries and opinion pieces, studies including individuals who were not eligible for an NHS Health Check, and studies which focused on screening or health check services other than the NHS Health Check.

Data extraction and quality assessment

The data from these studies were extracted independently by at least two researchers (JUS + EH and/or CMa), each from a different disciplinary background (academic general practice, public services, and health systems and innovation), using standardised extraction forms. We performed quality assessment at the same time as data extraction across eight dimensions based on the Critical Appraisal Skills Programme (CASP)[9]. We did not exclude studies on the basis of quality alone.

Synthesis

We conducted a thematic synthesis of our data in three stages as described in detail elsewhere[10]. Briefly, first we performed line-by-line verbatim coding of key findings from our sample of studies. Following this initial extraction, we arranged a workshop during which we discussed the similarities and discrepancies in the coding from the three researchers and

126 organised the findings into related areas to develop descriptive themes. We then held a series
127 of consensus meetings during which we discussed similarities and discrepancies across the
128 studies and themes and developed over-arching analytical themes which addressed our
129 research question. The purpose of this final stage was to enable the 'translation of concepts
130 from one study to another'[11]. We have included illustrative quotations from the original
131 studies alongside the analytical themes in this paper to enable an appreciation of the primary
132 data.
133
134 **RESULTS**
135 From the initial 18,524 articles identified and screened from the searches, we reviewed 178 at
136 full-text level. After excluding duplicates, commentaries and studies not meeting our
137 inclusion criteria, we identified nine studies relevant to the study question (Figure 1). Table 1
138 provides details of the characteristics of these nine studies, including the methods for data
139 collection, time period, location and setting. They covered a range of methods, including
140 face-to-face or telephone interviews (*n*=5), face-to-face surveys (*n*=2), and surveys with
141 space for free text (*n*=2). Across the studies, general practices were the predominant intended
142 setting for NHS Health Checks (*n*=7), while some studies focused on reasons for not
143 attending NHS Health Checks at pharmacies (*n*=2), community-settings (*n*=1), or any setting
144 (*n*=1). Together the studies covered a number of regions across England, including London,
145 the North East, North West, West Midlands, and South West regions. Based on the CASP
146 criteria (Table 2), three studies were of high quality overall, four were of medium quality and
147 two low quality.
148
149 Thematic synthesis of these nine studies identified six key themes for why people had not
150 attended NHS Health Checks: 1) Lack of awareness or knowledge; 2) misunderstanding the
151 purpose; 3) aversion to preventive medicine; 4) time constraints or competing priorities; 5)
152 difficulty with access in general practices; and 6) concern around the pharmacy as a setting.
153 The primary articles contributing to each of those themes is shown in Table 3. Except for the
154 final theme, concern around the pharmacy as a setting, which was not applicable to those
155 studies based in general practice, each theme was present in over half the studies and all three
156 high quality studies included data relevant to all the themes. The three survey studies each
157 only contributed to two of the themes but there were no other clear patterns across the
158 findings and recruitment method, patient group, site of the NHS Health Checks, or region.
159 Details of each of the themes given below. Although we present our findings by theme, there

160 is overlap between them and it is likely that each individual was influenced by at least one
161 reason.
162
163 ***1. Lack of awareness or knowledge***
164 A low level of awareness of NHS Health Checks was evident across a number of the
165 studies[12–15]. Some respondents had either no knowledge of the NHS Health Check or no
166 recollection of receiving an invitation[14, 16] and 91% of those taking part in a face-to-face
167 survey on the street reported being unaware of an NHS Health Check pharmacy service[12].
168 Others appeared to be aware of the programme but a lack of knowledge about what it
169 involved had contributed to their non-attendance[17–19].
170
171 *"Are they free? How do you go about getting a Health Check?"*[18]
172
173 *"I didn't realise that it was dementia…And I certainly didn't know that it was, um,*
174 *diabetes and kidney, I thought it was purely cholesterol.*"[19]
175
176 ***2. Misunderstanding the purpose***
177 In addition to this lack of awareness or knowledge, there was a lack of clarity around the
178 purpose or objective of the NHS Health Checks. This lack of understanding led some
179 individuals to feel apprehensive about the results and the potential for health issues to be
180 uncovered, particularly amongst some women[14, 19]. Others had not recognised the
181 preventive role of the programme and so felt that if they were in good health or visited their
182 GP regularly that a check-up was unnecessary[13–15] and did not wish to divert time or
183 resources from others or place a burden on their doctor or the NHS[14–16, 19].
184
185 "*I mean there's no point in doing that if it's, you know, using up people's precious*
186 *time and resources if it's not necessary*."[15]
187
188 *"It's beneficial for those already having problems. but for me I'm fit and active, you*
189 *should go when you're poorly, not just for the sake of it"*[14]
190
191 ***3. Aversion to preventive medicine***
192 Others appeared to be aware of the NHS Health Check programme and understood its
193 preventive purpose but were unwilling to attend[13–15, 19, 20]. For some this was because

194 they were just not interested[17] whilst others "*did not want to know*"[13, 15] or were afraid
195 of receiving negative news about their health[14, 15, 19]. Others appeared to avoid attending
196 as they did not wish to be "*told off*" or given lifestyle advice[13, 15, 19] and some reported
197 that negative views from friends influenced their decision to attend or not[19].
198
199 *"I am just the type of person who wouldn't want to know. I would rather things just*
200 *happen and then deal with it. I worry about the now and not the future."*[13]
201
202 "*you go for a check and something is discovered… I hear lots of people end up going*
203 *for so many tests, and worry about their health*"[14]
204
205 ***4. Time constraints or competing priorities***
206 Other frequently cited reasons for non-attendance included time constraints or conflicting
207 priorities[14, 16, 17, 19, 21]. Some stated being "too busy" as a reason for non-attendance
208 and some found it difficult to arrange an appointment that suited their daily schedules, which
209 included work, caring for others and travelling abroad[14, 15, 17].
210
211 *"…And. you, know, when you work freelance any spare time you have to work, you*
212 *know to keep the financial thing on track. So you know, it's just life, you just kind of*
213 *do what's in front of you.*"[15]
214
215 ***5. Difficulty with access in general practices***
216 The two final themes relate to setting specific barriers to attendance. In general practice
217 settings an actual or perceived difficulty in obtaining an appointment was the most common
218 barrier, particularly for those who worked normal office hours, and those with carer
219 responsibilities[13–15, 18, 19].
220
221 "*it is just the time to arrange to go in,…I…come to work early and they are shut. They*
222 *are shut when I go home. Weekends they are not open, so it's difficult to get*
223 *there*"[14]
224
225 *"It's very difficult for me to (go to the appointment) and hold on to a nine-to-five job.*
226 *It means I have to take personal time off from my employer to do this. They don't give*
227 *you an option where you can go in the evening."*[15]

6. Concern around the pharmacy as a setting

Amongst those invited to attend NHS Health Checks in pharmacies the reasons for not attending were less around access but more about concerns regarding privacy, confidentiality and pharmacists' competence, with men demonstrating less willingness to be screened at a pharmacy than women[12, 15].

> *"Not enough privacy in small pharmacy – unless special rooms are kept just for that. Don't feel they are qualified"*[12]

> *"The relationship with pharmacies is a consumer one, about products, and not about care and health…potentially it's pretty intimate information. It should not be the place for delivering bad news about cholesterol."*[15]

DISCUSSION

Summary

To our knowledge this is the first systematic synthesis of qualitative evidence concerning why people do not attend NHS Health Checks. It highlights three particular groups of individuals: those who were unaware of the NHS Health Checks programme; those who were aware of the programme but did not appreciate the preventive nature; and those who recognised the preventive nature but actively chose not to engage due to either fear of being told off, or a preference for simply 'not wanting to know'. There is also evidence of practical barriers to attendance, such as time constraints or competing priorities amongst those with work and carer obligations. In addition, for GP and pharmacy settings, perceived or actual difficulties making an appointment, wishing to avoid the GP, or concerns about pharmacy and pharmacists' role in conducting NHS Health Checks also contributed to decisions not to attend.

Strengths and limitations

The main strengths of our study are the systematic literature search, including the OpenGrey database and web-based searches to locate unpublished studies, and the independent data extraction by three researchers, each with different academic backgrounds. Given the highly interpretive nature of qualitative data, the decision to include three researchers in this step of the research and to hold a series of subsequent consensus meetings with the wider research

262 team reduced the risk of introducing bias to the results. Our choice of thematic synthesis also
263 allowed us to develop additional interpretations and conceptual insights beyond the findings
264 of the primary studies. For example, the aversion to preventive medicine theme described
265 here was not explicitly described across the studies.
266
267 However, although three researchers conducted the data extraction, only one qualitative
268 researcher conducted the title and abstract review for the Web of Science and OpenGrey
269 literature search results and we relied on the screening that had already been performed by
270 PHE in the other databases. It is, therefore, possible that we have overlooked additional
271 studies relevant to the research question. Other limitations are the relatively small number of
272 studies which focus on reasons for non-attendance at an NHS Health Check and the varying
273 levels of quality of these studies. The studies also all included only small numbers of
274 participants who were self-selecting as they had agreed to take part in research. As
275 acknowledged in a number of the studies, non-attenders are a particularly difficult group to
276 recruit as they have already not engaged with the NHS Health Check programme. Whether
277 their views are representative of the large group who do not attend is, therefore, not known. It
278 is also not possible to assess the relative contribution of each of the themes described. In
279 qualitative analysis it is common for divergent themes to be specifically sought and for data
280 collection to continue until no new themes arise. It is, therefore, possible that some of the
281 reasons reported in this study are only applicable to a small number of those not attending
282 NHS Health Checks. Our analysis also relied on the data presented in the included studies
283 which meant it was not possible to identify whether some findings were more common
284 amongst specific patient groups.
285
286 **Comparison with existing literature**
287 Few studies have explored reasons for non-attendance within prevention programmes. Our
288 findings are consistent with data from interviews with 259 people who had not attended
289 similar health checks before the introduction of the NHS Health Check programme[22]. In
290 that study 9% did not recall receiving an invitation and the main reasons for not attending
291 were: practical reasons, including lack of time and difficulties scheduling an appointment; a
292 belief that screening was not necessary for them, either because they felt well or were already
293 in contact with medical services; and lack of interest. The reasons given are also comparable
294 with existing literature exploring the reasons people do not attend screening or immunisation
295 programmes. For example, studies have shown that people who declined bowel cancer

296 screening felt that undergoing screening left them vulnerable to receiving unwanted news
297 about poor health[23], did not want to waste resources, and had other competing
298 priorities[24]. The concern about not wanting to waste resources has also been reported in
299 studies exploring why people in the UK do not seek help with symptoms of cancer[25, 26] or
300 childhood illness[27] and similar concerns around public trust in pharmacies as settings for
301 health care as found in this study have also been reported elsewhere[28].
302
303
304 Despite the similarity in findings across the studies, establishing the relative importance of
305 these factors is, however, difficult. To our knowledge only one study has reported
306 quantitative data on reasons for non-attendance and non-uptake to NHS Health Checks[6]. In
307 that study reasons for not attending or not taking up an invitation that had been entered during
308 routine care were extracted from the medical records of patients in 37 general practices.
309 Reasons were only available for less than 20% of patients, with co-morbidities or already
310 being reviewed in general practice being the most commonly reported.
311
312 **Implications for policy, practice and communication around NHS Health Checks**
313 This study highlights a number of findings which are of relevance to policy makers and
314 healthcare professionals delivering NHS Health Checks, as well as those involved in planning
315 and delivering other prevention programmes, such as the recently introduced NHS Diabetes
316 Prevention Programme[29]. In particular, it suggests three areas for action at a policy or
317 practical level. The first is a need for clearer and more targeted communication about the
318 NHS Health Check programme as a whole and its purpose. Lessons learned from screening
319 programmes and the drive towards increasing shared-decision making highlight the need to
320 provide appropriately balanced evidence concerning benefits and harms to enable informed
321 decision-making. This study shows that despite the programme having been in place for eight
322 years, some people remain unaware of it, and many of those who were aware had
323 misunderstood the purpose or did not appreciate the potential benefits of prevention and
324 early detection. Modifying invitation letters[8, 30], incorporating text message reminders[30]
325 or offering pre-booked appointments[31] may also potentially help those wishing to attend.
326 Secondly, offering evening or early morning appointments within general practice settings
327 and clarifying the distinction between appointments for NHS Health Checks and
328 appointments for routine and urgent care may provide opportunities for more people to attend
329 and reduce patient concerns that by attending they are taking up resources. Finally, NHS

Health Check delivery within pharmacy and community settings could be promoted and awareness raised amongst the general public of the suitability of pharmacies as sites for NHS Health Checks, and the training pharmacists receive. In addition to influencing the belief that by attending a Health Check individuals are placing an unnecessary burden on general practice resources when they feel they are in good health, this might also encourage uptake of other services provided with pharmacies.

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Contributors

EH screened articles for inclusion, extracted and synthesised the qualitative data, interpreted the findings and wrote the first draft of the manuscript. CMa extracted and synthesised the qualitative data and critically revised the manuscript. AM screened articles for inclusion, interpreted the findings and critically revised the manuscript. CS, CM, FW, SG and JM developed the protocol, interpreted the findings and critically revised the manuscript. JUS developed the protocol, screened articles for inclusion, extracted and synthesised the quantitative and qualitative data, interpreted the findings and wrote the first draft of the manuscript.

364

365 **Competing Interests**

366 None declared.

367

368 **FIGURE LEGENDS**

369 Figure 1. PRISMA diagram

370

371 **REFERENCES**

372 1. Department of Health. Economic Modelling for Vascular Checks
373 [www.healthcheck.nhs.uk/document.php?o=225]

374 2. NHS Health Check Data
375 [http://www.healthcheck.nhs.uk/commissioners_and_providers/data/]

376 3. Chang K-M, Soljak M, Lee JT, Woringer M, Johnston D, Khunti K, Majeed A, Millett C:
377 Coverage of a national cardiovascular risk assessment and management programme (NHS
378 Health Check): Retrospective database study. *Prev Med (Baltim)* 2015, 78:1–8.

379 4. Robson J, Dostal I, Sheikh A, Eldridge S, Madurasinghe V, Griffiths C, Coupland C,
380 Hippisley-Cox J: The NHS Health Check in England: an evaluation of the first 4 years. *BMJ*
381 *Open* 2016, 6:e008840.

382 5. Artac M, Dalton ARH, Babu H, Bates S, Millett C, Majeed A: Primary care and population
383 factors associated with NHS Health Check coverage: A national cross-sectional study. *J*
384 *Public Heal (United Kingdom)* 2013, 35:431–439.

385 6. Cochrane T, Gidlow CJ, Kumar J, Mawby Y, Iqbal Z, Chambers RM: Cross-sectional
386 review of the response and treatment uptake from the NHS Health Checks programme in
387 Stoke on Trent. *J Public Heal (United Kingdom)* 2013, 35:92–98.

388 7. Dalton ARH, Bottle A, Okoro C, Majeed A, Millett C: Uptake of the NHS Health Checks
389 programme in a deprived, culturally diverse setting: cross-sectional study. *J public Heal*
390 *(Oxford, Engla* 2011, 33:422–9.

391 8. Sallis A, Bunten A, Bonus A, James A, Chadborn T, Berry D: The effectiveness of an
392 enhanced invitation letter on uptake of National Health Service Health Checks in primary
393 care: a pragmatic quasi-randomised controlled trial. *BMC Fam Pract* 2016, 17:35.

394 9. Critical Appraisal Skills Programme (CASP) Checklists [http://www.casp-uk.net/casp-
395 tools-checklists]

396 10. Thomas J, Harden A: Methods for the thematic synthesis of qualitative research in
397 systematic reviews. *BMC Med Res Methodol* 2008, 8:45.

398 11. Noblit G, Hare R: *Meta-Ethnography: Synthesizing Qualitative Studies*. Sage
399 Publications, Ltd.; 1988.
400 12. Taylor J, Krska J, MacKridge A: A community pharmacy-based cardiovascular screening
401 service: Views of service users and the public. *Int J Pharm Pract* 2012, 20:277–284.
402 13. Oswald N, Mcnaughton R, Watson P, Shucksmith J: Tees Vascular Assessment
403 Programme Evaluation. 2010.
404 14. Ellis N, Gidlow C, Cowap L, Randall J, Iqbal Z, Kumar J: A qualitative investigation of
405 non-response in NHS health checks. *Arch public Heal* 2015, 73:14.
406 15. Burgess C, Wright AJ, Forster AS, Dodhia H, Miller J, Fuller F, Cajeat E, Gulliford MC:
407 Influences on individuals' decisions to take up the offer of a health check: A qualitative
408 study. *Heal Expect* 2015, 18:2437–2448.
409 16. Health Diagnostics: A Picture Of Health NHS Health Checks Case Study : Case study
410 Introduction : National inequalities in health check provision. 2014.
411 17. NHS Greenwich: Evaluation of NHS Health Check PLUS Community Outreach
412 Programme in Greenwich. 2011:1–61.
413 18. McDermott L, Wright AJ, Cornelius V, Burgess C, Forster AS, Ashworth M, Khoshaba
414 B, Clery P, Fuller F, Miller J, Dodhia H, Rudisill C, Conner MT, Gulliford MC: Enhanced
415 invitation methods and uptake of health checks in primary care: randomised controlled trial
416 and cohort study using electronic health records. *Health Technol Assess (Rockv)* 2016, 20:1–
417 92.
418 19. Jenkinson CE, Asprey A, Clark CE, Richards SH: Patients' willingness to attend the NHS
419 cardiovascular health checks in primary care: a qualitative interview study. *BMC Fam Pract*
420 2015, 16:33.
421 20. Krska J, du Plessis R, Chellaswamy H: Views and experiences of the NHS Health Check
422 provided by general medical practices: cross-sectional survey in high-risk patients. *J Public*
423 *Health (Bangkok)* 2015, 37:210–7.
424 21. Krska J, du Plessis R, Chellaswamy H: Views and experiences of the NHS Health Check
425 provided by general medical practices: cross-sectional survey in high-risk patients. *J Public*
426 *Health (Bangkok)* 2015, 37:210–217.
427 22. Pill R, Stott N: Invitation to attend a health check in a general practice setting: the views
428 of a cohort of non-attenders. *J R Coll Gen Pract* 1988, 38:57–60.
429 23. Palmer CK, Thomas MC, von Wagner C, Raine R: Reasons for non-uptake and
430 subsequent participation in the NHS Bowel Cancer Screening Programme: a qualitative
431 study. *Br J Cancer* 2014, 110:1705–1711.

432 24. Hall N, Birt L, Rees CJ, Walter FM, Elliot S, Ritchie M, Weller D, Rubin G: Concerns,
433 perceived need and competing priorities: a qualitative exploration of decision-making and
434 non-participation in a population-based flexible sigmoidoscopy screening programme to
435 prevent colorectal cancer. *BMJ Open* 2016, 6:e012304.
436 25. Forbes LJL, Atkins L, Thurnham A, Layburn J, Haste F, Ramirez AJ: Breast cancer
437 awareness and barriers to symptomatic presentation among women from different ethnic
438 groups in East London. *Br J Cancer* 2011, 105:1474–9.
439 26. Cromme SK, Whitaker KL, Winstanley K, Renzi C, Smith CF, Wardle J: Worrying about
440 wasting GP time as a barrier to help-seeking: a community-based, qualitative study. *Br J Gen*
441 *Pract* 2016(July).
442 27. Francis N, Crocker JC, Gamper A, Brookes-Howell L, Powell C, Butler CC: Missed
443 opportunities for earlier treatment? A qualitative interview study with parents of children
444 admitted to hospital with serious respiratory tract infections. *Arch Dis Child* 2011, 96:154–9.
445 28. Gidman W, Ward P, McGregor L: Understanding public trust in services provided by
446 community pharmacists relative to those provided by general practitioners: a qualitative
447 study. *BMJ Open* 2012, 2:e000939.
448 29. NHS Diabetes Prevention Programme [https://www.england.nhs.uk/ourwork/qual-clin-
449 lead/diabetes-prevention/]
450 30. Alpsten BT: Saving lives through effective patient engagement around NHS health
451 checks. *Clin Gov* 2015, 20:108–112.
452 31. Local Government Association: Checking the health of the nation : Implementing the
453 NHS Health Check Programme studies - Stoke-on-Trent. 2015.
454

455 **Table 1: Characteristics of studies including the views of people who had not taken up an offer of an NHS Health Check**

Author/year	Type of report	Region	Setting of NHS Health Checks	Data collection method	*n*	Recruitment of non-attenders	Participant characteristics
Burgess 2015[15]	Journal article	South London	Four general practices	Semi-structured interviews	10	Purposive sampling by age, sex and attendance of patients who had been invited but not attended	7 females, 3 males Predominantly white ethnicity
Ellis 2015[14]	Journal article	Stoke-on-Trent	Four general practices	Telephone and face-to-face semi-structured interviews	41	500 letters of invitation sent by GPs to those who had not taken up the invitation for an NHS Health Check. Incentivised with the offer of £15 to participate	22 females, 19 males Mean age 52.9 ± 8.5 Socio-demographically representative of non-attendees
NHS Greenwich 2011[17]	Evaluation report	Greenwich	Clinic and community setting	In-depth telephone interviews	10	Recruited through a 'social marketing approach' by social marketing professionals.	Not given
Health Diagnostics 2014[16]	Case studies	North East of England	General practice, pharmacy	Face-to-face survey	325	Recruited on the street	Not given
Jenkinson 2015[19]	Journal article	Torbay	Four general practices	Face-to-face and telephone interviews	10	Letters of invitation to a random sample stratified by age and gender of those who had not responded to an invitation.	6 females, 4 males 4 employed, 1 unemployed, 5 retired
Krska 2015[20]	Journal article	Sefton, an area of North West England	16 general practices	Postal survey with free text responses	210	Postal survey to all patients with estimated 10 year CVD risk > 20%	46 females, 164 males 67.% over 65 99.5% white 14.6% highest quintile of deprivation 9.2% lowest quintile of deprivation
McDermott 2016[18]	HTA report	Lambeth and Lewisham	18 general practices	Content analysis of questionnaire	Not given	Questionnaires sent to all participants in the two intervention arms of a trial of enhanced invitation methods.	Not given
Oswald 2010[13]	Evaluation report	Teesside	Any	Semi-structured interviews	51	Participants approached 'on the street' at job centres, working men's clubs and libraries	Not given
Taylor 2012[12]	Journal article	Sefton PCT	Pharmacy	Face-to face survey	261	High-street locations, community centres and other social settings in the vicinity	172 females, 89 males 20.7% 35-45 years 30.6% 46-55 years 23.4% 55-65 years 25.3% 66-75 years

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Table 2: Results from the CASP quality assessment checklist

Author/year	Study addressed a clearly focused issue	Appropriateness of qualitative method	Design	Recruitment	Consideration of relationship between research and participants	Ethical issues	Rigor of data analysis	Clarity of statement of findings	Overall
Burgess 2015[15]	⬤	⬤	⬤	●	•	●	⬤	⬤	High
Ellis 2015[14]	⬤	⬤	⬤	⬤	●	●	⬤	⬤	High
Health Diagnostics 2014[16]	•	•	•	•	•	•	•	•	Low
NHS Greenwich 2011[17]	⬤	⬤	⬤	●	•	•	•	●	Medium
Jenkinson 2015[19]	⬤	⬤	⬤	⬤	•	⬤	⬤	⬤	High
Krska 2015[20]	⬤	⬤	●	⬤	n/a	●	●	●	Medium
McDermott 2016[18]	●	•	●	•	•	●	•	●	Low
Oswald 2010[13]	⬤	⬤	⬤	●	•	●	●	●	Medium
Taylor 2012[12]	⬤	●	⬤	⬤	•	⬤	•	●	Medium

• Low ● Medium ⬤ High

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Author/ year	Lack of awareness or knowledge	Time constraints or competing priorities	Lack of clarity around purpose	Aversion to preventive medicine	Difficulty with access in general practices	Concern around the pharmacy as a setting
Burgess 2015[15]	X	X	X	X	X	X
Ellis 2015[14]	X	X	X	X	X	
Greenwich 2011[17]	X	X		X	X	
Health Diagnostics 2014[16]		X	X			
Jenkinson 2015[19]	X	X	X	X	X	
Krska 2015[20]		X		X		
McDermott 2016[18]	X				X	
Oswald 2010[13]	X		X	X	X	
Taylor 2012[12]	X					X

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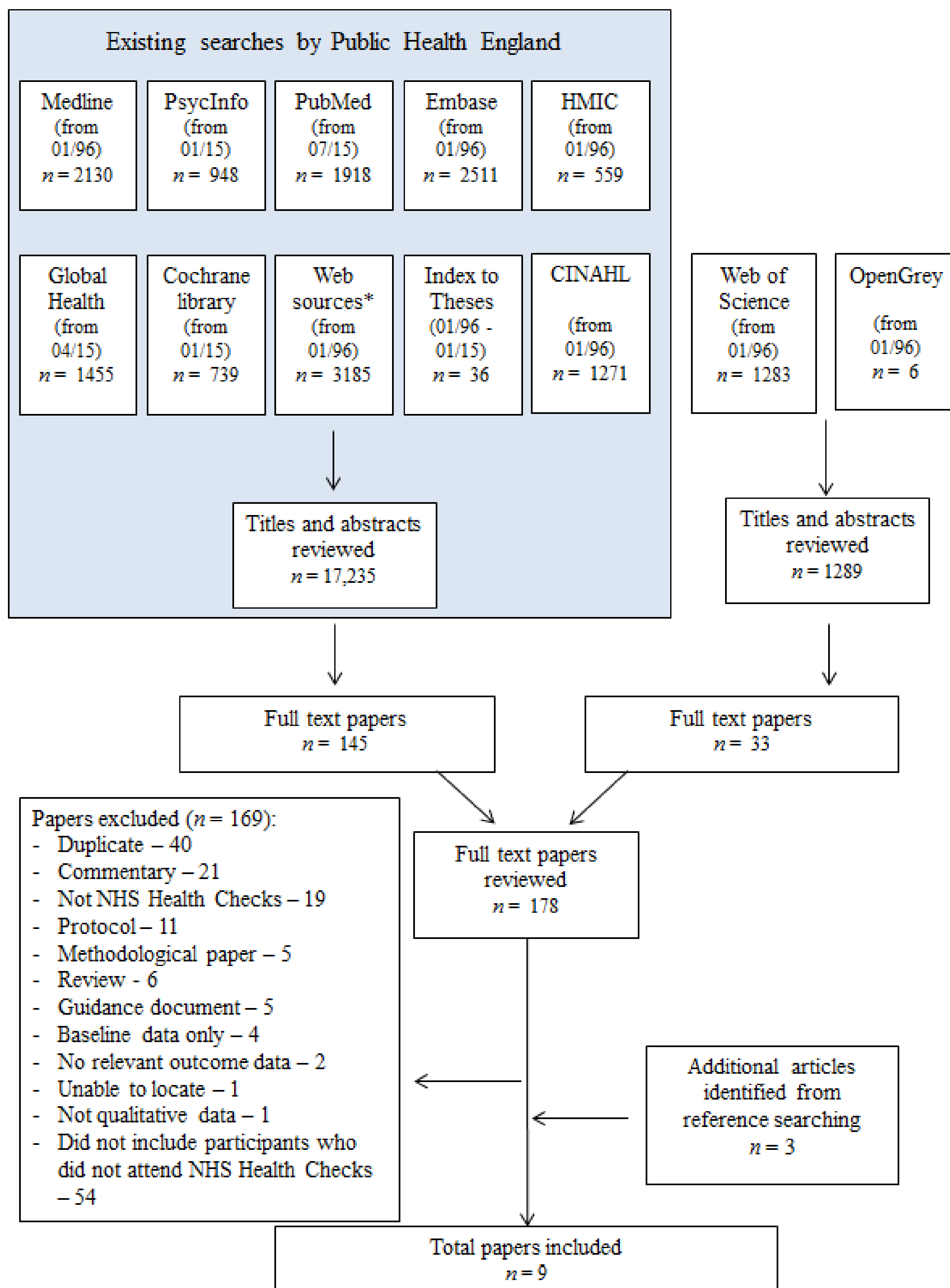
Existing searches by Public Health England
Medline (from 01/96) n = 2130
PsycInfo (from 01/15) n = 948
PubMed (from 07/15) n = 1918
Embase (from 01/96) n = 2511
HMIC (from 01/96) n = 559
Global Health (from 04/15) n = 1455
Cochrane library (from 01/15) n = 739
Web sources* (from 01/96) n = 3185
Index to Theses (01/96 - 01/15) n = 36
CINAHL (from 01/96) n = 1271
Web of Science (from 01/96) n = 1283
OpenGrey (from 01/96) n = 6
Titles and abstracts reviewed n = 17,235
Titles and abstracts reviewed n = 1289
Full text papers n = 145
Full text papers n = 33
Full text papers reviewed n = 178
Papers excluded (n = 169):
- Duplicate – 40
- Commentary – 21
- Not NHS Health Checks – 19
- Protocol – 11
- Methodological paper – 5
- Review - 6
- Guidance document – 5
- Baseline data only – 4
- No relevant outcome data – 2
- Unable to locate – 1
- Not qualitative data – 1
- Did not include participants who did not attend NHS Health Checks – 54
Additional articles identified from reference searching n = 3
Total papers included n = 9