UK National Screening Committee

Screening for dental disease in children aged 9 years and under

External review against programme appraisal criteria for the UK National Screening Committee

Version: Final

Author: Costello Medical

Date: October 2019

The UK National Screening Committee secretariat is hosted by Public Health England.

About the UK National Screening Committee (UK NSC)

The UK NSC advises ministers and the NHS in the 4 UK countries about all aspects of population screening and supports implementation of screening programmes. Conditions are reviewed against evidence review criteria according to the UK NSC's evidence review process.

Read a complete list of UK NSC recommendations.

UK NSC, Floor 5, Wellington House, 133-155 Waterloo Road, London, SE1 8UG
www.gov.uk/uknsc
Twitter: @PHE_Screening Blog: phescreening.blog.gov.uk

For queries relating to this document, please contact: phe.screeninghelpdesk@nhs.net

Published November 2019

Contents

Plain English summary

Dental diseases and conditions such as tooth decay, gum disease and trauma can affect children. If left untreated, they can have a harmful impact on the child's general health. The most common type of dental disease is dental caries, commonly known as tooth decay or cavities. It is now less common for children to have tooth decay, but it is still a health problem. If dentists detect tooth decay or other diseases early they can be stopped or even reversed. However, when dental diseases are not treated they can cause pain and even lead to tooth loss.

Screening all children for dental disease is not currently recommended by the UK NSC. This is because a high-quality study published in 2006, found that school dental screening was not effective in reducing untreated dental caries or increasing attendance at a dentist, compared with no screening. Another review was done in 2013 and no new studies were found. This means that all the evidence we have says that screening is not effective in reducing the level of dental caries.

This current review was done to check if there were any new studies published between 2012 and 2018 that compared screening for dental disease to no screening. Such studies would need to show that screening can reduce levels of untreated dental disease for the review to suggest changing the recommendation of "no screening" to "screening".

The review found that there are no new studies comparing screening to no screening for dental disease in children aged 9 and under. Because of this, the recommendation of "no screening" for dental disease should not be changed.

Executive summary

Purpose of the review

The review aimed to assess whether there is any evidence on the effectiveness of screening for dental disease in children aged 9 years and younger that would support a change in the current recommendation not to screen for dental disease.

Background

Dental diseases and other oral conditions have a substantial impact on general health. The most common form of dental disease in children is dental caries. Prevalence rates of dental caries in UK children have fallen; however, it remains a significant public health problem that can lead to pain and tooth loss, if untreated. Further, significant inequalities remain, with children from lower income families being disproportionately affected with higher levels of obvious or extensive decay.[1] While association between deprivation and caries outcomes weakened over time, an increased trend was observed in the association between carious teeth and deprivation in 5 year olds.[2]

Focus of the review

The review looked for new evidence of effectiveness of screening for dental disease in children aged 9 years and younger since the previous UK NSC review. This was assessed through UK NSC screening criterion 11. Studies considered relevant were randomised controlled trials (RCTs) and systematic reviews of these in the first instance, or comparative prospective or retrospective observational studies in case no RCTs were identified, comparing screening to no screening and reporting levels of untreated dental disease in children aged 9 and younger. Studies had to be conducted in the UK or countries with populations similar to the UK and published since October 2012, when the previous UK NSC review was conducted.

Recommendation under review

Screening for dental disease in children aged 9 years and younger is currently not recommended in the UK. This is based on the 2006 UK NSC recommendation following the publication of a cluster RCT which concluded that ‘School dental screening delivered according to 3 different models was not effective at reducing levels of active caries and increasing attendance in the population under study’.[3] The UK NSC recommendation was reaffirmed in 2014, following a 2013 UK NSC review which concluded that the current

recommendation should be maintained as no new evidence was found that screening children for dental disease between the ages of 6 and 9 by the school dental service in England is effective; that screening test for dental caries had a low sensitivity; that there was evidence that measures to prevent dental caries work if accessed; and that the rate of dental caries in children was falling.[4]

Findings and gaps in the evidence of this review

This updated review found no relevant studies that report on the effectiveness of screening for dental disease in children aged 9 years and younger.

Recommendations on screening

This updated UK NSC review found no evidence to support a change to the current recommendation on screening for dental disease in children aged 6 to 9 years.

It was highlighted by the previous review that children at risk of dental disease due to social factors or in high-risk groups due to medical conditions or learning disabilities may require special consideration; however, effectiveness of testing for dental disease in these high-risk groups was beyond the scope of this review, so the volume of available evidence is unclear.

Limitations

Based on the lack of evidence identified to support a population screening programme in the 2013 UK NSC review, this review did not look to identify further evidence on the accuracy of the screening test, inequalities in the distribution of the condition, the risk factors involved or the effectiveness of prevention or treatment strategies.

The review followed rapid review methodology. As such, it was limited to peer-reviewed literature published in English since October 2012 that was available freely or accessible at the Cambridge University Library. Articles were screened by a single reviewer, with a second reviewer verifying all inclusion and 10% of exclusion decisions. It is expected that the use of this pragmatic steps should have minimised the risk of errors.

Evidence uncertainties

The small volume of available evidence indicates that screening for dental disease is not effective in reducing levels of untreated dental disease; otherwise, there is a paucity of

evidence on how school dental screening affects oral health. Further work to measure long-term effects of screening is indicated.

Introduction and approach

Background

Dental diseases and other oral conditions have a substantial impact on general health. The most common form of dental disease in children is dental caries (tooth decay), which is a preventable disease that can occur at any age from the appearance of teeth after around 6 months of age. A number of biological and behavioural risk factors influence the occurrence of caries, and early detection can stop or even reverse the course of the disease.[5] Untreated, dental caries can cause pain and tooth loss, outcomes that can be prevented if treated early. Trauma to the incisors in primary teeth can interfere with odontogenesis of permanent teeth, with early diagnosis indicated to prevent complications.[6, 7]

Prevalence rates of tooth decay in UK children have fallen; however, caries remains a significant health problem.[8] The 2013 UK NSC review noted that prevalence of caries is disproportionate between certain groups, including those from economically deprived backgrounds, those who have a poor diet, or those with poor oral hygiene. There is evidence that children from lower income families are disproportionately affected with higher levels of obvious or extensive decay.[9] While association between deprivation and caries outcomes weakened over time, an increased trend was observed in the association between carious teeth and deprivation in 5 year olds.[2] Due to possible short-term and long-term consequences of dental disease, preventive strategies are important.

Current policy context and previous reviews

Screening for dental disease is currently not recommended by the UK NSC. In 2006, the UK NSC recommended discontinuing screening for dental disease in children aged 6 to 9. At that time the school dental inspection had been a statutory requirement (since 1918). Its purpose was to identify children who needed further examination and treatment, and to advise parents/carers of what action they should take. The UK NSC's 2006 recommendation was based on a UK-based randomised controlled trial (RCT) examining the effect of school dental screening on untreated dental disease and attendance at the dentist at the population level.[3] The study concluded that school dental screening programmes, delivered through any of 3 methods tested, were not effective in reducing active dental caries levels or increasing dental attendance rates at the public health level; across the four arms of the study, no significant differences were found in reductions from baseline in prevalence of untreated caries or oral sepsis, gross plaque, calculus or trauma to incisor teeth.[3]

In 2013, a subsequent UK NSC review concluded that the recommendation should be upheld, i.e. it did not recommend screening for dental caries in children aged 6 to 9 years.

This recommendation was based on:

- The lack of evidence that screening 6 to 9 year old children for dental disease by the school dental service in England is effective
- The evidence of preventive measures being effective
- The falling rate of dental caries in children
- The low sensitivity of the screening test
- A number of children being introduced to new systems delivering general dental services, including promotion of prevention, case finding, and the provision of clear pathways for treatment

The 2013 UK NSC review did suggest that children at risk of dental disease due to social factors or in high-risk groups due to medical conditions or education disabilities may require special consideration.

Objectives

Following on from the conclusions in the 2013 review, this update assessed the quality and volume of evidence published since October 2012 (when the searches for the previous review were conducted).

The UK NSC reviews focused on evidence for screening for dental caries, but the scope of the current rapid review was broadened to include all dental disease, to assess whether there is any evidence to support reconsidering the current recommendations on screening for dental disease in children aged 9 years and under. The review considered a single question, detailed in Table 1, which relates to one criterion set out by the UK NSC for assessing the suitability of a screening programme.

As shown in Table 1, the objective of this review was to synthesise the evidence on whether screening children aged 9 and under for dental disease is effective at specifically reducing the level of untreated dental disease in the population. Dental attendance has also been used to investigate the effectiveness of school dental screening. However, it was not an outcome of interest for the current review because it is considered to be a surrogate outcome for dental health. Attendance at the dentist may not have resulted in receiving the required care and improvement in dental health; a large RCT found that only 53% of children who attended a dentist for caries in permanent teeth received treatment for this condition.[3]

Table 1. Key questions for the evidence summary, and relationship to UK NSC screening criteria

	Criterion	Key questions	Studies Included
	THE SCREENING PROGRAMME		
11	There should be evidence from high quality randomised controlled trials that the screening programme is effective in reducing mortality or morbidity. Where screening is aimed solely at providing information to allow the person being screened to make an "informed choice" (eg. Down's syndrome, cystic fibrosis carrier screening), there must be evidence from high quality trials that the test accurately measures risk. The information that is provided about the test and its outcome must be of value and readily understood by the individual being screened.	Is there evidence that screening children aged 9 and under for dental disease is effective at reducing the level of untreated dental disease in the population?	0

Methods

The current review was conducted by Costello Medical in collaboration with the UK NSC, in keeping with the UK NSC evidence review process. The search strategy is presented in Appendix 1, and the methods of study selection are detailed below.

Eligibility for inclusion in the review

The following review process was followed:

1. The title of each record was screened by one reviewer to exclude any obviously irrelevant articles. Where there was any uncertainty about the relevance of the article, it was included at this stage to ensure that all potentially relevant studies were captured.
2. Each abstract was reviewed against the inclusion/exclusion criteria by one reviewer. Where the applicability of the inclusion criteria was unclear, the article was included at this stage in order to ensure that all potentially relevant studies were captured. A second independent reviewer provided input in cases of uncertainty, and validated all included articles and 10% of excluded articles. Any disagreements were resolved by discussion until a consensus was met.
3. Full-text articles required for the full-text review stage were acquired.
4. Each full-text article was reviewed against the inclusion/exclusion criteria by 1 reviewer. A second independent reviewer provided input in cases of uncertainty, and validated all included articles and 10% of excluded articles. Any disagreements were resolved by discussion until a consensus was met.

Eligibility criteria are presented in Table 2 below.

Table 2. Inclusion and exclusion criteria

Domain	Inclusion criteria	Exclusion criteria
Population	Children aged 9 and under	• Adults or older children • Mixed populations, where results are not presented separately for children aged 9 and under
Target condition	• Untreated dental caries in primary or permanent teeth • Oral sepsis • Gross plaque • Calculus • Dental trauma to incisor teeth • Gingivitis or periodontitis	-
Intervention	Any method of screening	Interventions to treat dental caries
Comparator	No screening	Comparisons between different screening methods
Outcomes	• Level of untreated dental disease	Dental attendance or any other outcomes
Study design	• RCTs • Systematic reviews of RCTs • Comparative prospective studies, if no RCTs are identified • Comparative retrospective studies, if no RCTs or prospective studies are identified	• Non-comparative studies, such as single-arm trials • Case reports • Case series • Case control studies • Narrative reviews • Non peer-reviewed literature, such as reports or conference abstracts
Setting	• UK populations • Populations analogous to the UK, if no UK studies are identified	Studies in resource-limited settings
Other considerations	Electronic publication from October 2012 onwards	Published before October 2012

Appraisal for quality/risk of bias tool

It was pre-specified that the quality of randomised controlled trials (RCTs), non-randomised interventional studies and observational studies would be assessed using a modified version of the Downs and Black checklist.[10]

Databases searched

The following electronic databases were searched:

- MEDLINE, including MEDLINE In-Process, MEDLINE Daily and Epub Ahead of Print
- Embase
- The Cochrane Library, including the following:
    - Cochrane Database of Systematic Reviews (CDSR)
    - Cochrane Central Register of Controlled Trials (CENTRAL)
    - Database of Abstracts of Reviews of Effects (DARE)

Searches were conducted on 9th July 2018. Full details of the searches, including the search strategy for each database, are presented in Appendix 1.

Question level synthesis

Criterion 11

There should be evidence from high quality randomised controlled trials that the screening programme is effective in reducing mortality or morbidity. Where screening is aimed solely at providing information to allow the person being screened to make an "informed choice" (such as Down's syndrome or cystic fibrosis carrier screening), there must be evidence from high quality trials that the test accurately measures risk. The information that is provided about the test and its outcome must be of value and readily understood by the individual being screened.

Question 1 – Is there evidence that screening children aged 9 and under for dental disease is effective at reducing the level of untreated dental disease in the population?

The 2006 UK NSC recommendation was that population screening for dental disease among children aged 6 to 9 years should be discontinued. This followed the findings of an RCT published in 2006 showing that screening for dental caries, delivered according to 3 different methods, was not effective in reducing active caries or in increasing attendance at the dentist. The 2013 review looked for evidence of the effectiveness of screening for dental caries specifically, and found no further studies of screening that refute the conclusions of the 2006 RCT.

Eligibility for inclusion in the review

This review searched for RCTs and cohort studies, as well as systematic literature reviews (SLRs) of these study types, reporting on the effectiveness of screening for dental disease in children aged 9 and under compared with no screening. Relevant outcomes were a reduction in the level of untreated dental disease. Studies from the UK and countries with cohorts analogous to the UK were eligible.

Description of the evidence

Database searches yielded 2,919 results; however, no relevant studies were identified.

Two SLRs, Arora 2017 and Joury 2017,[11, 12] were identified during this review. The scope of both reviews was closely aligned with the scope of the current rapid review in that the authors examined evidence for school dental screening programmes for oral health. The reviews were not included in the current rapid review as all of the studies included were

published prior to 2012, with the exception of one study published in 2014. However, this study was conducted in India, which is not considered a setting where the level of dental health is expected to be similar to that in the UK, its main outcome measure was dental attendance and it did not report levels of untreated dental disease. Furthermore, no meta-analyses were conducted in these SLRs on the outcome measure of interest for this review. Neither SLR found a significant difference between screening and no screening in reducing dental caries or other oral health conditions.[12] Further, Arora 2017 looked for evidence of the effect of screening on the proportion of children with untreated caries and other untreated oral health needs, and concluded that no trials reported this outcome.[11]

0contains a full PRISMA flow diagram (Figure 1).

Summary of findings

No relevant studies were identified.

Summary of findings relevant to criterion 11: Criterion not met

As no studies were found, there is no new evidence showing that screening for dental disease is effective; thus, criterion 11 is not met.

Review summary

Conclusions and implications for policy

This updated review found no RCT evidence to support a change to the current recommendation on screening for dental disease in 6 to 9 year old children.

The reason for this is that no relevant studies were identified that report on the effectiveness of screening for dental disease, and evidence from previous reviews suggests that screening for dental disease is not effective in reducing levels of dental disease.

The 2013 UK NSC review concluded that the screening test for dental caries was not sensitive and that preventative rather than diagnostic measures should be implemented. Further, it was suggested that efforts should be increased in areas with high levels of dental decay and among groups of children at high-risk, such as those with special needs, medical conditions or in more socially deprived populations.

Based on the lack of any evidence identified on the effectiveness of screening in the 2013 review, this review did not look to identify further evidence on the accuracy of the screening test, the inequalities in the distribution of the condition, the risk factors involved or the effectiveness of prevention or treatment strategies.

The prior UK NSC reviews focused on evidence for screening for dental caries, but the scope of the current rapid review was broadened to include other dental disease and conditions. The evidence searches were limited to records published since 2012, when the previous review was conducted. To ensure that no pre-2012 evidence supporting screening for dental disease was missed, two published SLRs looking at screening for dental disease without date limits were hand-searched.[11, 12] These SLRs found no significant differences between screening and no screening in levels of dental disease or prevalence of dental caries, but did not find evidence on the effect of screening on untreated dental disease, supporting the conclusions of the current review.

Limitations

This section considers limitations of the review methodology. Limitations of the evidence and evidence gaps are discussed in the section above.

This rapid review was conducted in line with the UK NSC requirements for evidence summaries, as described at https://www.gov.uk/government/publications/uk-nsc-evidence-

review-process/appendix-f-requirements-for-uk-nsc-evidence-summaries. All items on the UK NSC Reporting Checklist for Evidence Summaries have been addressed in this report. A summary of the checklist, along with the page or pages where each item can be found in this report, is presented in Table 6 in Appendix 3.

Searches of multiple databases were conducted (see Appendix 1). Database search terms were restricted by study design and intervention (screening). However, it is unlikely that major important studies were missed, as a published and well validated filter was used to limit by study design and searches were supplemented with SLR reference list searches.[13, 14]

Included publication types

This review only included peer-reviewed journal publications, and excluded publications that were not peer-reviewed and grey literature. This may have led to the exclusion of relevant evidence. However, this is an accepted methodological adjustment for a rapid review and is unlikely to miss any pivotal studies.

Language

Only studies published in English were included. Given that this review was focusing on evidence relevant to the UK setting, this limitation should not have led to the exclusion of any pivotal studies.

Review methodology

The title of each article identified through the database searches was screened by a single reviewer, without validation from a second reviewer. It is unlikely that any records were missed as only the titles that were obviously irrelevant to the narrow eligibility criteria of the review question were excluded at this stage.

Abstracts and full texts were reviewed by a single reviewer in the first instance, with a second reviewer examining all included articles, 10% of excluded articles, and any articles where there was uncertainty about inclusion. This pragmatic strategy should have minimised the risk of errors.

Appendix 1 — Search strategy

Electronic databases

The search strategy included searches of the databases shown in Table 2.

Table 2. Summary of electronic database searches and dates

Database	Platform	Searched on date	Date range of search
MEDLINE, MEDLINE In-Process, MEDLINE Daily, Epub Ahead of Print	Ovid SP	9th July 2018	1946 to July 05, 2018
Embase	Ovid SP	9th July 2018	1974 to 2018 July 06
The Cochrane Library, including: - Cochrane Database of Systematic Reviews (CDSR) - Cochrane Central Register of Controlled Trials (CENTRAL) - Database of Abstracts of Reviews of Effects (DARE)	Wiley Online	9th July 2018	CDSR: Issue 7 of 12, July 2018 DARE: Issue 2 of 4, April 2015 CENTRAL: Issue 6 of 12, June 2018

Search terms

Search terms included combinations of free text and subject headings (Medical Subject Headings [MeSH] for MEDLINE, and Emtree terms for Embase), grouped into the following categories:

- population: children, infants, schoolchildren
- intervention: screening for dental disease
- study designs: RCTs, prospective and retrospective observational studies
- exclusion terms: animal studies, irrelevant publication types

Search terms for MEDLINE, MEDLINE In-Process, MEDLINE Daily, Epub Ahead of Print and Embase are shown in Table 3, and search terms for the Cochrane Library databases are shown in Table 4.

Table 3. Search strategy for MEDLINE, MEDLINE In-Process, MEDLINE Daily, Epub Ahead of Print and Embase

Term Group	#	Search terms	Results
Children	1	exp school/ or (school$ or preschool$).ti,ab.	896161
	2	exp child/ or exp infant/ or (child$ or schoolchild$ or juvenile$ or boy$ or girl$ or p?ediatric$ or student$ or infant$ or infancy).ti,ab.	6630104
	3	1 or 2	7033050

Screening for dental disease	4	exp mass screening/ and (exp stomatognathic diseases/ or exp mouth disease/)	5003
	5	((dental or oral or mouth or dentist$) adj5 (screen$ or exam$ or assess$ or certif$ or check$ or inspect$)).ti,ab.	78019
	6	((caries or carious or (decay adj1 (tooth or teeth)) or (trauma$ adj1 (tooth or teeth)) or malocclusion or "gum health" or gingivitis or "oral hygiene" or cavity or cavities) adj5 (screen$ or exam$ or assess$ or certif$ or check$ or inspect$)).ti,ab.	18650
	7	Dental health surveys/	4061
	8	or/4-7	96563
Study designs	9	exp Randomized Controlled Trials as Topic/	267282
	10	exp Randomized Controlled Trial/	972551
	11	exp Random Allocation/	173724
	12	exp Randomization/	173724
	13	exp Double Blind Method/	297860
	14	exp Single Blind Method/	57100
	15	exp Cross-over Procedure/	56014
	16	((singl$ or doubl$ or treb$ or tripl$) adj (blind$3 or mask$3)).tw.	372624
	17	exp Clinical Trial/	2134204
	18	Clinical trial, phase ii.pt.	29332
	19	Clinical trial, phase iii.pt.	13881
	20	Clinical trial, phase iv.pt.	1548
	21	exp Phase 2 Clinical Trial/ or exp Clinical trial, phase II/	96637
	22	exp Phase 3 Clinical Trial/ or exp Clinical trial, phase III/	48592
	23	exp Phase 4 Clinical Trial/ or exp Clinical trial, phase IV/	4562
	24	Controlled clinical trial.pt.	92483
	25	Randomized controlled trial.pt.	463484
	26	Multicenter study.pt.	235451
	27	Clinical trial.pt.	510949
	28	Comparative study.pt.	1801893
	29	exp Clinical Trials as Topic/	586991
	30	trial$.ti.	583980
	31	(clinical adj trial$).tw.	748215
	32	(allocated adj2 random$).tw.	61318
	33	random allocation.tw.	3302
	34	random assignment.tw.	4718
	35	randomi?ed.ti,ab.	1291912
	36	Randomi?ed controlled trial$.tw.	324012
	37	randomi?ation.tw.	78540
	38	randomly.ti,ab.	677344
	39	Allocated randomly.tw.	4416
	40	RCT.tw.	45341
	41	prospective$.tw.	1517957
	42	exp Placebos/	361375
	43	placebo$.tw.	472638
	44	Epidemiologic studies/	217592

	45	exp cohort studies/	2139436
	46	Clinical study/	155763
	47	Family study/	25174
	48	Longitudinal study/	230624
	49	Retrospective study/	1360701
	50	Prospective study/	934271
	51	Cohort analysis/	609691
	52	(cohort adj (study or studies)).tw.	382169
	53	Cohort analy$.tw.	16029
	54	(Follow up adj (study or studies)).tw.	103835
	55	(observational adj (study or studies)).tw.	209924
	56	Longitudinal$.tw.	511417
	57	Retrospective$.tw.	1588806
	58	(epidemiologic$ adj (study or studies)).tw.	173761
	59	or/9-58	9861434
Combined	60	3 and 8 and 59	10343
Exclusion terms	61	animals/ not humans/	5790558
	62	(letter or historical article or case reports or editorial or note or comment or conference abstract or conference review).pt.	9047278
	63	(case stud$ or case report$).ti.	582729
	64	letter/ or historical article/ or case studies/	4049659
	65	or/61-64	15096658
	66	60 not 65	9601
Date limit	67	limit 66 to yr="2012-Current"	3558
De-duplicate	68	remove duplicates from 67	2279

Table 4. Search strategy for the Cochrane Library Databases (Searched via the Wiley Online platform)

Term Group	#	Search terms	Results
Children	#1	[mh school] or (school* or preschool*):ti,ab	21217
	#2	[mh child] or [mh infant] or (child* or schoolchild* or juvenile or boy* or girl* or p?ediatric* or student* or infant* or infancy):ti,ab	141541
	#3	#1 or #2	146923
Screening for dental disease	#4	[mh "mass screening"] and ([mh "stomatognathic diseases"] or [mh "mouth disease"])	60
	#5	((dental or oral or mouth or dentist*) near/5 (screen* or exam* or assess* or certif* or check* or inspect*)):ti,ab	4436
	#6	((caries or carious or (decay near/1 (tooth or teeth)) or (trauma* near/1 (tooth or teeth)) or malocclusion or "gum health" or gingivitis or "oral hygiene" or cavity or cavities) near/5 (screen* or exam* or assess* or certif* or check* or inspect*)):ti,ab	855
	#7	[mh "Dental health surveys"]	2999
	#8	{or #4-#7}	7532
Combined	#9	#3 and #8	1606
Limits	#10	#9	640

Term Group	#	Search terms	Results
		Publication Year from 2012 to 2018, in Cochrane Reviews (Reviews only), Other Reviews and Trials	

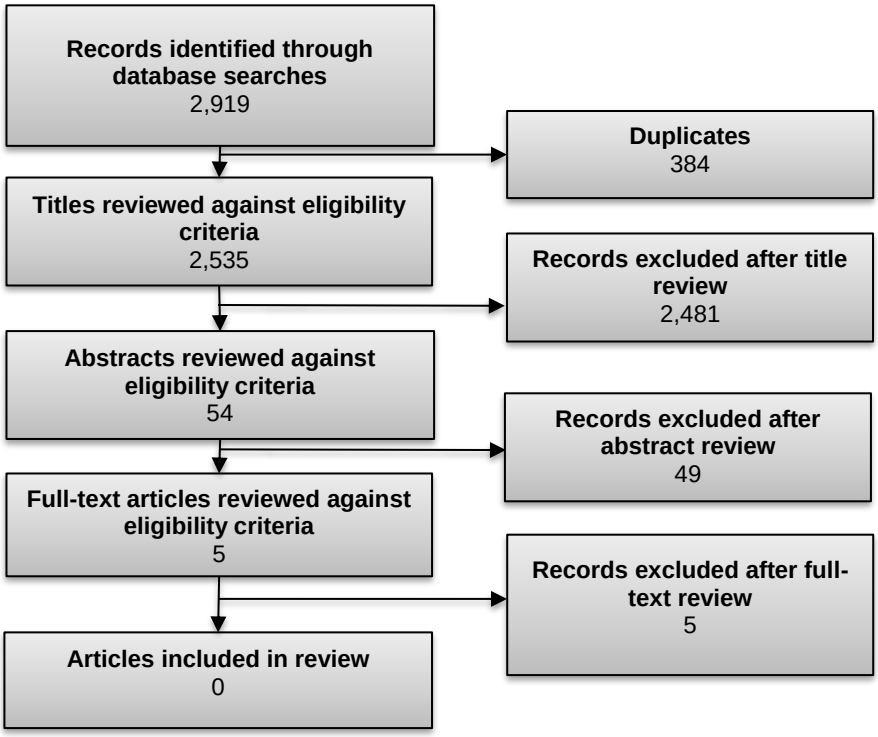
Results were imported into EndNote and de-duplicated.

Appendix 2 — Included and excluded studies

PRISMA flowchart

Figure 1 summarises the volume of publications included and excluded at each stage of the review. No publications were judged to be relevant to the review question and considered for extraction. Publications that were excluded after the review of full-text articles are detailed below.

Figure 1. Summary of publications included and excluded at each stage of the review



Publications excluded after review of full-text articles

Of the 5 publications included after the review of titles and abstracts, all 5 were ultimately judged not to be relevant to this review. These publications, along with reasons for exclusion, are listed in Table 5.

Table 5. Publications excluded after review of full-text articles

Reference	Reason for exclusion
Anonymous. Systematic review and meta-analysis of randomised controlled trials on the effectiveness of school-based dental screening versus no screening on improving oral health in children. British Dental Journal. 2017;222(9):675.	Publication is a commentary
Arora A, Khattri S, Ismail NM, Kumbargere Nagraj S, Prashanti E. School dental screening programmes for oral health. Cochrane Database of Systematic Reviews. 2017;2017 (12) (no pagination)(CD012595).	SLR, all relevant studies were published before 2012
Denison E, Lidal IB, Strauman GH. Knowledge Centre for the Health Services at The Norwegian Institute of Public Health (NIPH). 2015;NIPH Systematic Reviews:Executive Summaries.	SLR, all relevant studies were published before 2012
Jackson EB. Outcomes of a Quality Improvement Project Examining Early Childhood Caries and Improving Identification of At Risk Patients in a Pediatric Medical Home Setting. Journal of pediatric nursing. 2015;30(4):543-9.	No relevant outcomes reported
Joury E, Bernabe E, Sabbah W, Nakhleh K, Gurusamy K. Systematic review and meta-analysis of randomised controlled trials on the effectiveness of school-based dental screening versus no screening on improving oral health in children. Journal of dentistry. 2017;58:1-10.	SLR, all relevant studies were published before 2012

Appendix 3 – UK NSC reporting checklist for evidence summaries

All items on the UK NSC Reporting Checklist for Evidence Summaries have been addressed in this report. A summary of the checklist, along with the page or pages where each item can be found in this report, is presented in Table 6.

Table 6. UK NSC reporting checklist for evidence summaries

	Section	Item	Page no.
1.	TITLE AND SUMMARIES		
1.1	Title sheet	Identify the review as a UK NSC evidence summary.	Title page
1.2	Plain English summary	Plain English description of the executive summary.	4
1.3	Executive summary	Structured overview of the whole report. To include: the purpose/aim of the review; background; previous recommendations; findings and gaps in the evidence; recommendations on the screening that can or cannot be made on the basis of the review.	5-6
2.	INTRODUCTION AND APPROACH		
2.1	Background and objectives	Background – Current policy context and rationale for the current review – for example, reference to details of previous reviews, basis for current recommendation, recommendations made, gaps identified, drivers for new reviews Objectives – What are the questions the current evidence summary intends to answer? – statement of the key questions for the current evidence summary, criteria they address, and number of studies included per question, description of the overall results of the literature search. Method – briefly outline the rapid review methods used.	7-10

	Section	Item	Page no.
2.2	Eligibility for inclusion in the review	State all criteria for inclusion and exclusion of studies to the review clearly (PICO, dates, language, study type, publication type, publication status etc.) To be decided *a priori*.	11
2.3	Appraisal for quality/risk of bias tool	Details of tool/checklist used to assess quality, e.g. QUADAS 2, CASP, SIGN, AMSTAR.	12
3.	SEARCH STRATEGY AND STUDY SELECTION (FOR EACH KEY QUESTION)		
3.1	Databases/ sources searched	Give details of all databases searched (including platform/interface and coverage dates) and date of final search.	12
3.2	Search strategy and results	Present the full search strategy for at least one database (usually a version of Medline), including limits and search filters if used. Provide details of the total number of (results from each database searched), number of duplicates removed, and the final number of unique records to consider for inclusion.	17–21
3.3	Study selection	State the process for selecting studies – inclusion and exclusion criteria, number of studies screened by title/abstract and full text, number of reviewers, any cross checking carried out.	10
4.	STUDY LEVEL REPORTING OF RESULTS (FOR EACH KEY QUESTION)		
4.1	Study level reporting, results and risk of bias assessment	For each study, produce a table that includes the full citation and a summary of the data relevant to the question (for example, study size, PICO, follow-up period, outcomes reported, statistical analyses etc.). Provide a simple summary of key measures, effect estimates and confidence intervals for each study where available. For each study, present the results of any assessment of quality/risk of bias.	Study level reporting: NA Quality assessment: NA
5.	QUESTION LEVEL SYNTHESIS		
5.1	Description of the evidence	For each question, give numbers of studies screened, assessed for eligibility, and included in the review, with summary reasons for exclusion.	13-14

	Section	Item	Page no.
5.2	Combining and presenting the findings	Provide a balanced discussion of the body of evidence which avoids over reliance on one study or set of studies. Consideration of four components should inform the reviewer's judgement on whether the criterion is 'met', 'not met' or 'uncertain': quantity; quality; applicability and consistency.	14
5.3	Summary of findings	Provide a description of the evidence reviewed and included for each question, with reference to their eligibility for inclusion. Summarise the main findings including the quality/risk of bias issues for each question. Have the criteria addressed been 'met', 'not met' or 'uncertain'?	14
6.	REVIEW SUMMARY		
6.1	Conclusions and implications for policy	Do findings indicate whether screening should be recommended? Is further work warranted? Are there gaps in the evidence highlighted by the review?	15
6.2	Limitations	Discuss limitations of the available evidence and of the review methodology if relevant.	15-16

References

1. Public Health England. National Dental Epidemiology Programme for England: oral health survey of five-year-old children 2017 A report on the inequalities found in prevalence and severity of dental decay 2018.
2. Masood M, Mnatzaganian G, Baker SR. Inequalities in dental caries in children within the UK: Have there been changes over time? Community dentistry and oral epidemiology 2019;47:71-77.
3. Milsom K, Blinkhorn A, Worthington H, et al. The effectiveness of school dental screening: a cluster-randomized control trial. Journal of dental research 2006;85:924-928.
4. UK National Screening Committee. Screening for Dental Caries in Children aged 6 to 9 years. External review against programme appraisal criteria for the UK National Screening Committee (UK NSC). 2013.
5. Selwitz RH, Ismail AI, Pitts NB. Dental caries. The Lancet 2007;369:51-59.
6. Paoloni V, Pavoni C, Mucedero M, et al. Post-traumatic impaction of maxillary incisors: diagnosis and treatment. Annali di stomatologia 2013;4:174-183.
7. Lenzi MM, da Silva Fidalgo TK, Luiz RR, et al. Trauma in primary teeth and its effect on the development of permanent successors: a controlled study. Acta Odontologica Scandinavica 2019;77:76-81.
8. Holmes R, Porter J, Vernazza C, et al. Child Dental Health Survey 2013, England, Wales and Northern Ireland. Health and Social Care Information Center 2015.
9. National statistics. Children's Dental Health Survey 2013. Report 4:The Burden of Dental Disease in Children: England, Wales and Northern Ireland. 2013.
10. Downs SH, Black N. The feasibility of creating a checklist for the assessment of the methodological quality both of randomised and non-randomised studies of health care interventions. Journal of Epidemiology and Community Health 1998;52:377-384.
11. Arora A, Khattri S, Ismail NM, et al. School dental screening programmes for oral health. Cochrane Database Syst Rev 2017;12:Cd012595.
12. Joury E, Bernabe E, Sabbah W, et al. Systematic review and meta-analysis of randomised controlled trials on the effectiveness of school-based dental screening versus no screening on improving oral health in children. Journal of dentistry 2017;58:1-10.
13. Scottish Intercollegiate Guidelines Network. Search Filters (Observational Studies).
14. Scottish Intercollegiate Guidelines Network. Search Filters (Randomised Controlled Trials).