

Appendix 1

Final protocol amended April 2020

Systematic review and meta-analysis: Interventions designed to improve participation, amongst under-served population groups, in national screening programmes in the UK

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Protocol amendments

Amendments to this protocol have been made using strikethrough and grey to delete ~~outdated text~~ and bold with underlining to highlight **new text in October 2019**. ***New text added in April 2020 in bold, underlined and italics***

Three summary documents prepared for the funder at the end of Phase I and used to help finalise the scope of the review are embedded below. The interim report includes the results of the literature search and a discussion of the outstanding scoping decisions. The funder requested supplementary information for some of the studies which we had identified as marginally relevant (non-randomised or making outdated comparisons) based on criteria laid out in the original protocol and responsible use of resources. These remained anonymised in the supplementary report.



Interim report



Supplementary information



Underserved by age and sex for inclusion i

Phase II of this project was slightly delayed at the funder's request and formally started in October 2019. The first set of protocol amendments were agreed at the conclusion of Phase I and submitted to PROSPERO at the start of Phase II.

The second set of protocol amendments were agreed between November 2019 and February 2020 and submitted to PROSPERO in April 2020. In addition, a few minor edits have been made to make the wording clearer.

Abbreviations

AAA	abdominal aortic aneurysm programme
AABR	automated auditory brainstem response
AOAE	automated otoacoustic emission
BCSP	bowel cancer screening programme
BSP	breast screening programme
CASP	Critical Appraisal Skills Programme
cRCT	cluster randomised controlled trial
CSP	cervical screening programme
CF	cystic fibrosis
CHT	congenital hypothyroidism
DES	diabetic eye screening programme
FASP	fetal anomaly screening programme
FIT	faecal immunochemical test
FOBT	faecal occult blood test
GA1	glutaric aciduria type 1
HCU	homocystinuria
HR-HPV	high risk human papillovirus
IDSP	infectious diseases in pregnancy screening programme
ICC	intracluster correlation coefficient
IRR	incidence rate ratio
IVA	isovaleric acidaemia
LTGAH	Long-term gender-affirming hormones
LGBT+	Lesbian, gay, bisexual, trans* (+ queer, intersex, asexual)

MSUD	maple syrup urine disease
MCADD	medium-chain acyl-CoA dehydrogenase deficiency
NBS	newborn blood spot screening programme
NIHR	National Institute for Health Research
NHSP	newborn hearing screening programme
NIPE	newborn and infant physical examination screening programme
NN4B	numbers for babies (NHS scheme)
PHE	Public Health England
PKU	phenylketonuria
qRCT	quasi-randomised controlled trial
RCT	randomised controlled trial
RR	relative risk
SCT	sickle cell and thalassaemia screening programme
SCD	sickle cell disease
SPH	Solutions for Public Health
UKCTG	UK Clinical Trials Gateway

1 Introduction

Public Health England (PHE) Screening is seeking to further develop its commitment to reducing health inequalities in screening as outlined in its recently published **screening** inequalities strategy (Supporting the health system to reduce inequalities in screening, PHE Screening inequalities strategy, PHE, 2018).

Solutions for Public Health (SPH) has been commissioned to produce a systematic review and, where possible, meta-analysis of interventions to improve participation amongst under-served population groups in national screening programmes.

1.1 NHS screening programmes

There are 11 different NHS national screening programmes. Some screen for more than one condition and some include more than one screening **test** method. Each of the programmes is summarised briefly below. The numbered subheadings contain links to more detailed information from the NHS about the programmes.

A brief description of each screening programme is given below with some relevant extracts taken from the PHE Screening inequalities strategy (PHE, 2018). Superscript references in the quoted text are contained in the original PHE 2018 report (linked in the reference section of this report).

1.1.1 [NHS abdominal aortic aneurysm \(AAA\) programme](#)

Men are invited for a single ultrasound scan in the year they turn 65 with results being available at the time of the scan. Materials include an information leaflet and informed consent obtained at the clinic. (NHS AAA, 2015)

Transgender people whose gender is recorded as male by their GP will be invited for screening. Transgender women are believed to have the same risk as cisgender men but an invitation may not be issued if their gender is recorded correctly on their medical records. Transgender men are not considered to be at higher risk but may attend if they receive an invitation. (NHS-SP Trans Health, 2017)

Examples of inequalities identified by PHE

“Within the NHS AAA screening programme those people experiencing social deprivation, are less likely to attend and participate in screening and the proportion of aneurysms detected is inversely correlated with increasing deprivation.”

1.1.2 [NHS bowel cancer screening programme \(BCSP\)](#)

Bowel cancer screening is offered every 2 years to people aged 60-74. An information leaflet is sent a week in advance of a home test kit. A faecal immunochemical test (FIT) kit is being introduced in England from 2018 and will eventually replace **has replaced** the faecal occult blood test (FOBT) kit. Bowel scope screening by flexible sigmoidoscopy is also being introduced as an additional test for people at age 55 but is not yet available everywhere. (NHS BCSP, 2015)

Examples of inequalities identified by PHE

“People in more deprived groups are less likely to complete bowel screening (35% for the most deprived group compared to 61% for the least deprived)^{ix} and are more likely to die from bowel cancer^x.”

“Uptake of bowel screening in England is lower in the ethnically diverse areas (38% compared to 52 to 58% in other areas)^{xv}.”

“Women reporting any disability are less likely to participate in bowel screening (RR 0.75 compared to those without disabilities). This is particularly the case for those with disabilities relating to self-care or vision, or for those with 3 or more disabilities^{xxiii}. People with learning disabilities are also less likely to participate in bowel screening (IRR 0.86 compared to those without learning disabilities)^{xxiv}.”

“Men have a lower uptake of bowel screening (51% compared to 56% for women)^{xxvi} but are more likely to be diagnosed and die from bowel cancer (male:female ratio 12:10)^{xxvii}.”

1.1.3 [NHS breast screening programme \(BSP\)](#)

Mammography is offered every 3 years to women aged 50-70 and women over 70 may request continued screening. (NHS BSP, 2015)

Transgender men and women may need to attend for breast screening but only those whose gender is recorded as female by their GP will be invited. Transgender women who are using long-term gender-affirming hormones should attend for screening and transgender men should attend screening if they have any breast tissue regardless of whether or not they have had chest reconstruction. (NHS-SP Trans Health, 2017)

Examples of inequalities identified by PHE

“Women in the most deprived groups are generally less likely to participate in breast screening (relative risk (RR) 0.89 for the most deprived groups compared to the least deprived)^{xiii} but are more likely to die from breast cancer^{xiv}.”

“There is some evidence that women from ethnic minority groups are less likely to attend breast screening compared to White British women, but estimates vary by study and by minority ethnic group^{xviii}.”

“Women with disabilities are less likely to participate in breast screening (RR 0.64 compared to those without disabilities). This is particularly the case for those with disabilities relating to self-care or vision, or for those with 3 or more disabilities^{xxi}. Women with learning disabilities are also less likely to participate in breast screening (incident rate ratio (IRR) 0.76 compared to those without learning disabilities)^{xxii}.”

1.1.4 [NHS cervical screening programme \(CSP\)](#)

Women are invited for a cervical screening test every 3 years from ages 25-49 and every 5 years from ages 50-64. Women over the age of 65 will only be screened further if recent tests have shown abnormal cells. Abnormal findings are triaged through a high risk human papillomavirus (HR-HPV) test with positive findings being referred for colposcopy. Women who have received the HPV vaccination (introduced in 2008) are still invited to screening. (NHS CSP, 2015)

Transgender men whose gender is recorded as female by their GPs will be invited and should attend if they still have a cervix. Transgender women may receive an invite if their gender is recorded as female but they do not need to attend. (NHS-SP Trans Health, 2017)

Examples of inequalities identified by PHE

“Women in the most deprived groups (most deprived quintile) are less likely to attend cervical screening (odds ratio (OR) 0.91 to 0.94 when compared to the least deprived quintile^{xi}) yet are more likely to have high risk HPV, and a higher risk of being diagnosed with/dying from cervical cancer^{xii}.”

“Women from ethnic minority groups are less likely to attend cervical screening compared to White British women (OR 2.20 for White British women compared to ethnic minority women)^{xvi}. The disparity is particularly great for certain ethnic minority groups – for example the likelihood of non-attendance reaches OR 10.69 and OR 12.86 for Indian and Bangladeshi women respectively compared to White British women^{xvii}.”

“In cervical screening uptake is markedly higher among 50 to 64 year olds than among 25 to 49 year olds^{xx}.”

“Women with learning disabilities are less likely to participate in cervical screening (incident rate ratio (IRR) 0.54 compared to those without learning disabilities)^{xxv}.”

1.1.5 [NHS diabetic eye screening \(DES\) programme](#)

All people with type 1 and type 2 diabetes aged 12 or over are invited to screening for diabetic retinopathy every year at their local screening service, which may be at their GP, local hospital, an optician or another local clinic. Additional screening is offered in pregnancy after the first antenatal visit and after 28 weeks of pregnancy. Screening is not necessary for gestational diabetes. (NHS DES, 2014)

Examples of inequalities identified by PHE

“People from South Asian communities are known to be up to 6 times more likely to have type 2 diabetes than the general population. In addition, this population group tend to have poorer diabetes management, putting them at higher risk of serious health complications including diabetic retinopathy. Data analysed from the Clinical Practice Research Datalink (CPRD) showed the prevalence of diabetic retinopathy to be highest in the South Asian population and also in the most deprived geographical group^{xix}.”

1.1.6 [NHS fetal anomaly screening programme \(FASP\)](#)

Antenatal screening is offered by healthcare professionals to everyone in pregnancy for early detection of anencephaly, open spina bifida, cleft lip, diaphragmatic hernia, gastroschisis, exomphalos, serious cardiac abnormalities, bilateral renal agenesis, lethal skeletal dysplasia, Edwards’ syndrome (T18), and Patau’s syndrome (T13). Initial screening includes a sonograph to measure nuchal translucency and a blood test. The quadruple blood test for Down’s may be used for late screening. Those identified as higher risk based on these tests are offered either chorionic villus sampling or amniocentesis. (NHS FASP, 2013)

Examples of inequalities identified by PHE

“Overall, there is limited published evidence on inequalities in antenatal and newborn screening programmes. However, 2013 UK research using large survey data consolidated evidence that single women, those from ethnic minorities and younger women are more likely to make late bookings for antenatal care, have fewer antenatal checks and engage less with screening^{xxviii}.”

“In NHS London an equity audit undertaken in 2015/16 found:

- *evidence of inequalities in access to timely antenatal care across London*
- *many of the characteristics of women at greater risk of booking at more than 10 weeks gestation were also associated with social disadvantage, poorer pregnancy outcomes and poorer infant health*
- *there was considerably longer wait from referral to booking for women living in higher deprivation areas*

- *for several maternal characteristics (including first language other than English, Jewish religion, unemployment and most black and minority ethnicities), a later referral is compounded by a longer wait from referral to booking”*

1.1.7 NHS infectious diseases in pregnancy screening (IDPS) programme

Midwives and other healthcare professionals offer a blood test as part of antenatal care to screen for HIV, hepatitis B and syphilis. (NHS IDPS, 2015)

Examples of inequalities identified by PHE

“Overall, there is limited published evidence on inequalities in antenatal and newborn screening programmes. However, 2013 UK research using large survey data consolidated evidence that single women, those from ethnic minorities and younger women are more likely to make late bookings for antenatal care, have fewer antenatal checks and engage less with screening^{xxviii}.”

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- *there was considerably longer wait from referral to booking for women living in higher deprivation areas*
- *for several maternal characteristics (including first language other than English, Jewish religion, unemployment and most black and minority ethnicities), a later referral is compounded by a longer wait from referral to booking”*

1.1.8 NHS newborn and infant physical examination (NIPE) screening programme

Healthcare professionals offer physical examinations for newborn babies born in England for congenital heart disease, developmental dysplasia of the hip, congenital cataracts and cryptorchidism (undescended testes). (NHS NIPE, 2013)

Examples of inequalities identified by PHE

“Overall, there is limited published evidence on inequalities in antenatal and newborn screening programmes.”

1.1.9 NHS newborn blood spot (NBS) screening programme

Healthcare professionals will take a blood spot sample from the heel usually when a child is 5 days old but may offer screening up to one year old. Nine conditions are screened from the blood spot: sickle cell disease (SCD), cystic fibrosis (CF), congenital hypothyroidism (CHT), phenylketonuria (PKU), medium-chain acyl-CoA dehydrogenase deficiency (MCADD), maple syrup urine disease (MSUD), isovaleric acidemia (IVA), glutaric aciduria type 1 (GA1), homocystinuria (HCU). (NHS NBS, 2013)

Examples of inequalities identified by PHE

“Overall, there is limited published evidence on inequalities in antenatal and newborn screening programmes.”

1.1.10 NHS newborn hearing screening programme (NHSP)

Healthcare professionals offer hearing screening within 4-5 weeks of birth and up to 3 months old. Either automated otoacoustic emission (AOAE) or automated auditory brainstem response (AABR) may be used. Babies at high risk of hearing impairment from another condition are referred straight to full audiological assessment. (NHS NHSP, 2013)

Examples of inequalities identified by PHE

“Overall, there is limited published evidence on inequalities in antenatal and newborn screening programmes.”

1.1.11 NHS sickle cell and thalassaemia (SCT) screening programme

Healthcare professionals offer screening in pregnancy and to fathers where the screening identifies the mother as a carrier. If both parents are carriers then counselling and prenatal diagnosis will be offered, with the option of termination if a diagnosis is obtained early enough. The programme aims to offer initial screening by 10 weeks of pregnancy. Newborns are tested for sickle cell disease as part of NBS screening. (NHS SCT, 2013)

Examples of inequalities identified by PHE

“Overall, there is limited published evidence on inequalities in antenatal and newborn screening programmes. However, 2013 UK research using large survey data consolidated evidence that single women, those from ethnic minorities and younger women are more likely to make late bookings for antenatal care, have fewer antenatal checks and engage less with screening^{xxviii}.”

“In NHS London an equity audit undertaken in 2015/16 found:

- *evidence of inequalities in access to timely antenatal care across London*
- *many of the characteristics of women at greater risk of booking at more than 10 weeks gestation were also associated with social disadvantage, poorer pregnancy outcomes and poorer infant health*
- *there was considerably longer wait from referral to booking for women living in higher deprivation areas*
- *for several maternal characteristics (including first language other than English, Jewish religion, unemployment and most black and minority ethnicities), a later referral is compounded by a longer wait from referral to booking”*

1.1.12 Summary of the screening programmes

Screening programme	Population	Repeated
AAA	Men aged 65	No
BCSP	Adults	
a. FOBT or FIT	a. 60-74	a. Yes (every 2 years)
b. sigmoidoscopy	b. 55	b. No
BSP	Women aged 50-70	Yes (every 3 years)
CSP	Women	
	i. 25-49	i. Yes (every 3 years)
	ii. 50-64	ii. Yes (every 5 years)
DES	People with diabetes aged 12+	Yes (annual)
FASP	Pregnancy	No
IDPS	Pregnancy	No
NIPE	Newborn (in England)	No
NBS	Newborn & infancy	No
NHSP	Newborn up to 3 months	No
SCT	Pregnancy	No
1. Mother	(aim to begin step-wise screening by 10 weeks of pregnancy)	
2. Father		
3. Foetus		

1.2 Under-served groups

The under-served groups defined by the commissioning brief are as follows:

- groups experiencing socio-economically deprived backgrounds
- those with protected characteristics as described in the 2010 Equality Act
 - age
 - disability
 - gender reassignment
 - marriage and civil partnership
 - pregnancy and maternity
 - race
 - religion or belief
 - sex
 - sexual orientation
- those who are not registered with a GP
- homeless people and rough sleepers
- asylum seekers
- gypsy and traveller groups
- sex workers
- those in prison
- those experiencing severe and enduring mental health problems
- those with drug or alcohol harm issues
- those with communication difficulties

This review will, of necessity, include only what evidence is available for any of these groups for each screening programme. We anticipate finding little or no evidence for some sub-questions whereas others, especially socio-economic status, ethnicity and language- or literacy-related communication difficulties are likely to have a reasonably large body of evidence. A rapid review of this question, commissioned by PHE for the cancer screening programmes only (Duffy *et al*, 2017), found 68 trials making 71 comparisons. 26 were conducted in the UK, 21 of these were randomised (including 5 cluster randomised), with 11 of these randomised trials including some information about under-served groups or subgroups, primarily defined by socio-economic status, ethnicity and language barriers.

Age and sex are slightly different from the other underserved groups in that there is no obvious, or consistent, way to identify the underserved group (men or women, older or younger or both?). This was considered for each screening programme where we have identified trial evidence which includes information for subgroups defined by age and/or sex. We used the PHE report from 2018 referenced in the protocol (Supporting the health system to reduce inequalities in screening, PHE Screening inequalities strategy) as the primary source and looked for additional information where necessary. The document we produced relating to this is embedded in the Protocol Amendments section at

the start of this protocol and the table below is a summary of the agreed way forward. Because the age groups presented in studies varied, the commissioner examined national data on uptake in order to further define which age groups were underserved and changes were made to the table below accordingly. For DES, no underserved age group was identified that corresponded to any of the studies found.

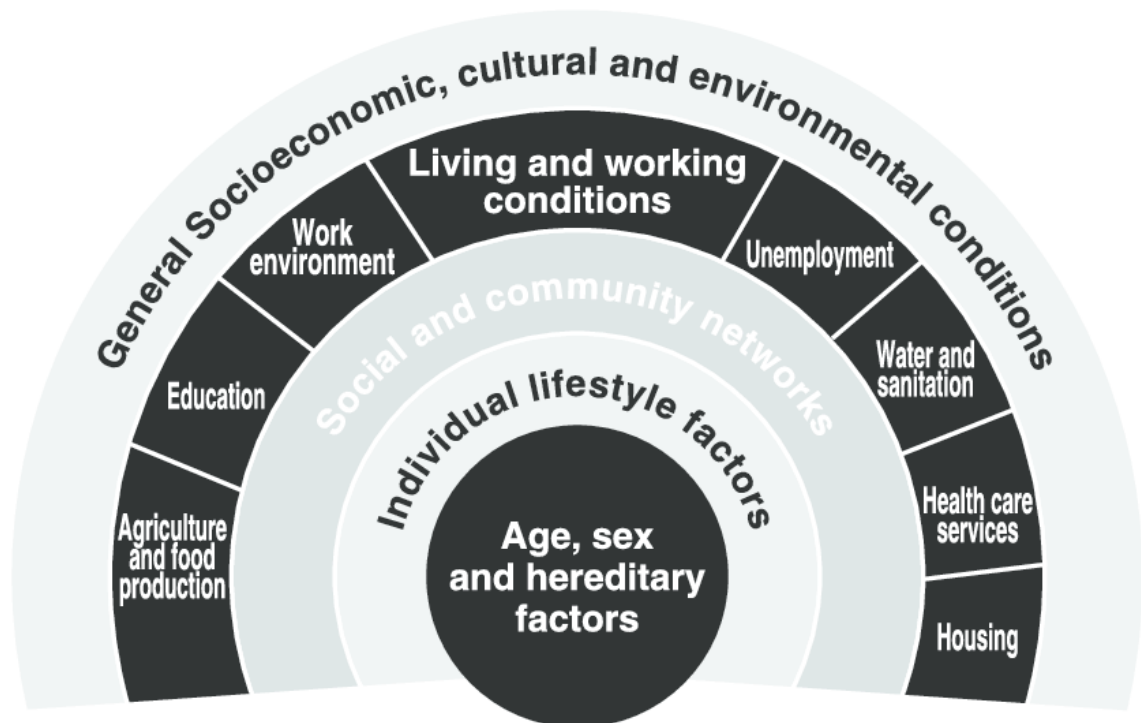
Summary of underserved sex and age groups by screening programme, as relevant for the purposes of this systematic review

Screening programme	Sex	Age
BCSP	Male	<u>Under 65s and over 70s</u> Youngest and oldest age groups (within age range eligible for screening programme)
BSP	N/A	<u>Under 60s</u> Youngest and oldest age groups (within age range eligible for screening programme)
CSP	N/A	Under 35s <u>50s</u> (and smaller age bands under 35 <u>50</u> if reported)
FASP	N/A	Youngest age group reported
IDPS	N/A	Youngest age group reported
SCT	N/A	Youngest age group reported

Where results are reported cross tabulated by age and sex, a comment will be made on the potential interaction.

1.2.1 Barriers to accessing health care

The PHE report referenced earlier (PHE, 2018) discusses broad barriers to healthcare affecting under-served groups, citing a “determinants of health” framework (Dahlgren & Whitehead, 1992) and the Marmot Review (Fair Society, Healthy Lives, 2010).



The Determinants of Health. (Dahlgren & Whitehead, 1992)

While recognising the important differences between groups who are disadvantaged with respect to accessing some or all healthcare services, and the diversity within groups defined by broad labels, we anticipate that there will be a number of overarching factors including, but not necessarily limited to:

- communication barriers related to language, literacy and education
- transience, lack of address or insecure accommodation
- difficulty with time and transport, including getting time off work, transport time and costs and loss of hourly pay
- lack of time and energy due to factors like disability, poor mental health, long working hours or difficult shift patterns
- fear of the authorities, due to factors like the “hostile environment”, poor treatment by officialdom or criminalisation

This is not an exhaustive list and there will be some very specific barriers for certain groups as already noted, for example, for transgender people and sex-specific screening programmes. These group-specific barriers may nevertheless be exacerbated by the elements of socio-economic deprivation listed above.

1.3 Interventions to improve participation in screening

PHE previously commissioned a rapid review of interventions to improve participation in screening services, restricted to cancer screening but not to the UK (Duffy *et al*, 2017). This provides a very useful starting point for identifying the sorts of interventions we might anticipate for the adult screening programmes. A schematic diagram from the paper is reproduced below, summarising interventions along the screening timeline.

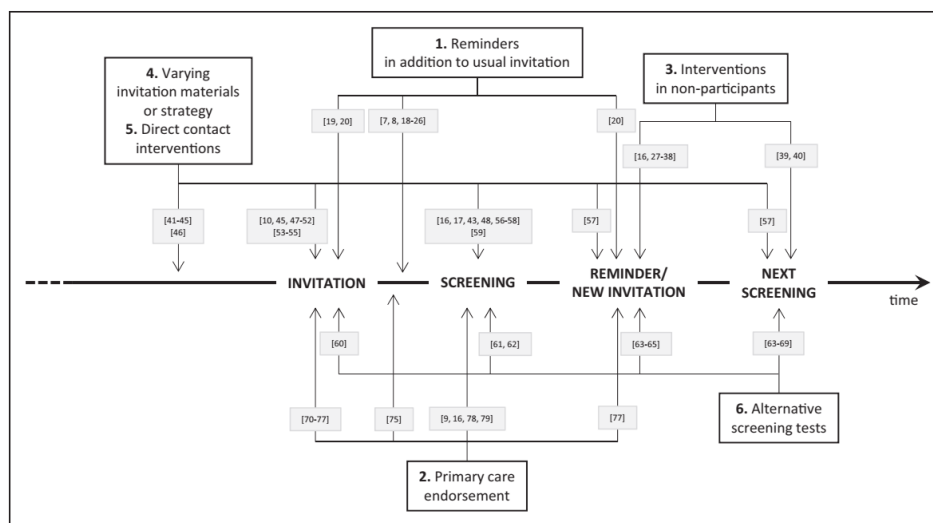


Figure 1. Schematic diagram showing the categories of intervention by time point on the screening pathway at which the intervention takes place, with references to the relevant studies in parentheses.

Source: Duffy *et al* (2017)

The interventions for antenatal, newborn and infant screening are likely to be quite different as screening is usually initiated directly by midwives or other healthcare professionals who are already in clinical contact with the mother and child. The NHS baby number, or “numbers for babies (NN4B)”, introduced in 2002/3, is an example of a tool designed to improve screening rates for newborns and infants (RCM, 2008).

Timely initiation of antenatal screening is particularly important as these are intended to allow early treatment to prevent or minimise harm to the unborn child and to allow parents to make an informed decision about continuing with the pregnancy. The entire screening pathway, from initial invitation to any actions based on screening results, needs to take place in a very defined (and very short) period of time and so efficient systems for identification and referral are likely to be an especially important part of interventions in these programmes.

1.3.1 Mixed interventions

A number of the trials identified by the rapid review (Duffy *et al*, 2017) included mixed interventions which are not easily categorised. The final classification scheme will

depend on what evidence we find but we anticipate the following sorts of mixed categories will arise:

- mixed (invite-based)
- mixed (community-based)
- mixed (invite & community)
- mixed (systems-based)

These trials will be considered alongside, but separately from, trials of single interventions which are included in the mixed intervention.

1.3.2 Opting out

Improved participation in screening is a public health objective which may not be shared by individuals in the population. A benefit of improved identification and communication with candidates for screening includes improving information about the risks and benefits of screening and providing the opportunity to opt out (NHS-SP, 2016).

2 Aims and objectives

To identify interventions which are effective in improving participation in national screening programmes amongst under-served groups ***in the UK***.

2.1 Relevant evidence

This review is restricted to UK-based trials of NHS national screening programmes conducted since 1990 and so the control arms will typically be standard NHS screening practice at the time the trial was conducted. However, this practice has changed over time and may vary between regions. There will inevitably be some heterogeneity between studies in the control arms used to evaluate interventions for each screening programme. There may also be trials which compare 2 non-standard interventions and these will also be included.

Some more complex interventions are difficult to evaluate using an RCT, being heavily reliant on local insights and services, difficult to scale, with often intensive and costly interventions. Single cohort studies without a comparator group will often be designed around local needs and circumstances or as pilots for controlled trials. These will not be included in this evidence review as they cannot give reliable estimates of benefit.

Outcomes of screening, including referral for treatment and especially the ultimate impact on the burden of disease, are the end goals of improving uptake. However these endpoints are extremely difficult to study in the context of a controlled trial of an intervention that aims to increase uptake. Only a very small proportion of people screened will have any kind of disease detected. Trials of screening vs no screening typically require sample sizes of tens or hundreds of thousands of people to measure realistic differences in outcomes due to screening. To detect differences due to a percentage increase in uptake of screening would, in most cases, be unrealistic and we anticipate finding little evidence for these outcomes from prospective, controlled trials.

2.2 Resource considerations

This review has been commissioned in 2 stages to establish the size of the project and funding required to complete it. The end of Phase 1 includes a report to PHE summarising the type and volume of evidence identified in each of the numerous sub-categories for this review, summarised in the table below.

This protocol covers the full review, Phase 1 and Phase 2, to ensure that our intended approach is pre-registered in full before the literature searches are conducted.

The evidence for each screening programme may include several different under-served groups. Some of those groups will have been identified at a demographic level (eg areas of high deprivation) and others at the individual level (eg community nurses visiting traveller sites). Some trials will have been targeted specifically at the deprived group they report on and others will have conducted subgroup analysis, possibly for a number of different disadvantaged groups included in their sample. These characteristics will be noted as part of the Phase 1 paper selection.

Summary of evidence table

Design			NHS screening programme				
			Under-served group 1		Under-served group 2		...
			Area-based	Individual	Area-based	Individual	
Intervention type 1	RCT	<i>wholgroup</i>	n(N)	n(N)	n(N)	n(N)	
		<i>subgroup</i>	n(N)	n(N)	n(N)	n(N)	
	Cluster RCT	<i>wholgroup</i>	n(C)(N)	n(C)(N)	n(C)(N)	n(C)(N)	
		<i>subgroup</i>	n(C)(N)	n(C)(N)	n(C)(N)	n(C)(N)	
	Quasi-randomised	<i>wholgroup</i>	n(N)	n(N)	n(N)	n(N)	
		<i>subgroup</i>	n(N)	n(N)	n(N)	n(N)	
	Controlled	<i>wholgroup</i>	n(N)	n(N)	n(N)	n(N)	
		<i>subgroup</i>	n(N)	n(N)	n(N)	n(N)	
Cluster controlled	<i>wholgroup</i>	n(C)(N)	n(C)(N)	n(C)(N)	n(C)(N)		
	<i>subgroup</i>	n(C)(N)	n(C)(N)	n(C)(N)	n(C)(N)		
...							

3 Methods

3.1 Pre-registration

This protocol will be registered on [PROSPERO](#) (an NIHR-funded international prospective register of systematic reviews) when the search strategy has been finalised and this protocol document is agreed with our funders, PHE.

It is anticipated that further protocol amendments will be necessary after the paper selection is completed as we will not have a definitive list of interventions, or under-served populations with evidence available, until that stage is completed. We have also agreed with PHE that we will produce a report at the end of Phase 1 (protocol development through to paper selection) summarising the type and quality of evidence available with, where possible, some options to either expand the evidence base or contain costs if required.

Protocol amendments will be made on PROSPERO and in an updated version of this document, with an audit trail for both sources.

3.2 Data management

Documentation relating to the design and production of the search and review will be saved centrally on SPH's shared access drive, which is automatically backed up. Backups of draft documents produced by SPH associates will be saved directly to the cloud, Interim versions of documents will be frozen to check for discrepancies with the final versions.

Search results will be entered into an excel database which will be used to document all decisions regarding title, abstract and full paper review. Versions of the database completed by individual reviewers will be saved separately from an agreed final version. SPH will produce and maintain a quality assurance framework to provide a documented audit trail of all stages of the review process.

Trial summaries will be entered directly into evidence tables in Word. Quality assessment and numerical results for the primary endpoint will be entered into Excel.

3.3 Search strategy

A systematic search strategy of Medline, EMBASE and Cochrane databases has been devised in conjunction with the specialist healthcare information scientists at the Bodleian Healthcare Library, University of Oxford. The PICOS agreed with PHE was used to inform the literature search design and key terms to be included.

Two test searches were carried out, followed by review of the search terms, number of studies returned by each and detailed assessment of the first 100 results. Search terms were then amended following discussion between the information scientist, the 2 reviewers and the SPH quality assurance (QA) lead for this project, to ensure that relevant terms are included. The search design will be shared and agreed with PHE.

The final search strategy can be found in the appendix to this protocol, including the date range of the search, databases searched, search strategy, key search terms and the number of studies found at each stage of the search. In addition, we will check studies included in previous systematic reviews and will search the UK Clinical Trials Gateway (UKCTG) database of registered trials for trials in progress.

In addition to searching the three databases specified in the original protocol (EMBASE, Medline and Cochrane), we searched an additional three databases (CINAHL, HMIC and PsychInfo).

The second phase of this review was delayed by a few months and so it was agreed that the literature searches would be updated at the start of phase 2, in parallel with preliminary quality assessment and data extraction of the studies identified in phase 1.

3.4 Paper selection

Titles will be reviewed by an experienced reviewer at SPH and those that are clearly out of scope of the inclusion criteria will be excluded.

A second check of all excluded titles was carried out by the SPH QA lead for the project and any studies where there was any doubt regarding relevance were taken forward to the abstract review stage. Both reviewer and QA lead recorded reasons for exclusion.

The remaining abstracts will be independently reviewed by two reviewers to identify studies which are eligible or possibly eligible. Full papers will be obtained for all potentially eligible studies after resolution of any disagreements. If there is any doubt about eligibility the full paper will be reviewed.

The full papers will be screened for eligibility by JS with decisions reviewed by VdS as the QA lead and any disagreements resolved by discussion, with a third party where necessary.

For included studies, the screening programme(s) and study design will be noted. For the trials, details of whether under-served groups were targeted by area demographics or individual characteristics and whether they were specifically targeted by the trial or reported as subgroups, will also be recorded along with total sample size, the interventions compared and the under-served groups included.

The number of studies excluded at each stage will be recorded via a PRISMA flow diagram, including reasons for exclusion during the review of full papers. An interim report will be produced for PHE with summary tables showing the volume of evidence found.

3.4.1 Inclusion criteria

- parallel group trials comparing methods to improve participation in one of the 11 NHS national screening programmes (listed in section 1.1 above) with the following designs:
 - randomised controlled trials
 - quasi-randomised controlled trials where predictable allocation did not affect inclusion
 - cluster randomised trials
 - ~~non-randomised cohort and quasi-experimental studies⁴~~
- at least one under-served group targeted by the trial or reported as a subgroup **including groups defined as previous non-attenders or non-responders³ and groups defined as first-time invitees⁴**
- conducted in the UK
- systematic reviews which include at least one trial which would meet these inclusion criteria²

~~⁴Non-randomised controlled trials will be considered for inclusion for questions where there is little or no randomised evidence.~~

² We anticipate finding a very large number of systematic reviews, many of which will include substantial amounts of evidence from outside the UK. These will be tabulated by the question addressed and volume of UK evidence, for PHE to consider which they would like included in Phase 2 of this review. **This table is included in the reports embedded at the beginning of this document with options on how to proceed. The funder chose to maintain a strictly focused ‘review of reviews’ and include only those studies with a focus on underserved groups conducted from a UK perspective (but not necessarily restricted to UK trials).**

³This criterion was omitted in error from the original protocol; previous non-attendance was identified by the earlier rapid review (Duffy et al, 2017) as a relevant proxy for underserved groups and we agree.

⁴This criterion was added because in considering younger age groups, we realised that first-time invitees are, by definition, in the younger age groups and are also interesting as a group in their own right.

- cost-effectiveness studies, or reviews including cost-effectiveness studies, of interventions to improve participation in screening using UK costs

3.4.2 *Exclusion criteria*

- case-reports, case-series, uncontrolled cohort studies, case-control studies
- grey literature
- not published as full text articles in peer-reviewed journals
- non-English language
- published before 1990
- **trials with outdated comparisons (such as opportunistic controls or testing patient information leaflets as an intervention) and which contain no other more currently relevant comparisons**
- **trials which consented participants prior to randomisation were excluded because such trials do not test the real-world effect of the intervention on the population of interest (by pre-selecting people who are more likely to attend screening and who consider all the interventions acceptable)**

3.4.3 *Final paper selection*

An interim report will be produced summarising the evidence found by screening programme, under-served group and type of intervention. No information on outcomes will be included in the interim report. The final inclusion criteria, with respect to non-randomised studies, and also systematic reviews to be included in a “review of reviews”, will be agreed with the funder, depending on the availability of randomised evidence for specific questions and resource considerations.

All systematic reviews found will be cross-checked with our own search results to ensure we have found all the relevant trials.

3.5 Outcomes

Methods to improve participation in screening are of interest at all stages of the screening process:

- cohort identification (invitation)

- information about screening
- access to screening services
- onward referral
- access to treatment
- disease outcomes

There is likely to be very little evidence from comparative trials about most of these stages. We have therefore specified the primary outcome as uptake of screening, which will include interventions relating to information and access, the second and third bullet points above.

3.5.1 *Primary outcome*

Screening uptake (**as defined by studies, longest follow up available reported**)

3.5.2 *Secondary outcomes*

- identification of people to be invited to participate in screening
- progress through referral pathways following screening
- disease outcomes
- recorded preference to opt out of screening programme

Any other reported outcomes will be recorded in evidence summary tables.

3.6 **Quality assessment (risk of bias) tools**

~~Quality assessment of studies will be done by JS, who will discuss with VdS where there is uncertainty, and with a third reviewer if uncertainty persists.~~

Data extraction and quality assessment will be completed for each study independently by two reviewers including the lead reviewer (JS) and a second independent reviewer. The two reviewers will discuss and agree any discrepancies and agree a final quality assessment for each study, with the help of a third experienced reviewer if needed.

3.6.1 Parallel group trials

We do not anticipate that many of the relevant studies will include individual informed consent because of the nature of the question. Quasi-randomised trials where predictable allocation has no influence on inclusion in the trial may therefore be considered strong evidence and will be treated similarly to RCTs. Where predictable allocation may have influenced inclusion in the trial these will be grouped with non-randomised controlled trials for the purposes of selection and analysis.

The updated RoB 2.0 risk of bias tool (RoB 2, 2018) covers individually and cluster randomised trials and will be used to assess the quality of randomised trials. The related ROBINS-I tool (Sterne *et al*, 2016) will be used to assess any non-randomised studies included in the review.

RoB 2.0 was updated again on 22nd August 2019 (Sterne *et al*, 2019), shortly before Phase 2 of this review started. The 2019 version will be used for quality assessment.

3.6.2 Systematic reviews

Systematic reviews included in the “review of reviews” will be assessed using the ROBIS tool (Whiting *et al*, 2016).

3.6.3 Cost-effectiveness studies

Cost-effectiveness studies will be summarised through a narrative review guided by the York CRD guidance for economic evaluations in systematic reviews (York CRD) with quality assessment informed by the more detailed tools for assessing economic studies provided by the Cochrane Handbook (Cochrane 15) and the Consensus on Health Economic Criteria (CHEC) checklist (Evers *et al*, 2005).

3.7 Data extraction

Details of the trial design, interventions, population and outcomes will be extracted into evidence summary tables in Word. Quality assessment of included trials and numerical data for analysis of the primary endpoint will be recorded in Excel.

~~Data extraction will be done by JS. VdS will review the evidence summary tables and discuss any issues with JS, reviewing papers where there are ambiguities or inconsistencies or where JS requests a second opinion, and we envisage that through this process data extraction will be checked by VdS for at least 10% of papers. If the number of papers reviewed in this way by VdS covers less than 10% of the total included papers, further papers will be chosen at random for review of data extraction by VdS.~~ **Data extraction will be completed for each study**

independently by two reviewers including the lead reviewer (JS) and a second independent reviewer. The two reviewers will discuss and agree any discrepancies and agree a final set of extracted data for each study, with the help of a third experienced reviewer if needed. VdS will review the data extraction completed for each study by the lead reviewer (JS) against the published paper and any discrepancies will be discussed and agreed between JS and VdS.

3.8 Analysis

Numerical data for analysis will be extracted into Excel with interim versions frozen for checking against the final dataset. Analysis will be conducted in R using the metafor package (Viechtbauer, 2017).

All extractable results on the primary endpoint (screening uptake) will be displayed visually using forest plots of relative risk (RR) with absolute differences compared to control also summarised for ease of interpretation with respect to practical impact.

Forest plots will be presented in multiple formats driven by screening programme, under-served group and intervention type to allow this complex dataset to be viewed in different ways depending on the item of interest to decision-makers.

Trials with missing data will be included on the plots to indicate where data exists but has not been adequately reported. Other outcomes will be summarised in the evidence tables and considered in the narrative summary. It is not anticipated that there will be many clinically homogeneous groups of trials for these outcomes but forest plots will be produced where there is enough information to make a visual overview useful, with meta-analysis where appropriate.

Systematic reviews and economic evaluations will be quality assessed and summarised through a narrative review.

3.8.1 Cluster trials

We will follow the detailed guidance on reporting cluster trials within systematic reviews from a review of the quality of Cochrane reviews (Richardson *et al*, 2016). Results of cluster trials will be adjusted for clustering, using imputed values for the intracluster correlation coefficient (ICC) where the original trials are poorly analysed or reported, using methods recommended in the Cochrane handbook (Cochrane Handbook 16.3). Where ICC values are not reported and difficult to estimate, conservative estimates will be applied where possible. Where results could not be reliably adjusted this will be clearly indicated.

3.8.2 *Meta-analysis across screening programmes and under-served groups*

Of necessity meta-analysis can only be done within groups of similar interventions as there is no reason to believe that very different methods to improve participation will have similar impact. We can pool subgroups of studies across screening programmes and under-served groups where there are sufficient features in common to believe that the result will be interpretable. Structural similarities between screening programmes and barriers in common across under-served groups are considered in section 1 of this protocol.

Primary analysis will be driven by type of intervention and meta-analysed within groups and across groups with structural similarities. Results will also be presented grouped by screening programme, under-served group and barriers to accessing health care.

The additive random effects model (Dersimonian & Laird, 1986) will be used to pool studies regardless of the extent of heterogeneity. If there is substantial heterogeneity a multiplicative random effects model will also be applied to examine the influence of smaller trials, which may have a large influence on the central estimate of the additive model (Thompson & Sharp, 1999). Study size is associated with study quality and so the additive model can have the effect of exaggerating bias in some circumstances.

3.8.3 *Assessing publication bias*

Formal assessment of publication bias is unlikely to be possible in this review as we do not anticipate having a sufficiently large number of clinically homogeneous trials within any one group. Funnel plots will be difficult to interpret as smaller trials are likely to have used more intensive community-based interventions or to have targeted a very low participation group, and so the reasons for any asymmetry we can observe will not be obvious.

This question will be considered in the narrative but we do not anticipate strong empirical evidence either way. Exclusion of the grey literature and the use of a UK-specific search filter means that some publication bias is likely and we will try to assess the impact of missing trials on interpretation.

It should be noted that the focus on underserved groups in this review will inevitably introduce some bias as trials are somewhat more likely to report subgroup results if they appear ‘interesting’, which often means ‘positive’. Evidence of pre-specification of reported results and/or an a priori hypothesis with respect to the underserved groups will be given strong emphasis in interpretation of results.

3.9 Open data

Data and code for analysis will be made available to peer reviewers and others on request.

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York CRD 5.5 QUALITY ASSESSMENT

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5 Appendices

5.1 Searches

5.1.1 Medline

Search date: 10 October 2019

#	Searches	Results
▲		
1	"Early Detection of Cancer"/	22637
2	Mass Screening/	99452
3	Mammography/	29016
4	papanicolaou test/ or vaginal smears/	22647
5	((nhs or national) adj5 screening programme*).ti,ab.	1439
6	((population or mass) adj3 screening).ti,ab.	15071
7	((bowel or colon* or colorectal or colo-rectal or breast or cervical or cervix) adj5 screening).ti,ab.	36586
8	(cancer adj5 screening).ti,ab.	45487
9	(f?ecal occult blood test* or f?ecal immunochemical test* or f?ecal immunochemical test*).ti,ab.	4014
10	((sigmoidoscop* or colonoscop* or flexisig* or bowel scop*) and screening).ti,ab.	7681
11	mammogra*.ti,ab.	31117
12	((chest adj2 (x-ray* or xray* or imag* or radiogra*)) and screening).ti,ab.	2529
13	((vagina* or cervi* or pap*) adj2 smear*).ti,ab.	13469
14	((pap or papanicolaou or smear) adj2 (test* or screen*)).ti,ab.	6423
15	(("carcinoma in situ" or cervical intraepithelial neoplas* or cervical intra-epithelial neoplas* or cin2 or cin3 or cervical dyskaryosis or cervical dysplasia*) adj5 screening*).ti,ab.	325
16	exp Congenital Abnormalities/ and screening.mp.	17004
17	exp Prenatal Diagnosis/	72117
18	Neonatal Screening/	9746
19	((neonat* or newborn or pregnan* or prenatal or antenatal or pre-natal or ante-natal or fetal or foetal or fetus or foetus) adj5 screening).ti,ab.	22987
20	("newborn and infant physical exam*" or NIPE).ti,ab.	44
21	("newborn blood spot" or "neonatal blood spot").ti,ab.	74
22	((neonat* or newborn) adj3 hearing) and (screening or test*).ti,ab.	1664
23	(automated otoacoustic emission* or aoae or automated auditory brainstem response or aabr).ti,ab.	253

24	((hip dysplasia or ((congenital or newborn* or neonat*) adj2 (cataract* or hypothyroid*)) or cryptorchidism or cystic fibrosis or phenylketonuria or dehydrogenase deficiency or maple syrup urine disease or acid?emia or aciduria or homocystinuria or pku or scd or cf or cht or mcadd or hcu or iva or gai or ((gene* or carrier*) adj3 h?emoglobin)) and screening).ti,ab.	8640
25	((fetal or foetal or fetus or foetus) adj (anatomy or defect? or malformation? or abnormalit* or anomal* or syndrome?)).ti,ab.	6472
26	((congenital* or cardiac or heart) adj2 (defect? or malformation? or abnormalit* or anomal*)).ti,ab.	77515
27	(structural adj2 (defect? or malformation? or abnormalit* or anomal*)).ti,ab.	16389
28	((non-chromosomal or nonchromosomal) adj2 (defect? or malformation? or abnormalit* or anomal*)).ti,ab.	100
29	25 or 26 or 27 or 28	97398
30	(ultrasound* or ultra-sound or ultrasonogra* or ultra-sonogra* or sonogra* or echocardiogra* or screen* or scan* or structural assessment* or structural survey*).ti,ab.	1644477
31	29 and 30	19568
32	((down* syndrome or edward* syndrome or patau* syndrome or trisomy or t13 or t18) adj5 (screening* or test*)).ti,ab.	3190
33	((chorionic vill* adj2 (sAMPL* or test* or screen*)) or amniocentesis or nuchal translucenc*).ti,ab.	11032
34	((anencephal* or spina bifida or (cleft adj (lip? or palate?)) or (diaphragm* adj hernia?) or gastroschisis or exomphalos or ((renal or kidney) adj agenesis) or skeletal dysplasia) and screening).ti,ab.	1046
35	((diabetes or diabetic) adj3 (eye? or retin* or macul*)) and (screening or test*).ti,ab.	4901
36	((pregnan* or antenatal or ante-natal) and (hiv or human immunodeficiency virus or hepatitis or hepB or hep-b or syphilis or sexually transmitted infection* or sexually transmitted disease*) and screening).ti,ab.	2956
37	Vision Screening/ and diabet*.mp.	291
38	((sickle cell or thalass?emia? or h?emoglobinopath*) and screening).ti,ab.	3695
39	((aaa or ((aorta or aortic) adj2 aneurysm?)) and screening).ti,ab.	1601
40	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39	321649
41	Patient Participation/	24554
42	Patient Compliance/	56207
43	((improv* or increase* or enhanc* or promot*) adj5 (participat* or "use" or uptake or utili?ation or utili?ed or attendance? or attending)).ti,ab.	226615
44	(screening adj5 (participat* or "use" or uptake or utili?ation or utili?ed or access* or attendance? or attending)).ti,ab.	24680
45	((improv* or increase* or enhanc* or promot*) adj5 screening).ti,ab.	22559
46	((improv* or increase* or enhanc* or promot*) and (participat* or "use" or uptake or utili?ation or utili?ed or attendance? or attending)).ti.	26925
47	(screening and (participat* or "use" or uptake or utili?ation or utili?ed or access* or attendance? or attending)).ti.	6536

48	((improv* or increase* or enhanc* or promot*) and screening).ti.	4833
49	41 or 42 or 43 or 44 or 45 or 46 or 47 or 48	354835
50	Reminder Systems/	3280
51	Patient Navigation/	622
52	(reminder* or alert? or automated messag*).ti,ab.	39799
53	(letter? adj2 (invitation? or invite?)).ti,ab.	642
54	((personal* or tailor* or target*) adj2 (letter? or invit*)).ti,ab.	1461
55	((provider? or professional? or physican? or doctor? or general practi* or midwi* or community) adj5 (letter? or endorse* or recommend*)).ti,ab.	12323
56	(text messag* or sms or telephone call* or phone call* or call centre? or call center? or helpline? or hotline?).ti,ab.	17010
57	incentiv*.ti. or (((financial or economic or cash) adj3 (incentive? or transfer?)) or reimburs* or re-imburs* or voucher? or token? or reward*).ti,ab.	89789
58	health communication/ or persuasive communication/	5493
59	health education/ or consumer health information/ or exp health promotion/ or exp patient education as topic/	207696
60	(health adj2 (promotion or education or communication)).ti,ab.	69887
61	((patient or public or parent? or parental) adj2 education).ti,ab.	31371
62	((community or population or public) adj2 engagement).ti,ab.	3401
63	((personali* or tailor* or target*) adj5 (mail* or communicat* campaign? or initiative? or strateg* or program*)).ti,ab.	61405
64	((promotion* or publicity or education* or media) adj5 (campaign? or initiative? or strateg* or program*)).ti,ab.	83651
65	((promotion* or publicity or education*) adj5 (material? or tool? or information)).ti,ab.	23733
66	(information* adj3 (material? or tool? or sheet?)).ti,ab.	7475
67	(leaflet? or pamphlet? or booklet? or book let?).ti,ab.	26413
68	((translat* or pict* or photo*) adj5 (material? or tool? or information)).ti,ab.	19539
69	(translator? or interpreter? or chaperone? or multilingual* or multi-lingual or bilingual or bi-lingual or ((multiple or many or several) adj2 language?)).ti,ab.	44693
70	((community adj3 (nurse? or aide? or advocate? or volunteer?)) or lay health) and (enhanc* or promot* or educat*).ti,ab.	2793
71	(cultural* adj2 (sensitiv* or adapt* or chang* or appropriat*)).ti,ab.	15516
72	(dvd? or audiovisual* or audio-visual* or video* or screencast* or podcast* or stream*).ti,ab.	186493
73	(social media or twitter or facebook* or instagram or youtube).ti,ab.	12464
74	Reagent Kits, Diagnostic/ or Self Care/	48364
75	(self-sampl* or self-test* or self-collect* or home-sampl* or home-test* or home-collect*).ti,ab.	3455
76	(direct mail* or pre-addressed envelope* or pre-addressed packag* or free post* or prepaid post* or pre-paid post*).ti,ab.	991
77	((timed or fixed or booked or extended or screening) adj3 appointment?).ti,ab.	355

78	((improv* or increase* or enhanc* or promot*) adj5 access*).ti,ab.	39282
79	("out of hour?" or extended hour? or evening? or weekend? or week-end? or saturday? or sunday?).ti,ab.	30615
80	(travel* or transport).ti,ab.	411602
81	("baby number?" or "number for babies" or nn4b or n4b).ti,ab.	292
82	intervention?.ti,ab.	878470
83	50 or 51 or 52 or 53 or 54 or 55 or 56 or 57 or 58 or 59 or 60 or 61 or 62 or 63 or 64 or 65 or 66 or 67 or 68 or 69 or 70 or 71 or 72 or 73 or 74 or 75 or 76 or 77 or 78 or 79 or 80 or 81 or 82	2074727
84	40 and 49 and 83	10449
85	limit 84 to (english language and yr="1990 -Current")	9917
86	limit 85 to "reviews (maximizes specificity)"	467
87	exp United Kingdom/	356828
88	(national health service* or nhs*).ti,ab,in.	179023
89	(english not ((published or publication* or translat* or written or language* or speak* or literature or citation*) adj5 english)).ti,ab.	92602
90	(gb or "g.b." or britain* or (british* not "british columbia") or uk or "u.k." or united kingdom* or (england* not "new england") or northern ireland* or northern irish* or scotland* or scottish* or ((wales or "south wales") not "new south wales") or welsh*).ti,ab,jw,in.	1968348
91	(bangor or "bangor's" or cardiff or "cardiff's" or newport or "newport's " or st asaph or "st asaph's" or st davids or swansea or "swansea's").ti,ab,in.	51623
92	(aberdeen or "aberdeen's" or dundee or "dundee's" or edinburgh or "edinburgh's" or glasgow or "glasgow's" or inverness or (perth not australia*) or ("perth's" not australia*) or stirling or "stirling's").ti,ab,in.	197140
93	(armagh or "armagh's" or belfast or "belfast's" or lisburn or "lisburn's" or londonderry or "londonderry's" or derry or "derry's" or newry or "newry's").ti,ab,in.	24308

94	(bath or "bath's" or ((Birmingham not alabama*) or ("birmingham's" not alabama*) or bradford or "bradford's" or brighton or "brighton's" or bristol or "bristol's" or carlisle* or "carlisle's" or (cambridge not (massachusetts* or boston* or harvard*)) or ("cambridge's" not (massachusetts* or boston* or harvard*)) or (canterbury not zealand*) or ("canterbury's" not zealand*) or chelmsford or "chelmsford's" or chester or "chester's" or chichester or "chichester's" or coventry or "coventry's" or derby or "derby's" or (durham not (carolina* or nc)) or ("durham's" not (carolina* or nc)) or ely or "ely's" or exeter or "exeter's" or gloucester or "gloucester's" or hereford or "hereford's" or hull or "hull's" or lancaster or "lancaster's" or leeds* or leicester or "leicester's" or (lincoln not nebraska*) or ("lincoln's" not nebraska*) or (liverpool not (new south wales* or nsw)) or ("liverpool's" not (new south wales* or nsw)) or ((london not (ontario* or ont or toronto*)) or ("london's" not (ontario* or ont or toronto*)) or manchester or "manchester's" or (newcastle not (new south wales* or nsw)) or ("newcastle's" not (new south wales* or nsw)) or norwich or "norwich's" or nottingham or "nottingham's" or oxford or "oxford's" or peterborough or "peterborough's" or plymouth or "plymouth's" or portsmouth or "portsmouth's" or preston or "preston's" or ripon or "ripon's" or salford or "salford's" or salisbury or "salisbury's" or sheffield or "sheffield's" or southampton or "southampton's" or st albans or stoke or "stoke's" or sunderland or "sunderland's" or truro or "truro's" or wakefield or "wakefield's" or wells or westminster or "westminster's" or winchester or "winchester's" or wolverhampton or "wolverhampton's" or (worcester not (massachusetts* or boston* or harvard*)) or ("worcester's" not (massachusetts* or boston* or harvard*)) or (york not ("new york*" or ny or ontario* or ont or toronto*)) or ("york's" not ("new york*" or ny or ontario* or ont or toronto*))))).ti,ab,in.	1322578
95	87 or 88 or 89 or 90 or 91 or 92 or 93 or 94	2536117
96	(exp africa/ or exp americas/ or exp antarctic regions/ or exp arctic regions/ or exp asia/ or exp oceania/) not (exp great britain/ or europe/)	2757521
97	95 not 96	2397223
98	85 and 97	1133
99	86 or 98	1488

5.1.2 Embase

Search date: 10 October 2019

#	Searches	Results
▲		
1	cancer screening/	75247
2	Mass Screening/	52829
3	mammography/	47295
4	female genital tract cytology/ or papanicolaou test/ or vagina smear/	25129
5	((nhs or national) adj5 screening programme*).ti,ab.	2372
6	((population or mass) adj3 screening).ti,ab.	20433

7	((bowel or colon* or colorectal or colo-rectal or breast or cervical or cervix) adj5 screening).ti,ab.	53256
8	(cancer adj5 screening).ti,ab.	64897
9	(f?ecal occult blood test* or f?ecal immunochemical test* or f?ecal immuno-chemical test*).ti,ab.	6213
10	((sigmoidoscop* or colonoscop* or flexisig* or bowel scop*) and screening).ti,ab.	15489
11	mammogra*.ti,ab.	40635
12	((chest adj2 (x-ray* or xray* or imag* or radiogra*)) and screening).ti,ab.	4394
13	((vagina* or cervi* or pap*) adj2 smear*).ti,ab.	16401
14	((pap or papanicolaou or smear) adj2 (test* or screen*)).ti,ab.	8864
15	(("carcinoma in situ" or cervical intraepithelial neoplas* or cervical intra-epithelial neoplas* or cin2 or cin3 or cervical dyskaryosis or cervical dysplasia*) adj5 screening*).ti,ab.	461
16	exp congenital disorder/ and screening.mp.	71431
17	prenatal screening/ or developmental screening/ or genetic screening/ or exp prenatal diagnosis/	186245
18	newborn screening/	18179
19	((neonat* or newborn or pregnan* or prenatal or antenatal or pre-natal or ante-natal or fetal or foetal or fetus or foetus) adj5 screening).ti,ab.	33687
20	("newborn and infant physical exam*" or NIPE).ti,ab.	51
21	("newborn blood spot" or "neonatal blood spot").ti,ab.	110
22	((neonat* or newborn) adj3 hearing) and (screening or test*).ti,ab.	2117
23	(automated otoacoustic emission* or aoae or automated auditory brainstem response or aabr).ti,ab.	317
24	((hip dysplasia or ((congenital or newborn* or neonat*) adj2 (cataract* or hypothyroid*)) or cryptorchidism or cystic fibrosis or phenylketonuria or dehydrogenase deficiency or maple syrup urine disease or acid?emia or aciduria or homocystinuria or pku or scd or cf or cht or mcadd or hcu or iva or gai or ((gene* or carrier*) adj3 h?emoglobin)) and screening).ti,ab.	15006
25	((fetal or foetal or fetus or foetus) adj (anatomy or defect? or malformation? or abnormalit* or anomal* or syndrome?)).ti,ab.	9532
26	((congenital* or cardiac or heart) adj2 (defect? or malformation? or abnormalit* or anomal*)).ti,ab.	100423
27	(structural adj2 (defect? or malformation? or abnormalit* or anomal*)).ti,ab.	22382
28	((non-chromosomal or nonchromosomal) adj2 (defect? or malformation? or abnormalit* or anomal*)).ti,ab.	127
29	25 or 26 or 27 or 28	127598
30	(ultrasound* or ultra-sound or ultrasonogra* or ultra-sonogra* or sonogra* or echocardiogra* or screen* or scan* or structural assessment* or structural survey*).ti,ab.	2348196
31	29 and 30	31790
32	((down* syndrome or edward* syndrome or patau* syndrome or trisomy or t13 or t18) adj5 (screening* or test*)).ti,ab.	4182
33	((chorionic vill* adj2 (sampl* or test* or screen*)) or amniocentesis or nuchal translucenc*).ti,ab.	14627

34	((anencephal* or spina bifida or (cleft adj (lip? or palate?)) or (diaphragm* adj hernia?) or gastroschisis or exomphalos or ((renal or kidney) adj agenesi) or skeletal dysplasia) and screening).ti,ab.	1547
35	((diabetes or diabetic) adj3 (eye? or retin* or macul*)) and (screening or test*).ti,ab.	7761
36	((pregnan* or antenatal or ante-natal) and (hiv or human immunodeficiency virus or hepatitis or hepb or hep-b or syphilis or sexually transmitted infection* or sexually transmitted disease*) and screening).ti,ab.	4200
37	Vision test/ and diabet*.mp.	426
38	((sickle cell or thalass?emia? or h?emoglobinopath*) and screening).ti,ab.	5778
39	((aaa or ((aorta or aortic) adj2 aneurysm?)) and screening).ti,ab.	2188
40	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39	507981
41	Patient Participation/	26132
42	Patient Compliance/	128962
43	((improv* or increase* or enhanc* or promot*) adj5 (participat* or "use" or uptake or utili?ation or utili?ed or attendance? or attending)).ti,ab.	307012
44	(screening adj5 (participat* or "use" or uptake or utili?ation or utili?ed or access* or attendance? or attending)).ti,ab.	34694
45	((improv* or increase* or enhanc* or promot*) adj5 screening).ti,ab.	32890
46	((improv* or increase* or enhanc* or promot*) and (participat* or "use" or uptake or utili?ation or utili?ed or attendance? or attending)).ti.	34794
47	(screening and (participat* or "use" or uptake or utili?ation or utili?ed or access* or attendance? or attending)).ti.	8374
48	((improv* or increase* or enhanc* or promot*) and screening).ti.	6815
49	41 or 42 or 43 or 44 or 45 or 46 or 47 or 48	527425
50	Reminder System/	2501
51	(reminder* or alert? or automated messag*).ti,ab.	59800
52	(letter? adj2 (invitation? or invite?)).ti,ab.	1058
53	((personal* or tailor* or target*) adj2 (letter? or invit*)).ti,ab.	1813
54	((provider? or professional? or physican? or doctor? or general practi* or midwi* or community) adj5 (letter? or endorse* or recommend*)).ti,ab.	17492
55	(text messag* or sms or telephone call* or phone call* or call centre? or call center? or helpline? or hotline?).ti,ab.	26882
56	incentiv*.ti. or (((financial or economic or cash) adj3 (incentive? or transfer?)) or reimburs* or re-imburs* or voucher? or token? or reward*).ti,ab.	118221
57	medical information/ or persuasive communication/	79699
58	health education/ or exp health promotion/ or patient education/	281094
59	(health adj2 (promotion or education or communication)).ti,ab.	81402
60	((patient or public or parent? or parental) adj2 education).ti,ab.	44417
61	((community or population or public) adj2 engagement).ti,ab.	4238
62	((personali* or tailor* or target*) adj5 (mail* or communicat* campaign? or initiative? or strateg* or program*)).ti,ab.	84325
63	((promotion* or publicity or education* or media) adj5 (campaign? or initiative? or strateg* or program*)).ti,ab.	110299

64	((promotion* or publicity or education*) adj5 (material? or tool? or information)).ti,ab.	35323
65	(information* adj3 (material? or tool? or sheet?)).ti,ab.	10626
66	(leaflet? or pamphlet? or booklet? or book let?).ti,ab.	37165
67	((translat* or pict* or photo*) adj5 (material? or tool? or information)).ti,ab.	20327
68	(translator? or interpreter? or chaperone? or multilingual* or multi-lingual or bilingual or bi-lingual or ((multiple or many or several) adj2 language?)).ti,ab.	55509
69	((community adj3 (nurse? or aide? or advocate? or volunteer?)) or lay health) and (enhanc* or promot* or educat*).ti,ab.	3472
70	(cultural* adj2 (sensitiv* or adapt* or chang* or appropriat*).ti,ab.	18741
71	social media/	17069
72	(dvd? or audiovisual* or audio-visual* or video* or screencast* or podcast* or stream*).ti,ab.	260936
73	(social media or twitter or facebook* or instagram or youtube).ti,ab.	17885
74	self evaluation/	30482
75	(self-sampl* or self-test* or self-collect* or home-sampl* or home-test* or home-collect*).ti,ab.	4951
76	(direct mail* or pre-addressed envelope* or pre-addressed packag* or free post* or prepaid post* or pre-paid post*).ti,ab.	1363
77	((timed or fixed or booked or extended or screening) adj3 appointment?).ti,ab.	666
78	((improv* or increase* or enhanc* or promot*) adj5 access*).ti,ab.	53165
79	("out of hour?" or extended hour? or evening? or weekend? or week-end? or saturday? or sunday?).ti,ab.	46148
80	(travel* or transport).ti,ab.	463068
81	("baby number?" or "number for babies" or nn4b or n4b).ti,ab.	501
82	intervention?.ti,ab.	1220037
83	50 or 51 or 52 or 53 or 54 or 55 or 56 or 57 or 58 or 59 or 60 or 61 or 62 or 63 or 64 or 65 or 66 or 67 or 68 or 69 or 70 or 71 or 72 or 73 or 74 or 75 or 76 or 77 or 78 or 79 or 80 or 81 or 82	2764796
84	40 and 49 and 83	13607
85	limit 84 to (english language and yr="1990 -Current")	13055
86	limit 85 to "reviews (maximizes specificity)"	418
87	exp United Kingdom/	407676
88	(national health service* or nhs*).ti,ab,in.	273683
89	(english not ((published or publication* or translat* or written or language* or speak* or literature or citation*) adj5 english)).ti,ab.	40405
90	(gb or "g.b." or britain* or (british* not "british columbia") or uk or "u.k." or united kingdom* or (england* not "new england") or northern ireland* or northern irish* or scotland* or scottish* or ((wales or "south wales") not "new south wales") or welsh*).ti,ab,jw,in.	3003789
91	(bangor or "bangor's" or cardiff or "cardiff's" or newport or "newport's " or st asaph or "st asaph's" or st davids or swansea or "swansea's").ti,ab,in.	95168
92	(aberdeen or "aberdeen's" or dundee or "dundee's" or edinburgh or "edinburgh's" or glasgow or "glasgow's" or inverness or (perth not australia*) or ("perth's" not australia*) or stirling or "stirling's").ti,ab,in.	322571

93	(armagh or "armagh's" or belfast or "belfast's" or lisburn or "lisburn's" or londonderry or "londonderry's" or derry or "derry's" or newry or "newry's").ti,ab,in.	43757
94	(bath or "bath's" or ((Birmingham not alabama*) or ("birmingham's" not alabama*) or bradford or "bradford's" or brighton or "brighton's" or bristol or "bristol's" or carlisle* or "carlisle's" or (cambridge not (massachusetts* or boston* or harvard*)) or ("cambridge's" not (massachusetts* or boston* or harvard*)) or (canterbury not zealand*) or ("canterbury's" not zealand*) or chelmsford or "chelmsford's" or chester or "chester's" or chichester or "chichester's" or coventry or "coventry's" or derby or "derby's" or (durham not (carolina* or nc)) or ("durham's" not (carolina* or nc)) or ely or "ely's" or exeter or "exeter's" or gloucester or "gloucester's" or hereford or "hereford's" or hull or "hull's" or lancaster or "lancaster's" or leeds* or leicester or "leicester's" or (lincoln not nebraska*) or ("lincoln's" not nebraska*) or (liverpool not (new south wales* or nsw)) or ("liverpool's" not (new south wales* or nsw)) or ((london not (ontario* or ont or toronto*)) or ("london's" not (ontario* or ont or toronto*)) or manchester or "manchester's" or (newcastle not (new south wales* or nsw)) or ("newcastle's" not (new south wales* or nsw)) or norwich or "norwich's" or nottingham or "nottingham's" or oxford or "oxford's" or peterborough or "peterborough's" or plymouth or "plymouth's" or portsmouth or "portsmouth's" or preston or "preston's" or ripon or "ripon's" or salford or "salford's" or salisbury or "salisbury's" or sheffield or "sheffield's" or southampton or "southampton's" or st albans or stoke or "stoke's" or sunderland or "sunderland's" or truro or "truro's" or wakefield or "wakefield's" or wells or westminster or "westminster's" or winchester or "winchester's" or wolverhampton or "wolverhampton's" or (worcester not (massachusetts* or boston* or harvard*)) or ("worcester's" not (massachusetts* or boston* or harvard*)) or (york not ("new york*" or ny or ontario* or ont or toronto*)) or ("york's" not ("new york*" or ny or ontario* or ont or toronto*))))).ti,ab,in.	2331878
95	87 or 88 or 89 or 90 or 91 or 92 or 93 or 94	3663248
96	(exp africa/ or exp americas/ or exp antarctic regions/ or exp arctic regions/ or exp asia/ or exp oceania/) not (exp great britain/ or europe/)	2774633
97	95 not 96	3454232
98	85 and 97	1772
99	86 or 98	2070

5.1.3 PsycINFO

Search date: 10 October 2019

# ▲	Searches	Results
1	cancer screening/	4457
2	Screening Tests/ or Health Screening/ or Screening/	18010
3	mammography/	1207

4	((nhs or national) adj5 screening programme*).ti,ab.	88
5	((population or mass) adj3 screening).ti,ab.	956
6	((bowel or colon* or colorectal or colo-rectal or breast or cervical or cervix) adj5 screening).ti,ab.	3568
7	(cancer adj5 screening).ti,ab.	4783
8	(f?ecal occult blood test* or f?ecal immunochemical test* or f?ecal immuno-chemical test*).ti,ab.	325
9	((sigmoidoscop* or colonoscop* or flexisig* or bowel scop*) and screening).ti,ab.	469
10	mammogra*.ti,ab.	2262
11	((chest adj2 (x-ray* or xray* or imag* or radiogra*)) and screening).ti,ab.	33
12	((vagina* or cervi* or pap*) adj2 smear*).ti,ab.	821
13	((pap or papanicolaou or smear) adj2 (test* or screen*)).ti,ab.	872
14	("carcinoma in situ" or cervical intraepithelial neoplas* or cervical intra-epithelial neoplas* or cin2 or cin3 or cervical dyskaryosis or cervical dysplasia*) adj5 screening*).ti,ab.	4
15	exp congenital disorders/ and screening.mp.	309
16	prenatal diagnosis/	679
17	((neonat* or newborn or pregnan* or prenatal or antenatal or pre-natal or ante-natal or fetal or foetal or fetus or foetus) adj5 screening).ti,ab.	1726
18	("newborn and infant physical exam*" or NIPE).ti,ab.	3
19	("newborn blood spot" or "neonatal blood spot").ti,ab.	4
20	((neonat* or newborn) adj3 hearing) and (screening or test*).ti,ab.	301
21	(automated otoacoustic emission* or aoae or automated auditory brainstem response or aabr).ti,ab.	36
22	((hip dysplasia or ((congenital or newborn* or neonat*) adj2 (cataract* or hypothyroid*)) or cryptorchidism or cystic fibrosis or phenylketonuria or dehydrogenase deficiency or maple syrup urine disease or acid?emia or aciduria or homocystinuria or pku or scd or cf or cht or mcadd or hcu or iva or gai or ((gene* or carrier*) adj3 h?emoglobin)) and screening).ti,ab.	385
23	((fetal or foetal or fetus or foetus) adj (anatomy or defect? or malformation? or abnormalit* or anomal* or syndrome?)).ti,ab.	283
24	((congenital* or cardiac or heart) adj2 (defect? or malformation? or abnormalit* or anomal*)).ti,ab.	2042
25	(structural adj2 (defect? or malformation? or abnormalit* or anomal*)).ti,ab.	2179
26	((non-chromosomal or nonchromosomal) adj2 (defect? or malformation? or abnormalit* or anomal*)).ti,ab.	3
27	23 or 24 or 25 or 26	4436
28	(ultrasound* or ultra-sound or ultrasonogra* or ultra-sonogra* or sonogra* or echocardiogra* or screen* or scan* or structural assessment* or structural survey*).ti,ab.	134513
29	27 and 28	626
30	((down* syndrome or edward* syndrome or patau* syndrome or trisomy or t13 or t18) adj5 (screening* or test*)).ti,ab.	255
31	((chorionic vill* adj2 (sampl* or test* or screen*)) or amniocentesis or nuchal translucenc*).ti,ab.	288

32	((anencephal* or spina bifida or (cleft adj (lip? or palate?)) or (diaphragm* adj hernia?) or gastroschisis or exomphalos or ((renal or kidney) adj agenesis) or skeletal dysplasia) and screening).ti,ab.	47
33	((diabetes or diabetic) adj3 (eye? or retin* or macul*)) and (screening or test*).ti,ab.	123
34	((pregnan* or antenatal or ante-natal) and (hiv or human immunodeficiency virus or hepatitis or hepb or hep-b or syphilis or sexually transmitted infection* or sexually transmitted disease*) and screening).ti,ab.	221
35	((sickle cell or thalass?emia? or h?emoglobinopath*) and screening).ti,ab.	157
36	((aaa or ((aorta or aortic) adj2 aneurysm?)) and screening).ti,ab.	27
37	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36	27980
38	Client Participation/	2024
39	Compliance/	4245
40	((improv* or increase* or enhanc* or promot*) adj5 (participat* or "use" or uptake or utili?ation or utili?ed or attendance? or attending)).ti,ab.	56200
41	(screening adj5 (participat* or "use" or uptake or utili?ation or utili?ed or access* or attendance? or attending)).ti,ab.	5660
42	((improv* or increase* or enhanc* or promot*) adj5 screening).ti,ab.	3798
43	((improv* or increase* or enhanc* or promot*) and (participat* or "use" or uptake or utili?ation or utili?ed or attendance? or attending)).ti.	5569
44	(screening and (participat* or "use" or uptake or utili?ation or utili?ed or access* or attendance? or attending)).ti.	1441
45	((improv* or increase* or enhanc* or promot*) and screening).ti.	669
46	38 or 39 or 40 or 41 or 42 or 43 or 44 or 45	72166
47	(reminder* or alert? or automated messag*).ti,ab.	12288
48	(letter? adj2 (invitation? or invite?)).ti,ab.	142
49	((personal* or tailor* or target*) adj2 (letter? or invit*)).ti,ab.	1487
50	((provider? or professional? or physican? or doctor? or general practi* or midwi* or community) adj5 (letter? or endorse* or recommend*)).ti,ab.	6055
51	(text messag* or sms or telephone call* or phone call* or call centre? or call center? or helpline? or hotline?).ti,ab.	7257
52	incentiv*.ti. or (((financial or economic or cash) adj3 (incentive? or transfer?)) or reimburs* or re-imburs* or voucher? or token? or reward*).ti,ab.	69353
53	persuasive communication/	5085
54	health education/ or client education/ or health promotion/	37895
55	(health adj2 (promotion or education or communication)).ti,ab.	28302
56	((patient or public or parent? or parental) adj2 education).ti,ab.	15007
57	((community or population or public) adj2 engagement).ti,ab.	2208
58	((personali* or tailor* or target*) adj5 (mail* or communicat* campaign? or initiative? or strateg* or program*)).ti,ab.	17197

59	((promotion* or publicity or education* or media) adj5 (campaign? or initiative? or strateg* or program*)).ti,ab.	57476
60	((promotion* or publicity or education*) adj5 (material? or tool? or information)).ti,ab.	12902
61	(information* adj3 (material? or tool? or sheet?)).ti,ab.	2612
62	(leaflet? or pamphlet? or booklet? or book let?).ti,ab.	4548
63	((translat* or pict* or photo*) adj5 (material? or tool? or information)).ti,ab.	4095
64	(translator? or interpreter? or chaperone? or multilingual* or multi-lingual or bilingual or bi-lingual or ((multiple or many or several) adj2 language?)).ti,ab.	20601
65	((community adj3 (nurse? or aide? or advocate? or volunteer?)) or lay health) and (enhanc* or promot* or educat*).ti,ab.	1187
66	(cultural* adj2 (sensitiv* or adapt* or chang* or appropriat*).ti,ab.	15476
67	(dvd? or audiovisual* or audio-visual* or video* or screencast* or podcast* or stream*).ti,ab.	78750
68	(social media or twitter or facebook* or instagram or youtube).ti,ab.	13673
69	(self-sampl* or self-test* or self-collect* or home-sampl* or home-test* or home-collect*).ti,ab.	807
70	(direct mail* or pre-addressed envelope* or pre-addressed packag* or free post* or prepaid post* or pre-paid post*).ti,ab.	315
71	((timed or fixed or booked or extended or screening) adj3 appointment?).ti,ab.	92
72	((improv* or increase* or enhanc* or promot*) adj5 access*).ti,ab.	12346
73	("out of hour?" or extended hour? or evening? or weekend? or weekend? or saturday? or sunday?).ti,ab.	11005
74	(travel* or transport).ti,ab.	26934
75	("baby number?" or "number for babies" or nn4b or n4b).ti,ab.	17
76	intervention?.ti,ab.	357193
77	47 or 48 or 49 or 50 or 51 or 52 or 53 or 54 or 55 or 56 or 57 or 58 or 59 or 60 or 61 or 62 or 63 or 64 or 65 or 66 or 67 or 68 or 69 or 70 or 71 or 72 or 73 or 74 or 75 or 76	703313
78	37 and 46 and 77	2807
79	limit 78 to (english language and yr="1990 -Current")	2722
80	limit 79 to "reviews (maximizes specificity)"	97
81	(national health service* or nhs*).ti,ab,in.	23198
82	(english not ((published or publication* or translat* or written or language* or speak* or literature or citation*) adj5 english)).ti,ab.	94454
83	(gb or "g.b." or britain* or (british* not "british columbia") or uk or "u.k." or united kingdom* or (england* not "new england") or northern ireland* or northern irish* or scotland* or scottish* or ((wales or "south wales") not "new south wales") or welsh*).ti,ab,jw,in.	446773
84	(bangor or "bangor's" or cardiff or "cardiff's" or newport or "newport's " or st asaph or "st asaph's" or st davids or swansea or "swansea's").ti,ab,in.	18071

85	(aberdeen or "aberdeen's" or dundee or "dundee's" or edinburgh or "edinburgh's" or glasgow or "glasgow's" or inverness or (perth not australia*) or ("perth's" not australia*) or stirling or "stirling's").ti,ab,in.	42607
86	(armagh or "armagh's" or belfast or "belfast's" or lisburn or "lisburn's" or londonderry or "londonderry's" or derry or "derry's" or newry or "newry's").ti,ab,in.	5630
87	(bath or "bath's" or ((Birmingham not alabama*) or ("birmingham's" not alabama*) or bradford or "bradford's" or brighton or "brighton's" or bristol or "bristol's" or carlisle* or "carlisle's" or (cambridge not (massachusetts* or boston* or harvard*)) or ("cambridge's" not (massachusetts* or boston* or harvard*)) or (canterbury not zealand*) or ("canterbury's" not zealand*) or chelmsford or "chelmsford's" or chester or "chester's" or chichester or "chichester's" or coventry or "coventry's" or derby or "derby's" or (durham not (carolina* or nc)) or ("durham's" not (carolina* or nc)) or ely or "ely's" or exeter or "exeter's" or gloucester or "gloucester's" or hereford or "hereford's" or hull or "hull's" or lancaster or "lancaster's" or leeds* or leicester or "leicester's" or (lincoln not nebraska*) or ("lincoln's" not nebraska*) or (liverpool not (new south wales* or nsw)) or ("liverpool's" not (new south wales* or nsw)) or ((london not (ontario* or ont or toronto*)) or ("london's" not (ontario* or ont or toronto*)) or manchester or "manchester's" or (newcastle not (new south wales* or nsw)) or ("newcastle's" not (new south wales* or nsw)) or norwich or "norwich's" or nottingham or "nottingham's" or oxford or "oxford's" or peterborough or "peterborough's" or plymouth or "plymouth's" or portsmouth or "portsmouth's" or preston or "preston's" or ripon or "ripon's" or salford or "salford's" or salisbury or "salisbury's" or sheffield or "sheffield's" or southampton or "southampton's" or st albans or stoke or "stoke's" or sunderland or "sunderland's" or truro or "truro's" or wakefield or "wakefield's" or wells or westminster or "westminster's" or winchester or "winchester's" or wolverhampton or "wolverhampton's" or (worchester not (massachusetts* or boston* or harvard*)) or ("worchester's" not (massachusetts* or boston* or harvard*)) or (york not ("new york*" or ny or ontario* or ont or toronto*)) or ("york's" not ("new york*" or ny or ontario* or ont or toronto*))))).ti,ab,in.	344638
88	81 or 82 or 83 or 84 or 85 or 86 or 87	589168
89	79 and 88	314
90	80 or 89	394

5.1.4 CINAHL

Search date: 10 October 2019

#	Query
S51	S38 OR S50
S50	S48 NOT S49

- S49 ((MH "Africa+") OR (MH "America+") OR (MH "Asia+") OR (MH "Australia+")) NOT ((MH "Europe") OR (MH "United Kingdom+"))
- S48 S37 AND S47
- S47 S39 OR S40 OR S41 OR S42 OR S43 OR S44 OR S45 OR S46
- S46 TI ((bath or "bath's" or ((Birmingham not alabama*) or ("birmingham's" not alabama*) or bradford or "bradford's" or brighton or "brighton's" or bristol or "bristol's" or carlisle* or "carlisle's" or (cambridge not (massachusetts* or boston* or harvard*)) or ("cambridge's" not (massachusetts* or boston* or harvard*)) or (canterbury not zealand*) or ("canterbury's" not zealand*) or chelmsford or "chelmsford's" or chester or "chester's" or chichester or "chichester's" or coventry or "coventry's" or derby or "derby's" or (durham not (carolina* or nc)) or ("durham's" not (carolina* or nc)) or ely or "ely's" or exeter or "exeter's" or gloucester or "gloucester's" or hereford or "hereford's" or hull or "hull's" or lancaster or "lancaster's" or leeds* or leicester or "leicester's" or (lincoln not nebraska*) or ("lincoln's" not nebraska*) or (liverpool not (new south wales* or nsw)) or ("liverpool's" not (new south wales* or nsw)) or ((london not (ontario* or ont or toronto*)) or ("london's" not (ontario* or ont or toronto*)) or manchester or "manchester's" or (newcastle not (new south wales* or nsw)) or ("newcastle's" not (new south wales* or nsw)) or norwich or "norwich's" or nottingham or "nottingham's" or oxford or "oxford's" or peterborough or "peterborough's" or plymouth or "plymouth's" or portsmouth or "portsmouth's" or preston or "preston's" or ripon or "ripon's" or salford or "salford's" or salisbury or "salisbury's" or sheffield or "sheffield's" or southampton or "southampton's" or st albans or stoke or "stoke's" or sunderland or "sunderland's" or truro or "truro's" or wakefield or "wakefield's" or wells or westminster or "westminster's" or winchester or "winchester's" or wolverhampton or "wolverhampton's" or (worcester not (massachusetts* or boston* or harvard*)) or ("worcester's" not (massachusetts* or boston* or harvard*)) or (york not ("new york*" or ny or ontario* or ont or toronto*)) or ("york's" not ("new york*" or ny or ontario* or ont or toronto*))))) OR AB ((bath or "bath's" or ((Birmingham not alabama*) or ("birmingham's" not alabama*) or bradford or "bradford's" or brighton or "brighton's" or bristol or "bristol's" or carlisle* or "carlisle's" or (cambridge not (massachusetts* or boston* or harvard*)) or ("cambridge's" not (massachusetts* or boston* or harvard*)) or (canterbury not zealand*) or ("canterbury's" not zealand*) or chelmsford or "chelmsford's" or chester or "chester's" or chichester or "chichester's" or coventry or "coventry's" or derby or "derby's" or (durham not (carolina* or nc)) or ("durham's" not (carolina* or nc)) or ely or "ely's" or exeter or "exeter's" or gloucester or "gloucester's" or hereford or "hereford's" or hull or "hull's" or lancaster or "lancaster's" or leeds* or leicester or "leicester's" or (lincoln not nebraska*) or ("lincoln's" not nebraska*) or (liverpool not (new south wales* or nsw)) or ("liverpool's" not (new south wales* or nsw)) or ((london not (ontario* or ont or toronto*)) or ("london's" not

(ontario* or ont or toronto*) or manchester or "manchester's" or (newcastle not (new south wales* or nsw)) or ("newcastle's" not (new south wales* or nsw)) or norwich or "norwich's" or nottingham or "nottingham's" or oxford or "oxford's" or peterborough or "peterborough's" or plymouth or "plymouth's" or portsmouth or "portsmouth's" or preston or "preston's" or ripon or "ripon's" or salford or "salford's" or salisbury or "salisbury's" or sheffield or "sheffield's" or southampton or "southampton's" or st albans or stoke or "stoke's" or sunderland or "sunderland's" or truro or "truro's" or wakefield or "wakefield's" or wells or westminster or "westminster's" or winchester or "winchester's" or wolverhampton or "wolverhampton's" or (worcester not (massachusetts* or boston* or harvard*)) or ("worcester's" not (massachuse tts* or boston* or harvard*)) or (york not ("new york*" or ny or ontario* or ont or toronto*)) or ("york's" not ("new york*" or ny or ontario* or ont or toronto*))))) OR AF ((bath or "bath's" or ((Birmingham not alabama*) or ("birmingham's" not alabama*) or bradford or "bradford's" or brighton or "brighton's" or bristol or "bristol's" or carlisle* or "carlisle's" or (cambridge not (massachusetts* or boston* or harvard*)) or ("cambridge's" not (massachusetts* or boston* or harvard*)) or (canterbury not zealand*) or ("canterbury's" not zealand*) or chelmsford or "chelmsford's" or chester or "chester's" or chichester or "chichester's" or coventry or "coventry's" or derby or "derby's" or (durham not (carolina* or nc)) or ("durham's" not (carolina* or nc)) or ely or "ely's" or exeter or "exeter's" or gloucester or "gloucester's" or hereford or "hereford's" or hull or "hull's" or lancaster or "lancaster's" or leeds* or leicester or "leicester's" or (lincoln not nebraska*) or ("lincoln's" not nebraska*) or (liverpool not (new south wales* or nsw)) or ("liverpool's" not (new south wales* or nsw)) or ((london not (ontario* or ont or toronto*)) or ("london's" not (ontario* or ont or toronto*)) or manchester or "manchester's" or (newcastle not (new south wales* or nsw)) or ("newcastle's" not (new south wales* or nsw)) or norwich or "norwich's" or nottingham or "nottingham's" or oxford or "oxford's" or peterborough or "peterborough's" or plymouth or "plymouth's" or portsmouth or "portsmouth's" or preston or "preston's" or ripon or "ripon's" or salford or "salford's" or salisbury or "salisbury's" or sheffield or "sheffield's" or southampton or "southampton's" or st albans or stoke or "stoke's" or sunderland or "sunderland's" or truro or "truro's" or wakefield or "wakefield's" or wells or westminster or "westminster's" or winchester or "winchester's" or wolverhampton or "wolverhampton's" or (worcester not (massachusetts* or boston* or harvard*)) or ("worcester's" not (massachuse tts* or boston* or harvard*)) or (york not ("new york*" or ny or ontario* or ont or toronto*)) or ("york's" not ("new york*" or ny or ontario* or ont or toronto*)))))

- S45 TI ((armagh or "armagh's" or belfast or "belfast's" or lisburn or "lisburn's" or londonderry or "londonderry's" or derry or "derry's" or newry or "newry's")) OR AB ((armagh or "armagh's" or belfast or "belfast's" or lisburn or "lisburn's" or londonderry or "londonderry's" or derry or "derry's" or newry or "newry's")) OR AF ((armagh or "armagh's" or belfast or "belfast's" or lisburn or "lisburn's" or londonderry or "londonderry's" or derry or "derry's" or newry or "newry's"))
- S44 TI ((aberdeen or "aberdeen's" or dundee or "dundee's" or edinburgh or "edinburgh's" or glasgow or "glasgow's" or inverness or (perth not australia*) or ("perth's" not australia*) or stirling or "stirling's")) OR AB ((aberdeen or "aberdeen's" or dundee or "dundee's" or edinburgh or "edinburgh's" or glasgow or "glasgow's" or inverness or (perth not australia*) or ("perth's" not australia*) or stirling or "stirling's")) OR AF ((aberdeen or "aberdeen's" or dundee or "dundee's" or edinburgh or "edinburgh's" or glasgow or "glasgow's" or inverness or (perth not australia*) or ("perth's" not australia*) or stirling or "stirling's"))
- S43 TI ((bangor or "bangor's" or cardiff or "cardiff's" or newport or "newport's " or st asaph or "st asaph's" or st davids or swansea or "swansea's")) OR AB ((bangor or "bangor's" or cardiff or "cardiff's" or newport or "newport's " or st asaph or "st asaph's" or st davids or swansea or "swansea's")) OR AF ((bangor or "bangor's" or cardiff or "cardiff's" or newport or "newport's " or st asaph or "st asaph's" or st davids or swansea or "swansea's"))
- S42 TI ((gb or "g.b." or britain* or (british* not "british columbia") or uk or "u.k." or united kingdom* or (england* not "new england") or northern ireland* or northern irish* or scotland* or scottish* or ((wales or "south wales") not "new south wales") or welsh*)) OR AB ((gb or "g.b." or britain* or (british* not "british columbia") or uk or "u.k." or united kingdom* or (england* not "new england") or northern ireland* or northern irish* or scotland* or scottish* or ((wales or "south wales") not "new south wales") or welsh*)) OR AF ((gb or "g.b." or britain* or (british* not "british columbia") or uk or "u.k." or united kingdom* or (england* not "new england") or northern ireland* or northern irish* or scotland* or scottish* or ((wales or "south wales") not "new south wales") or welsh*))
- S41 TI ((english not ((published or publication* or translat* or written or language* or speak* or literature or citation*) N5 english))) OR AB ((english not ((published or publication* or translat* or written or language* or speak* or literature or citation*) N5 english))) OR AF ((english not ((published or publication* or translat* or written or language* or speak* or literature or citation*) N5 english)))
- S40 TI ((national health service* or nhs*)) OR AB ((national health service* or nhs*)) OR AF ((national health service* or nhs*))
- S39 (MH "United Kingdom+")
- S38 S37 Limiters - Clinical Queries: Review - High Specificity
- S37 S18 AND S22 AND S35 Limiters - Published Date: 19900101-20181231; English Language

- S36 S18 AND S22 AND S35
- S35 S23 OR S24 OR S25 OR S26 OR S27 OR S28 OR S29 OR S30
OR S31 OR S32 OR S33 OR S34
- S34 TI intervention? OR AB intervention?
- S33 TI (((timed or fixed or booked or extended or screening) N3
appointment?)) OR AB (((timed or fixed or booked or extended or
screening) N3 appointment?)) OR TI (((improv* or increase* or
enhanc* or promot*) N5 access*)) OR AB (((improv* or increase*
or enhanc* or promot*) N5 access*)) OR TI (("out of hour?" or
extended hour? or evening? or weekend? or week-end? or
saturday? or sunday?)) OR AB (("out of hour?" or extended hour?
or evening? or weekend? or week-end? or saturday? or sunday?))
OR TI ((travel* or transport)) OR AB ((travel* or transport)) OR TI
(("baby number?" or "number for babies" or nn4b or n4b)) OR AB (("baby number?" or "number for babies" or nn4b or n4b))
- S32 TI ((self-sampl* or self-test* or self-collect* or home-sampl* or
home-test* or home-collect*)) OR AB ((self-sampl* or self-test* or
self-collect* or home-sampl* or home-test* or home-collect*)) OR TI
((direct mail* or pre-addressed envelope* or pre-addressed
packag* or free post* or prepaid post* or pre-paid post*)) OR AB ((direct mail* or pre-addressed envelope* or pre-addressed packag*
or free post* or prepaid post* or pre-paid post*))
- S31 TI ((dvd? or audiovisual* or audio-visual* or video* or screencast*
or podcast* or stream*)) OR AB ((dvd? or audiovisual* or audio-
visual* or video* or screencast* or podcast* or stream*)) OR TI ((social media or twitter or facebook* or instagram or youtube)) OR
AB ((social media or twitter or facebook* or instagram or youtube))
- S30 TI ((translator? or interpreter? or chaperone? or multilingual* or
multi-lingual or bilingual or bi-lingual or ((multiple or many or
several) N2 language?))) OR AB ((translator? or interpreter? or
chaperone? or multilingual* or multi-lingual or bilingual or bi-lingual
or ((multiple or many or several) N2 language?))) OR TI ((((community N3 (nurse? or aide? or advocate? or volunteer?)) or
lay health) and (enhanc* or promot* or educat*))) OR AB ((((community N3 (nurse? or aide? or advocate? or volunteer?)) or
lay health) and (enhanc* or promot* or educat*))) OR TI ((cultural*
N2 (sensitiv* or adapt* or chang* or appropriat*))) OR AB ((cultural*
N2 (sensitiv* or adapt* or chang* or appropriat*)))
- S29 TI ((information* N3 (material? or tool? or sheet?))) OR AB ((information* N3 (material? or tool? or sheet?))) OR TI ((leaflet? or
pamphlet? or booklet? or book let?)) OR AB ((leaflet? or
pamphlet? or booklet? or book let?)) OR TI (((translat* or pict* or
photo*) N5 (material? or tool? or information))) OR AB (((translat*
or pict* or photo*) N5 (material? or tool? or information)))

- S28 TI (((personali* or tailor* or target*) N5 (mail* or communicat* campaign? or initiative? or strateg* or program*))) OR AB (((personali* or tailor* or target*) N5 (mail* or communicat* campaign? or initiative? or strateg* or program*))) OR TI (((promotion* or publicity or education* or media) N5 (campaign? or initiative? or strateg* or program*))) OR AB (((promotion* or publicity or education* or media) N5 (campaign? or initiative? or strateg* or program*))) OR TI (((promotion* or publicity or education*) N5 (material? or tool? or information))) OR AB (((promotion* or publicity or education*) N5 (material? or tool? or information)))
- S27 TI ((health N2 (promotion or education or communication))) OR AB ((health N2 (promotion or education or communication))) OR TI (((patient or public or parent? or parental) N2 education)) OR AB (((patient or public or parent? or parental) N2 education)) OR TI (((community or population or public) N2 engagement)) OR AB (((community or population or public) N2 engagement))
- S26 (MH "Persuasive Communication") OR (MH "Health Education") OR (MH "Patient Education+") OR (MH "Health Promotion")
- S25 TI incentiv* OR TI (((financial or economic or cash) N3 (incentive? or transfer?)) or reimburs* or re-imburs* or voucher? or token? or reward*)) OR AB (((financial or economic or cash) N3 (incentive? or transfer?)) or reimburs* or re-imburs* or voucher? or token? or reward*))
- S24 TI ((reminder* or alert? or automated messag*)) OR AB ((reminder* or alert? or automated messag*)) OR TI ((letter? N2 (invitation? or invite?))) OR AB ((letter? N2 (invitation? or invite?))) OR TI (((personal* or tailor* or target*) N2 (letter? or invit*))) OR AB (((personal* or tailor* or target*) N2 (letter? or invit*))) OR TI (((provider? or professional? or physican? or doctor? or general practi* or midwi* or community) N5 (letter? or endorse* or recommend*))) OR AB (((provider? or professional? or physican? or doctor? or general practi* or midwi* or community) N5 (letter? or endorse* or recommend*))) OR TI ((text messag* or sms or telephone call* or phone call* or call centre? or call center? or helpline? or hotline?)) OR AB ((text messag* or sms or telephone call* or phone call* or call centre? or call center? or helpline? or hotline?))
- S23 (MH "Reminder Systems") OR (MH "Patient Navigation")
- S22 S19 OR S20 OR S21

- S21 TI (((improv* or increase* or enhanc* or promot*) N5 (participat* or "use" or uptake or utili?ation or utili?ed or attendance? or attending))) OR AB (((improv* or increase* or enhanc* or promot*) N5 (participat* or "use" or uptake or utili?ation or utili?ed or attendance? or attending))) OR TI ((screening N5 (participat* or "use" or uptake or utili?ation or utili?ed or access* or attendance? or attending))) OR AB ((screening N5 (participat* or "use" or uptake or utili?ation or utili?ed or access* or attendance? or attending))) OR TI (((improv* or increase* or enhanc* or promot*) N5 screening)) OR AB (((improv* or increase* or enhanc* or promot*) N5 screening)) OR TI (((improv* or increase* or enhanc* or promot*) and (participat* or "use" or uptake or utili?ation or utili?ed or attendance? or attending)).) OR TI ((screening and (participat* or "use" or uptake or utili?ation or utili?ed or access* or attendance? or attending))) OR TI (((improv* or increase* or enhanc* or promot*) and screening))
- S20 (MH "Patient Compliance")
- S19 (MH "Consumer Participation")
- S18 S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8 OR S9 OR S10 OR S11 OR S12 OR S15 OR S16 OR S17
- S17 TI ((((diabetes or diabetic) N3 (eye? or retin* or macul*)) and (screening or test*))) OR AB ((((diabetes or diabetic) N3 (eye? or retin* or macul*)) and (screening or test*))) OR TI (((pregnan* or antenatal or ante-natal) and (hiv or human immunodeficiency virus or hepatitis or hepb or hep-b or syphilis or sexually transmitted infection* or sexually transmitted disease*) and screening)) OR AB (((pregnan* or antenatal or ante-natal) and (hiv or human immunodeficiency virus or hepatitis or hepb or hep-b or syphilis or sexually transmitted infection* or sexually transmitted disease*) and screening)) OR TI (((sickle cell or thalass?emia? or h?emoglobinopath*) and screening)) OR AB (((sickle cell or thalass?emia? or h?emoglobinopath*) and screening)) OR TI (((aaa or ((aorta or aortic) N2 aneurysm?)) and screening)) OR AB (((aaa or ((aorta or aortic) N2 aneurysm?)) and screening))
- S16 TI (((down* syndrome or edward* syndrome or patau* syndrome or trisomy or t13 or t18) N5 (screening* or test*))) OR AB (((down* syndrome or edward* syndrome or patau* syndrome or trisomy or t13 or t18) N5 (screening* or test*))) OR TI (((chorionic vill* N2 (sampl* or test* or screen*)) or amniocentesis or nuchal translucenc*)) OR AB (((chorionic vill* N2 (sampl* or test* or screen*)) or amniocentesis or nuchal translucenc*)) OR TI (((anencephal* or spina bifida or (cleft adj (lip? or palate?)) or (diaphragm* adj hernia?) or gastroschisis or exomphalos or ((renal or kidney) adj agenesis) or skeletal dysplasia) and screening)) OR AB (((anencephal* or spina bifida or (cleft adj (lip? or palate?)) or (diaphragm* adj hernia?) or gastroschisis or exomphalos or ((renal or kidney) adj agenesis) or skeletal dysplasia) and screening))
- S15 S13 AND S14

- S14 TI ((ultrasound* or ultra-sound or ultrasonogra* or ultra-sonogra* or sonogra* or echocardiogra* or screen* or scan* or structural assessment* or structural survey*)) OR AB ((ultrasound* or ultra-sound or ultrasonogra* or ultra-sonogra* or sonogra* or echocardiogra* or screen* or scan* or structural assessment* or structural survey*))
- S13 TI (((fetal or foetal or fetus or foetus) adj (anatomy or defect? or malformation? or abnormalit* or anomal* or syndrome?))) OR AB (((fetal or foetal or fetus or foetus) adj (anatomy or defect? or malformation? or abnormalit* or anomal* or syndrome?))) OR TI (((congenital* or cardiac or heart) N2 (defect? or malformation? or abnormalit* or anomal*))) OR AB (((congenital* or cardiac or heart) N2 (defect? or malformation? or abnormalit* or anomal*))) OR TI ((structural N2 (defect? or malformation? or abnormalit* or anomal*))) OR AB ((structural N2 (defect? or malformation? or abnormalit* or anomal*))) OR TI (((non-chromosomal or nonchromosomal) N2 (defect? or malformation? or abnormalit* or anomal*))) OR AB (((non-chromosomal or nonchromosomal) N2 (defect? or malformation? or abnormalit* or anomal*)))
- S12 TI ((automated otoacoustic emission* or aoae or automated auditory brainstem response or aabr) OR AB ((automated otoacoustic emission* or aoae or automated auditory brainstem response or aabr) OR TI (((hip dysplasia or ((congenital or newborn* or neonat*) N2 (cataract* or hypothyroid*)) or cryptorchidism or cystic fibrosis or phenylketonuria or dehydrogenase deficiency or maple syrup urine disease or acid?emia or aciduria or homocystinuria or pku or scd or cf or cht or mcadd or hcu or iva or gai or ((gene* or carrier*) N3 h?emoglobin)) and screening)) OR AB (((hip dysplasia or ((congenital or newborn* or neonat*) N2 (cataract* or hypothyroid*)) or cryptorchidism or cystic fibrosis or phenylketonuria or dehydrogenase deficiency or maple syrup urine disease or acid?emia or aciduria or homocystinuria or pku or scd or cf or cht or mcadd or hcu or iva or gai or ((gene* or carrier*) N3 h?emoglobin)) and screening))
- S11 TI (((neonat* or newborn or pregnan* or prenatal or antenatal or pre-natal or ante-natal or fetal or foetal or fetus or foetus) N5 screening)) OR AB (((neonat* or newborn or pregnan* or prenatal or antenatal or pre-natal or ante-natal or fetal or foetal or fetus or foetus) N5 screening)) OR TI (("newborn and infant physical exam*" or NIPE)) OR AB (("newborn and infant physical exam*" or NIPE)) OR TI (("newborn blood spot" or "neonatal blood spot")) OR AB (("newborn blood spot" or "neonatal blood spot")) OR TI ((((neonat* or newborn) N3 hearing) and (screening or test*))) OR AB ((((neonat* or newborn) N3 hearing) and (screening or test*)))
- S10 (MH "Neonatal Assessment")
- S9 (MH "Prenatal Diagnosis+")
- S8 (MH "Abnormalities+") AND TX screening

- S7 TI (((chest N2 (x-ray* or xray* or imag* or radiogra*)) and screening)) OR AB (((chest N2 (x-ray* or xray* or imag* or radiogra*)) and screening)) OR TI (((pap or papanicolaou or smear) N2 (test* or screen*))) OR AB (((pap or papanicolaou or smear) N2 (test* or screen*))) OR TI (("carcinoma in situ" or cervical intraepithelial neoplas* or cervical intra-epithelial neoplas* or cin2 or cin3 or cervical dyskaryosis or cervical dyplasia*) N5 screening*)) OR AB (("carcinoma in situ" or cervical intraepithelial neoplas* or cervical intra-epithelial neoplas* or cin2 or cin3 or cervical dyskaryosis or cervical dyplasia*) N5 screening*))
- S6 TI ((f?ecal occult blood test* or f?ecal immunochemical test* or f?ecal immuno-chemical test*)) OR AB ((f?ecal occult blood test* or f?ecal immunochemical test* or f?ecal immuno-chemical test*)) OR TI (((sigmoidoscop* or colonoscop* or flexisig* or bowel scop*) and screening)) OR AB (((sigmoidoscop* or colonoscop* or flexisig* or bowel scop*) and screening)) OR TI mammogra* OR AB mammogra* OR TI (((chest adj2 (x-ray* or xray* or imag* or radiogra*)) and screening)) OR AB (((chest adj2 (x-ray* or xray* or imag* or radiogra*)) and screening))
- S5 TI (((bowel or colon* or colorectal or colo-rectal or breast or cervical or cervix) N5 screening)) OR AB (((bowel or colon* or colorectal or colo-rectal or breast or cervical or cervix) N5 screening)) OR TI (cancer N5 screening) OR AB (cancer N5 screening)
- S4 TI (((nhs or national) N5 screening programme*)) OR AB (((nhs or national) N5 screening programme*)) OR TI (((population or mass) N3 screening)) OR AB (((population or mass) N3 screening))
- S3 (MH "Cervical Smears+")
- S2 (MH "Mammography")
- S1 (MH "Health Screening") OR (MH "Cancer Screening") OR (MH "Neonatal Assessment") OR (MH "Vision Screening")

5.1.5 HMIC

Search date: 10 October 2019

# ▲	Searches	Results
1	exp screening/	5438
2	mammography/	495
3	cytodiagnosis/ or vaginal smears/	9
4	((nhs or national) adj5 screening programme*).ti,ab.	485
5	((population or mass) adj3 screening).ti,ab.	388
6	((bowel or colon* or colorectal or colo-rectal or breast or cervical or cervix) adj5 screening).ti,ab.	1996
7	(cancer adj5 screening).ti,ab.	1494
8	(f?ecal occult blood test* or f?ecal immunochemical test* or f?ecal immuno-chemical test*).ti,ab.	116
9	((sigmoidoscop* or colonoscop* or flexisig* or bowel scop*) and	126

	screening).ti,ab.	
10	mammogra*.ti,ab.	658
11	((chest adj2 (x-ray* or xray* or imag* or radiogra*)) and screening).ti,ab.	44
12	((vagina* or cervi* or pap*) adj2 smear*).ti,ab.	264
13	((pap or papanicolaou or smear) adj2 (test* or screen*)).ti,ab.	199
14	("carcinoma in situ" or cervical intraepithelial neoplas* or cervical intra-epithelial neoplas* or cin2 or cin3 or cervical dyskaryosis or cervical dyplasia*) adj5 screening*).ti,ab.	15
15	exp congenital disorders/ and screening.mp.	172
16	prenatal diagnosis/	104
17	((neonat* or newborn or pregnan* or prenatal or antenatal or pre-natal or ante-natal or fetal or foetal or fetus or foetus) adj5 screening).ti,ab.	534
18	("newborn and infant physical exam*" or NIPE).ti,ab.	8
19	("newborn blood spot" or "neonatal blood spot").ti,ab.	13
20	((neonat* or newborn) adj3 hearing) and (screening or test*).ti,ab.	40
21	(automated otoacoustic emission* or aoae or automated auditory brainstem response or aabr).ti,ab.	3
22	((hip dysplasia or ((congenital or newborn* or neonat*) adj2 (cataract* or hypothyroid*)) or cryptorchidism or cystic fibrosis or phenylketonuria or dehydrogenase deficiency or maple syrup urine disease or acid?emia or aciduria or homocystinuria or pku or scd or cf or cht or mcadd or hcu or iva or gai or ((gene* or carrier*) adj3 h?emoglobin)) and screening).ti,ab.	126
23	((fetal or foetal or fetus or foetus) adj (anatomy or defect? or malformation? or abnormalit* or anomal* or syndrome?)).ti,ab.	72
24	((congenital* or cardiac or heart) adj2 (defect? or malformation? or abnormalit* or anomal*)).ti,ab.	307
25	(structural adj2 (defect? or malformation? or abnormalit* or anomal*)).ti,ab.	28
26	((non-chromosomal or nonchromosomal) adj2 (defect? or malformation? or abnormalit* or anomal*)).ti,ab.	11
27	23 or 24 or 25 or 26	382
28	(ultrasound* or ultra-sound or ultrasonogra* or ultra-sonogra* or sonogra* or echocardiogra* or screen* or scan* or structural assessment* or structural survey*).ti,ab.	10254
29	27 and 28	83
30	((down* syndrome or edward* syndrome or patau* syndrome or trisomy or t13 or t18) adj5 (screening* or test*)).ti,ab.	91
31	((chorionic vill* adj2 (sampl* or test* or screen*)) or amniocentesis or nuchal translucenc*).ti,ab.	37
32	((anencephal* or spina bifida or (cleft adj (lip? or palate?)) or (diaphragm* adj hernia?) or gastroschisis or exomphalos or ((renal or kidney) adj agenesis) or skeletal dysplasia) and screening).ti,ab.	11
33	((diabetes or diabetic) adj3 (eye? or retin* or macul*)) and (screening or test*).ti,ab.	81
34	((pregnan* or antenatal or ante-natal) and (hiv or human immunodeficiency virus or hepatitis or hep b or hep-b or syphilis or	105

	sexually transmitted infection* or sexually transmitted disease*) and screening).ti,ab.	
35	((sickle cell or thalass?emia? or h?emoglobinopath*) and screening).ti,ab.	94
36	((aaa or ((aorta or aortic) adj2 aneurysm?)) and screening).ti,ab.	41
37	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36	6393
38	community participation/ or public participation/	1299
39	patient participation/	1708
40	patient compliance/ or patient attendance/ or patient concordance/ or patient non compliance/	717
41	((improv* or increase* or enhanc* or promot*) adj5 (participat* or "use" or uptake or utili?ation or utili?ed or attendance? or attending)).ti,ab.	4880
42	(screening adj5 (participat* or "use" or uptake or utili?ation or utili?ed or access* or attendance? or attending)).ti,ab.	941
43	((improv* or increase* or enhanc* or promot*) adj5 screening).ti,ab.	741
44	((improv* or increase* or enhanc* or promot*) and (participat* or "use" or uptake or utili?ation or utili?ed or attendance? or attending)).ti.	613
45	(screening and (participat* or "use" or uptake or utili?ation or utili?ed or access* or attendance? or attending)).ti.	326
46	((improv* or increase* or enhanc* or promot*) and screening).ti.	156
47	38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46	9596
48	exp email/	226
49	(reminder* or alert? or automated messag*).ti,ab.	1435
50	(letter? adj2 (invitation? or invite?)).ti,ab.	82
51	((personal* or tailor* or target*) adj2 (letter? or invit*)).ti,ab.	56
52	((provider? or professional? or physican? or doctor? or general practi* or midwi* or community) adj5 (letter? or endorse* or recommend*)).ti,ab.	979
53	(text messag* or sms or telephone call* or phone call* or call centre? or call center? or helpline? or hotline?).ti,ab.	871
54	incentiv*.ti. or (((financial or economic or cash) adj3 (incentive? or transfer?)) or reimburs* or re-imburs* or voucher? or token? or reward*).ti,ab.	3686
55	health promotion/ or health education/ or consumer health information/ or health campaigns/	11852
56	(health adj2 (promotion or education or communication)).ti,ab.	7075
57	((patient or public or parent? or parental) adj2 education).ti,ab.	987
58	((community or population or public) adj2 engagement).ti,ab.	278
59	((personali* or tailor* or target*) adj5 (mail* or communicat* campaign? or initiative? or strateg* or program*)).ti,ab.	1159
60	((promotion* or publicity or education* or media) adj5 (campaign? or initiative? or strateg* or program*)).ti,ab.	3888
61	((promotion* or publicity or education*) adj5 (material? or tool? or information)).ti,ab.	1241
62	(information* adj3 (material? or tool? or sheet?)).ti,ab.	426

63	(leaflet? or pamphlet? or booklet? or book let?).ti,ab.	2523
64	((translat* or pict* or photo*) adj5 (material? or tool? or information)).ti,ab.	131
65	(translator? or interpreter? or chaperone? or multilingual* or multi-lingual or bilingual or bi-lingual or ((multiple or many or several) adj2 language?)).ti,ab.	433
66	((community adj3 (nurse? or aide? or advocate? or volunteer?)) or lay health) and (enhanc* or promot* or educat*).ti,ab.	485
67	(cultural* adj2 (sensitiv* or adapt* or chang* or appropriat*)).ti,ab.	717
68	(dvd? or audiovisual* or audio-visual* or video* or screencast* or podcast* or stream*).ti,ab.	2334
69	(social media or twitter or facebook* or instagram or youtube).ti,ab.	216
70	(self-sampl* or self-test* or self-collect* or home-sampl* or home-test* or home-collect*).ti,ab.	85
71	(direct mail* or pre-addressed envelope* or pre-addressed packag* or free post* or prepaid post* or pre-paid post*).ti,ab.	14
72	((timed or fixed or booked or extended or screening) adj3 appointment?).ti,ab.	97
73	((improv* or increase* or enhanc* or promot*) adj5 access*).ti,ab.	2461
74	("out of hour?" or extended hour? or evening? or weekend? or week-end? or saturday? or sunday?).ti,ab.	1914
75	(travel* or transport).ti,ab.	2980
76	("baby number?" or "number for babies" or nn4b or n4b).ti,ab.	24
77	intervention?.ti,ab.	18788
78	48 or 49 or 50 or 51 or 52 or 53 or 54 or 55 or 56 or 57 or 58 or 59 or 60 or 61 or 62 or 63 or 64 or 65 or 66 or 67 or 68 or 69 or 70 or 71 or 72 or 73 or 74 or 75 or 76 or 77	52824
79	37 and 47 and 78	575
80	limit 79 to yr="1990 -Current"	549

5.1.6 Cochrane

Search date: 10 October 2019

ID	Search
#1	MeSH descriptor: [Early Detection of Cancer] explode all trees
#2	MeSH descriptor: [Mass Screening] explode all trees
#3	MeSH descriptor: [Mammography] explode all trees
#4	MeSH descriptor: [Vaginal Smears] explode all trees
#5	MeSH descriptor: [Papanicolaou Test] explode all trees
#6	(screening):ti,ab,kw
#7	((("fecal occult blood test*" or "fecal immunochemical test*" or "fecal immuno-chemical test*")):ti,ab,kw OR ((("faecal occult blood test*" or "faecal immunochemical test*" or "faecal immuno-chemical test*")):ti,ab,kw

- #8 (mammogra*):ti,ab,kw
- #9 (((vagina* or cervi* or pap*) NEAR2 smear*)):ti,ab,kw OR (((pap or papanicolaou or smear) NEAR2 (test* or screen*)):ti,ab,kw
- #10 MeSH descriptor: [Prenatal Diagnosis] explode all trees
- #11 MeSH descriptor: [Neonatal Screening] explode all trees
- #12 (("newborn and infant physical exam*" or NIPE)):ti,ab,kw
- #13 (("newborn blood spot" or "neonatal blood spot")):ti,ab,kw
- #14 (((neonat* or newborn) NEAR3 hearing) and test*)):ti,ab,kw
- #15 (("automated otoacoustic emission*" or aoae or "automated auditory brainstem response" or aabr)):ti,ab,kw
- #16 (((fetal or foetal or fetus or foetus) NEXT (anatomy or defect* or malformation* or abnormalit* or anomal* or syndrome*)):ti,ab,kw OR (((congenital* or cardiac or heart) NEAR2 (defect* or malformation* or abnormalit* or anomal*)):ti,ab,kw OR ((structural NEAR2 (defect* or malformation* or abnormalit* or anomal*)):ti,ab,kw OR (((non-chromosomal or nonchromosomal) NEAR2 (defect* or malformation* or abnormalit* or anomal*)):ti,ab,kw
- #17 (ultrasound* or ultra-sound or ultrasonogra* or ultra-sonogra* or sonogra* or echocardiogra* or screen* or scan* or "structural assessment*" or structural survey*)):ti,ab,kw
- #18 #16 and #17
- #19 (((("down syndrome" or "downs syndrome" or "edward syndrome" or "edwards syndrome" or "patau syndrome" or "pataus syndrome" or trisomy or t13 or t18) NEAR test*)):ti,ab,kw
- #20 ((chorionic vill* NEAR2 (sampl* or test* or screen*)):ti,ab,kw
- #21 (amniocentesis or "nuchal translucenc*"):ti,ab,kw
- #22 (((diabetes or diabetic) NEAR3 (eye or eyes or retin* or macul*)) and test*)):ti,ab,kw
- #23 MeSH descriptor: [Vision Screening] explode all trees
- #24 #1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10 or #11 or #12 or #13 or #14 or #15
- #25 #18 or #19 or #21 or #23 or #24
- #26 MeSH descriptor: [Patient Participation] this term only
- #27 MeSH descriptor: [Patient Compliance] this term only
- #28 (((improv* or increase* or enhanc* or promot*) NEAR (participat* or "use" or uptake or utili* or attendance* or attending))):ti,ab,kw OR ((screening NEAR (participat* or "use" or uptake or utili* or attendance* or attending))):ti,ab,kw OR (((improv* or increase* or enhanc* or promot*) NEAR screening)):ti,ab,kw
- #29 (((improv* or increase* or enhanc* or promot*) and (participat* or "use" or uptake or utili* or attendance* or attending)):ti OR ((screening and (participat* or "use" or uptake or utili* or attendance* or attending)):ti OR (((improv* or increase* or enhanc* or promot*) and screening)):ti
- #30 #26 or #27 or #28 or #29
- #31 #25 and #30