National Institute for Health and Care Excellence

Draft for Consultation

Tobacco: preventing uptake, promoting quitting and treating dependence: update

[C] Evidence reviews for reducing proxy purchasing of tobacco
[D] Evidence reviews for reducing illicit supply of tobacco

NICE guideline <number>

Evidence reviews

June 2021

Draft for Consultation

These evidence reviews were developed by PH-IGD

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ISBN:

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Review questions

This evidence report covers two review questions, each with two parts:

C. Which interventions are effective and cost effective at reducing proxy purchasing of tobacco on behalf of children and young people, through engaging and educating retailers and the general public?

C. Do these interventions change perceptions of the social acceptability of proxy purchasing? In what way, and what aspects of interventions are perceived as having caused the change?

D. Which interventions are effective and cost effective at reducing the supply of illicit tobacco to children, young people and young adults, through engaging and educating retailers and the general public?

D. Do these interventions change perceptions of the social acceptability of supply of illicit tobacco? In what way, and what aspects of interventions are perceived as having caused the change?

Reducing proxy purchasing of tobacco

Review question

Which interventions are effective and cost effective at reducing proxy purchasing[a] of tobacco on behalf of children and young people, through engaging and educating retailers and the general public?

Do these interventions change perceptions of the social acceptability of proxy purchasing? In what way, and what aspects of interventions are perceived as having caused the change?

Introduction

Despite changes to legislation to regulate the sales of tobacco, 75% of secondary school pupils that smoke report that friends, and in particular older friends (67%), bought cigarettes for them. 53% reported that strangers bought cigarettes for them (NHS Digital Statistics on Smoking, England – 2016). It is important to identify whether measures to engage and educate retailers and the general public can reduce proxy purchasing of cigarettes on behalf of children and young people and prevent them from taking up smoking.

PICO table

The following table summarises the protocol for this review.

Table 1: PICO inclusion criteria for interventions to reduce proxy purchasing of tobacco on behalf of children and young people

Population	Children (5-11 years old) and young people (12-17 years old).
Interventions	Interventions that have a stated and measured aim of educating or engaging with retailers, families and friends of children, children themselves, or the general public to prevent the proxy purchasing of tobacco on behalf of children and young people. Retailers must be those who legally sell tobacco products, and may be related to retailers in physical premises, or online retailers.
Comparator	Other active interventions, including: • Other education or engagement interventions. • Enforcement or legislative interventions, e.g. licensing, pricing interventions etc. • Awareness raising interventions. • Interventions combining education or engagement with other elements. No intervention
Outcomes	Effectiveness studies (review question C.i.) *Critical outcomes* • Proxy sales: relative risk of a sale being a proxy sale; relative risk of sales people making proxy sales. • Children and young people's self-report of how they obtain their tobacco. • Adults' self-report of proxy purchase behaviour

[a] Although proxy purchasing is generally defined as an adult purchasing tobacco, cigarette papers or a relevant nicotine product on behalf of a person under the age of 18, here we are interested only in the proxy purchasing of tobacco products.

	Important outcomes • Tobacco use status at longest available follow-up. Measured as relative risk of using tobacco. Where biochemically validated measures are available, these are preferred to self-reported measures. • Number of proxy purchase offences recorded. • Health-related quality of life (using validated patient-report measures, for example EQ-5D). • Adverse or unintended (positive or negative) effects Qualitative studies (review question C.ii.) • Whether interventions change participant perceptions of the social acceptability of proxy purchasing. • How social acceptability of proxy purchasing has changed and what is perceived as having caused the change. Participants may be retailers, families and friends of children and young people, children and young people themselves, or the general public.

Methods and process

This evidence review was developed using the methods and process described in Developing NICE guidelines: the manual. Methods specific to this review question are described in the review protocol in Appendix A.

Declarations of interest were recorded according to NICE's 2018 conflicts of interest policy.

See the methods chapter for additional information on methods for the Tobacco guideline.

To mitigate for unit of allocation error, studies should correct for clustering. If no adjustment has been carried out, the review team adjusted for clustering by inflating the standard errors as described in the Cochrane manual. To do this, an intracluster correlation coefficient (ICC) is required. For this review, an ICC of 0.075 was used, as found for class level interventions for smoking prevention behaviour[b].

Identification of public health evidence

Included studies

A joint search was used to identify relevant studies for review question C (proxy purchasing) and review question D (illicit supply) combined.

The main search was done in October 2018 for studies published since 1998 and in the English language. A top-up was done for studies about people aged 5-11 years. An additional top-up search of terms related to online sales was conducted in November 2018. Website searches were conducted in line with the protocol. A total of 6481 unique search results were identified for screening. Further details on the search strategy are available in Appendix B.

From the combined search results, 45 articles with potential to answer review questions C or D were ordered for full-text review. One before-and-after study with a control group cluster met the inclusion criteria for this review. A linked study with additional intervention details was also included but not extracted for effectiveness (see references). Table 2 summarises the included effectiveness study; see Appendix D for the full evidence table. No systematic

[b] M R Crone, S A Reijneveld, M C Willemsen et al., 2003. Prevention of smoking in adolescents with lower education: a school based intervention study. *Journal of Epidemiology and Community Health,* 57:675-680.

reviews directly matched the review criteria but those identified as relevant to the topic area based on title and abstract were retrieved and cross-checked to ensure inclusion of all relevant primary studies. There were no qualitative studies that met the population inclusion criteria for this review.

Excluded studies

Of the 45 articles with potential to answer review questions C or D, 44 articles were identified for consideration but were subsequently excluded from this review. See Appendix K for a full list of excluded studies and the reasons for exclusion.

Summary of public health studies included in the evidence review

Table 2: Summary of public health studies included in the evidence review

Study	Setting	Population	Intervention	Comparator	Outcome(s)
Gautam 2014 Cluster controlled B&A (supported by additional information on same study from Glover 2010)	New Zealand 4 urban 'intermediate schools' (11-13 year old students) in low socioeconomic deciles	Students at the school over 3 years, and parents of students. 3,770 parents and 2,250 students completed baseline survey.	'Keeping Kids Smokefree' Campaign including test purchasing, information and education campaigns, artwork competition.	No intervention	• Parents willingness to provide cigarettes to their children • Children's self-report of where they obtain their cigarettes.

See Appendix D for full evidence tables.

Synthesis and appraisal of public health evidence included in the evidence review

Data synthesis

Only one study was identified for inclusion in this review.

Evidence appraisal

- This review addresses an intervention question. Randomised controlled trial (RCT) evidence was therefore assessed using Cochrane's *Risk of Bias* 2.0 tool, and all other study designs using the *Risk of Bias in Non-Randomised Studies – of Interventions* (ROBINS-I) tool, according to the NICE Manual.
- All GRADE rating start at 'high' and are downgraded as appropriate.

See Appendix F for full GRADE tables.

See Methods document for details of rationale for GRADE judgements.

Table 3: Minimal Important Differences (MIDs) agreed

Review	Outcome	Importance	MID
C	Risk of a tobacco sale being a proxy sale	Critical	Statistical significance

Review	Outcome	Importance	MID
C	Sources of tobacco [proxy]	Critical	Statistical significance
C	Adult report of proxy purchase behaviour	Critical	Statistical significance
C	Smoking status	Important	Statistical significance
D	Sources of tobacco [illicit]	Critical	Statistical significance
D	Risk of a tobacco sale being illicit	Critical	Statistical significance
D	Smoking prevention	Important	Statistical significance

See Appendix F for GRADE tables.

Economic evidence

Included studies

A joint search was used to identify relevant studies for the cost effectiveness elements of review questions A (digital mass media and apps), B (cessation campaigns), C (proxy sales), D (illicit supply) and E (smokefree class competitions) combined. This search incorporated the search strategies of the original effectiveness searches plus the top-up searches and then applied an agreed cost effectiveness filter.

The joint systematic search was undertaken in January 2019 for studies published in the English language from 1998-29 January 2019. After removal of duplicates 3110 unique results were identified. A further 4 results were identified from other sources.

3,114 records were assessed against the eligibility criteria.

2,984 records were excluded based on information in the title and abstract. One reviewer assessed all of the records and a second reviewer blind-screened 10% of the records. The level of agreement between the two reviewers was 100%.

The full-text papers of 130 documents were retrieved and assessed and 0 studies were assessed as meeting the eligibility criteria for research questions C.i. or D.i. One reviewer assessed all of the full texts and a second reviewer blind-screened 10% of the records. The level of agreement between the two reviewers was 100%. For review questions C.i. and D.i. no studies were included.

Excluded studies

130 full text documents were excluded for these review questions. The documents and the reasons for their exclusion are listed in Appendix K – Excluded studies. Documents were excluded for the following reasons: ineligible intervention (n=76), ineligible outcomes (n=22), ineligible study design (n=18), ineligible patient population (n=13) and non-English language (n=1). The selection process is shown in Appendix G

Summary of studies included in the economic evidence review

No studies were included for review question C.i. or D.i..

Economic model

Due to the paucity and quality of effectiveness evidence these review questions were not prioritised for economic modelling.

Resource impact

No new recommendations were made, so no resource impact is expected.

Summary of the evidence

This table is a very high-level overview of the results presented in the GRADE tables. These results should not be considered apart from the GRADE tables, which contain more information about confidence in the evidence and limitations.

Table 4: Evidence summary

Outcome	Summary	Confidence	GRADE profile
Parents willing to provide cigarettes to their children	The intervention could not differentiate between comparators (Gautam 2014).	Very low	1
Children who smoke reporting parents as the main source of cigarettes	The intervention could not differentiate between comparators (Gautam 2014).	Very low	2

The committee's discussion of the evidence

Interpreting the evidence

The outcomes that matter most

The committee agreed that outcomes measuring the level of proxy purchasing behaviour were most important for this review. It was decided that smoking status outcomes would be considered important rather than critical because a change to smoking status would not necessarily be due to a change in proxy purchasing behaviours but could be via another mechanism.

Confidence in the evidence

The evidence base was very limited, with just one study identified for inclusion in the review. The included study was a (cluster) controlled before and after study with two schools in the intervention group and two schools in the control group (Gautam 2014). Both children and their parents from these schools were included in the study.

The overall confidence (judged using GRADE) in both outcomes of interest was very low, which was contributed to by several factors: The committee agreed that the study was at high risk of bias due to self-reported outcomes potentially being affected by social desirability bias, and there were high levels of attrition in the parent's outcome. Results were imprecise, in part due to small participant numbers, and were neither statistically significant nor meaningful according to the MIDs agreed with committee. Confidence intervals indicated potential for either harm or benefit of the intervention. The committee did discuss that the significantly lower socioeconomic status in the intervention group might have been expected to reduce beneficial outcomes in that group, however they did not feel that this increased confidence in the intervention. The committee agreed that the specific setting and sample of the study, which was primarily for indigenous populations in New Zealand, could not be directly applied to the context in which recommendations would be made.

In addition to the limited evidence, the committee expressed reluctance to recommend an intervention which could potentially be costly in a context where schools and local authorities (those who would have responsibility for implementing these interventions) are operating under budgetary restrictions, particularly when return on that investment is uncertain.

Benefits and harms

The committee noted that the results for parents' willingness to supply their children with cigarettes, and children reporting parents as their usual source of cigarettes were imprecise. The confidence intervals indicated potential for the campaign to have caused a positive or a negative effect. They also noted that even if the campaign was effective for reducing the risk of children having parents as their main source of cigarettes, this could simply have shifted to a different source (for example, friends, siblings, directly from retailers and so on). Benefits could therefore be unclear.

The committee agreed that there was evidence of no benefit of the intervention, the one included study suggested no effect. In addition, they noted that the intervention, and other school-based interventions, may have benefits for learning and educational outcomes.

Cost effectiveness and resource use

The review did not identify any cost-effectiveness studies and the committee considered the effectiveness evidence too limited to inform an economic analysis. In addition, the committee considered that resource impact of the intervention was likely to outweigh the benefits reported in the literature, although they acknowledged that more evidence could increase confidence in and precision of the results.

Other factors the committee took into account

The committee considered that the evidence was so uncertain and potential resource impact significant enough that expert testimony was not a priority for this review. The committee discussed whether research recommendations would be beneficial in this area. They agreed that with the changing prevalence of smoking and with the increasing restrictions on tobacco retail that this is not a current priority for research.

Recommendations supported by this evidence review

No recommendations were made from this evidence review.

Included study list

Gautam J., Glover M., Scragg R., Bullen C., 2014. Parental and retail supply of tobacco to minors: findings from a community-based social supply intervention study. *Health Policy,* 117, p120-127

Reducing the supply of illicit tobacco

Review question

Which interventions are effective and cost effective at reducing the supply of illicit tobacco to children, young people and young adults, through engaging and educating retailers and the general public?

Do these interventions change perceptions of the social acceptability of supply of illicit tobacco? In what way, and what aspects of interventions are perceived as having caused the change?

Introduction

This review aims to ascertain which interventions that attempt to engage and educate both retailers and the general public are effective at reducing supply of illicit tobacco to children, young people and young adults. As illicit tobacco supply may be concentrated in areas of deprivation, this is an important equality consideration.

Illicit tobacco includes brands with no legal market in the country of sale, genuine brands brought into the country and sold without duty being paid, or illegally manufactured tobacco made to look like recognised brands (Fresh, 2018 as part of the Keep it Out campaign; Illicit Tobacco Partnership).

PICO table

The following table summarises the protocol for this review

Table 5: PICO inclusion criteria for interventions to reduce supply of illicit tobacco to children, young people and young adults

Population	Children (5-11 years old), young people (12-17 years old) and young adults (19-24 years old)
Interventions	Interventions that have a stated and measured aim of educating or engaging with retailers and sellers of illicit tobacco, families and friends of children, children themselves, or the general public to prevent the supply of illicit tobacco to children, young people and young adults. Suppliers may be related to physical premises, or online settings.
Comparator	Other active interventions, including: • Other education or engagement interventions. • Enforcement or legislative interventions, e.g. licensing, pricing interventions etc. • Awareness raising interventions. • Interventions combining education or engagement with other elements. No intervention
Outcomes	Effectiveness studies (review question D.i.) *Critical outcomes* • Relative risk of a tobacco sale being a sale of illicit tobacco • Children and young people's self-report of how they obtain their tobacco

Important outcomes

- Tobacco use status at longest available follow-up. Measured as relative risk of using tobacco.

Where biochemically validated measures are available, these are preferred to self-reported measures.

- Health-related quality of life (using validated patient-report measures, for example EQ-5D).
- Adverse or unintended (positive or negative) effects

Qualitative studies (review question D.ii.)

- Whether interventions change participant perceptions of the social acceptability of illicit tobacco
- How social acceptability of illicit tobacco has changed and what is perceived as having caused the change.

Participants may be retailers; families and friends of children; young people and young adults; children, young people and young adults themselves; or the general public.

Methods and process

See methods section for RQ C.

Identification of public health evidence

Included studies

A joint search was used to identify relevant studies for review question C (proxy purchasing) and review question D (illicit supply) combined.

As for RQ C, the main search was done in October 2018 for studies published since 1998 and in the English language. A top-up was done for studies about people aged 5-11 years. An additional top-up search of terms related to online sales was conducted in November 2018. Website searches were conducted in line with the protocol. A total of 6481 unique search results were identified for screening. Further details on the search strategy are available in Appendix B.

From the combined search results, 45 articles with potential to answer review questions C or D were ordered for full-text review. However, no effectiveness or qualitative studies met the inclusion criteria for this review.

No systematic reviews directly matched the review criteria but those identified as relevant to the topic area based on title and abstract were retrieved and cross-checked to ensure inclusion of all relevant primary studies.

Excluded studies

Of the 45 articles with potential to answer review questions C or D, 44 articles were identified for consideration but were subsequently excluded from this review. See Appendix K for a full list of excluded studies and the reasons for exclusion.

Summary of public health studies included in the evidence review

No studies were identified for inclusion from either the database or website searches.

Economic evidence

Included studies

A joint search was used to identify relevant studies for the cost effectiveness elements of review questions A (digital mass media and apps), B (cessation campaigns), C (proxy sales), D (illicit supply) and E (smokefree class competitions) combined. This search incorporated the search strategies of the original effectiveness searches plus the top-up searches and then applied an agreed cost effectiveness filter.

3,114 records were assessed against the eligibility criteria.

2,984 records were excluded based on information in the title and abstract. One reviewer assessed all of the records and a second reviewer blind-screened 10% of the records. The level of agreement between the two reviewers was 100%.

The full-text papers of 130 documents were retrieved and assessed and 0 studies were assessed as meeting the eligibility criteria for research question C.i. or D.i. One reviewer assessed all of the full texts and a second reviewer blind-screened 10% of the records. The level of agreement between the two reviewers was 100%. For review questions C.i. and D.i. no studies were included.

Excluded studies

130 full text documents were excluded for these review questions. The documents and the reasons for their exclusion are listed in Appendix K – Excluded studies. Documents were excluded for the following reasons: ineligible intervention (n=76), ineligible outcomes (n=22), ineligible study design (n=18), ineligible patient population (n=13) and non-English language (n=1). The selection process is shown in Appendix G

Summary of studies included in the economic evidence review

No studies were included for review questions C.i. or D.i.

Economic model

Due to the paucity and quality of effectiveness evidence these review questions were not prioritised for economic modelling.

Resource impact

No new recommendations were made so no resource impact is expected.

The committee's discussion of the evidence

Interpreting the evidence

The outcomes that matter most

The committee agreed that outcomes measuring the supply of illicit tobacco were the most important outcomes to investigate for this review. It was decided that smoking status outcomes would be considered important rather than critical because a change to smoking status would not necessarily be due to a change in supply of illicit tobacco but could be via another mechanism.

The quality of the evidence

No evidence was identified for this review. The committee noted the absence of evidence on measures which aim to engage and educate but which don't use enforcement measures, which were outside of the scope of this guideline. They decided that it would not be appropriate for NICE to make recommendations solely about interventions to educate and engage, which could divert resources from other areas of practice based on stronger evidence.

Benefits and harms

Due to the lack of published evidence, benefits and harms of educating and engaging people to reduce the supply of illicit tobacco are unclear. The committee discussed whether research recommendations would be appropriate in this area. They agreed that further research in this area is not a current priority.

Cost effectiveness and resource use

No cost effectiveness evidence, or evidence on which to base judgements about resource use, was identified for this review.

Recommendations supported by this evidence review

No recommendations were made from this evidence review.

Appendices

Appendix A – Review protocols

Review protocol for reducing proxy purchasing

ID	Field (based on PRISMA-P	Content
I	Review question	2.1a. Which interventions are effective and cost effective at reducing proxy purchasing[3] of tobacco on behalf of children and young people, through engaging and educating retailers and the general public? 2.1b. Do these interventions change perceptions of the social acceptability of proxy purchasing? In what way, and what aspects of interventions are perceived as having caused the change?
II	Type of review question	Mixed methods
III	Objective of the review	Despite changes to legislation to regulate the sales of tobacco, 75% of secondary school pupils that smoke report that friends, and in particular older friends (67%), bought cigarettes for them. 53% reported that strangers bought cigarettes for them (NHS Digital Statistics on Smoking, England – 2016). It is important to identify whether measures to engage and educate retailers and the general public can reduce proxy purchasing of cigarettes on behalf of children and young people, and prevent them from taking up smoking.

[3] Although proxy purchasing is defined as an adult purchasing tobacco, cigarette papers or a relevant nicotine product on behalf of a person under the age of 18, here we are interested only in the proxy purchasing of tobacco products.

IV	Eligibility criteria – population/disease/condition/issue/domain	**Included**: Children and young people[4]. Studies will not be excluded on the basis of whether or not participants smoke[5]. **Excluded**: People aged 18 or over. **Included settings**: • Retail settings. • Community settings. • Schools
V	Eligibility criteria – intervention(s)/exposure(s)/prognostic factor(s)	**Included**: Interventions that have a stated and measured aim of educating or engaging with retailers, families and friends of children, children themselves, or the general public to prevent the proxy purchasing of tobacco on behalf of children and young people.

[4] For the purposes of this guidance, children are aged 5-11 and young people are 12-17. Young adults are 18-24 inclusive, and are not included in the population for this review as they may legally purchase their own cigarettes, and buying cigarettes for someone aged 18 or over is not an offence.

[5] 'Smoking' or 'smoking habitually' refers, unless specifically stated otherwise, to people who smoke weekly or more often. Smoking experimentally is defined as smoking less than weekly.

		Retailers must be those who legally sell tobacco products, and may operate in physical premises, or online. Interventions could include: • Education or engagement programmes for retailers through training, mass media campaigns etc. • Education or engagement programmes for the general public, families, or children and young people themselves through training, mass media campaigns etc. • Programmes may educate or engage about the law, proof of age schemes, regulation and law enforcement (including encouraging members of the community to help enforce the law) **Excluded**: Interventions which aim to inform family members and peers who smoke about the influence they exert on children and young people's choices about tobacco. Interventions which focus on enforcement measures such as new legal requirements or enforcement of existing legal requirements, or test purchasing. Interventions about national advertising changes. Interventions aiming to reduce the sale of legal tobacco products directly to children and young people, or to prevent the sale of illicit tobacco. Interventions to encourage or support children and young people to quit smoking.

VI	Eligibility criteria – comparator(s)/control or reference (gold) standard	**Included**: Other active interventions, including: • Other education or engagement interventions. • Enforcement or legislative interventions, e.g. licensing, pricing interventions etc. • Awareness raising interventions. • Interventions combining education or engagement with other elements. No intervention
VII	Outcomes and prioritisation	**Quantitative outcomes (2.1a)** <u>Critical outcomes</u> • Proxy sales: number of proxy sales, relative risk of a sale being a proxy sale; relative risk of sales people making proxy sales. • Children and young people's self-report of how they obtain their tobacco. • Adults' self-report of proxy purchase behaviour. Trials where interventions are allocated by cluster and analysis is at the individual level are vulnerable to unit of analysis error. To mitigate for this, studies should correct for clustering. If no adjustment has been carried out, the review team will adjust the effect estimates by inflating standard errors, as described in the Cochrane manual.

		Important outcomes • Tobacco use status at longest available follow-up. Measured as relative risk of using tobacco. Where biochemically validated measures are available, these will be preferred to self-reported measures. • Attitude towards proxy purchasing (only extracted if another outcome reported, as a potential mediator of the effect) • Number of proxy purchase offences recorded. • Health-related quality of life (using validated patient-report measures, for example EQ-5D). • Adverse or unintended (positive or negative) effects **Qualitative outcomes (2.1b)** Do eligible interventions change perceptions (of retailers, families and friends of children, children themselves, or the general public) of the social acceptability of proxy purchasing? In what way, and what aspects of interventions are perceived as having caused the change? **Cost/resource use associated with the intervention** The following outcomes will be extracted in reviews of the health economic evidence, where available:

		• cost per quality-adjusted life year • cost per unit of effect • net benefit • net present value • cost/resource impact or use associated with the intervention or its components
VIII	Eligibility criteria – study design	**Included study designs**: • Systematic reviews of randomised controlled trials (RCTs) • RCTs (including cluster RCTs) • Non-randomised controlled trials • Controlled before and after studies • Interrupted time series <u>Qualitative studies:</u> • Focus groups, interview-based studies or surveys with open-ended responses. Must be related to an eligible intervention. <u>Economic studies</u>: • Cost-utility (cost per QALY)

		• Cost benefit (i.e. net benefit) • Cost-effectiveness (Cost per unit of effect) • Cost minimization • Cost-consequence **Excluded study designs**: • Cohort studies • Cross-sectional surveys • Correlation studies • Case control studies
IX	Other inclusion exclusion criteria	**Studies** Although direct sales of tobacco to children was covered under PH14, proxy purchasing was not. This is a new review question for this update. **Exclusion criteria** Only papers published in the English language will be included. Only studies carried out in OECD countries will be included (for effectiveness data) and in the UK (for qualitative data).

		Only studies published in 1998 onwards will be included. Only full published studies (not protocols or summaries even where they include some data) will be included. **Systematic reviews** Relevant systematic reviews (SRs) identified from database searches will be citation searched. Highly relevant systematic reviews may be included as a primary source of data. These SRs will be assessed against the inclusion criteria for this protocol, and their quality will be assessed using the ROBIS tool. Where the SR is highly relevant and of high quality, details or data from the systematic review may be used. In addition to any SRs meeting the above criteria, other primary studies will be included if they were published after the publication date of the SR and meet the protocol inclusion criteria. Full economic analyses and costing studies identified from searches will be included. Costing data will not be used for the purpose of the effectiveness review. Health economics reviews and modelling will be conducted by the York Health Economics Consortium (YHEC).

X	Proposed sensitivity/sub-group analysis, or meta-regression	The following factors will be of interest in any meta-regression or subgroup analyses:
		
		• Primary target of intervention
		  ○ Child versus other
		• Mode of delivery
		  ○ education and engagement through direct training compared with mass media campaigns
		  ○ single mode vs multi-mode.
		• Other intervention aspects

		○ longevity ○ setting (large vs small retailers)
XI	Selection process – duplicate screening/selection/analysis	The review will use the priority screening function within the EPPI-reviewer systematic reviewing software. Double screening will be carried out for 10% of titles and abstracts by a second reviewer. Disagreements will be resolved by discussion. Inter-rater reliability will be assessed and reported. If below 90%, a second round of 10% double screening will be considered. The study inclusion and exclusion lists will be checked with members of the PHAC to ensure no studies are excluded inappropriately.
XII	Data management (software)	EPPI Reviewer will be used: • to store lists of citations • to sift studies based on title and abstract • to record decisions about full text papers • to order freely available papers via retrieval function • to request papers via NICE guideline Information Services • to store extracted data Cochrane Review Manager 5 will be used to perform meta-analyses. Any meta-regression analyses will be undertaken using the R software package. Qualitative data will be summarised using secondary thematic analysis. A matrix approach will be used to compare findings with quantitative evidence.

XIII	Information sources – databases and dates	The same search will be used to identify evidence for both RQ2.1 and RQ2.2 because of the overlapping concepts. The following methods will be used to identify the evidence: • the databases listed below will be searched with an appropriate strategy. • the websites listed below will be searched or browsed with an appropriate strategy. • studies included in the surveillance reviews for PH14 will be added to the search results. • selected studies that are potentially relevant to the current review will be identified from the bibliography of any systematic reviews identified during the search process that are not being included in their own right. • forward citation searching will be done using selected studies prioritised from the scoping searches, surveillance reviews or any relevant systematic reviews identified in the search process. **Database strategies** The database strategy will be adapted as appropriate from the one used in PH14 in 2007, taking into account the resources available to this review, the subscriptions that NICE has, changes in indexing policies and the final scope for the current evidence reviews. The principal search strategy is listed in Appendix A. The search strategy will take this broad approach: Tobacco AND (Proxy sales OR Under age sales) OR Tobacco AND Retail AND Young people OR Tobacco AND Illicit activities AND Retail

		OR Tobacco AND Illicit activities AND Young people AND 1998-Current AND Limits Feedback on the principal database strategy was sought from PHAC members and an additional search will be done to cover: Tobacco AND Online sales AND 1998-Current AND Limits The principal search strategy will be developed in MEDLINE (Ovid interface) and then adapted, as appropriate, for use in the other sources listed, taking into account their size, search functionality and subject coverage. The databases will be: • Applied Social Science Index and Abstracts (ASSIA) via ProQuest • Cochrane Central Register of Controlled Trials (CENTRAL) via Wiley • Cochrane Database of Systematic Reviews (CDSR) via Wiley • EconLit via Ovid • Embase via Ovid • Health Management Information Consortium (HMIC) via Ovid • MEDLINE via Ovid • MEDLINE-in-Process (including Epub Ahead-of-Print) via Ovid • PsycINFO via Ovid • Social Policy and Practice (SPP) via Ovid **Database search limits** Database functionality will be used, where available, to exclude: • non-English language papers

		• animal studies • editorials, letters and commentaries • conference abstracts and posters • registry entries for ongoing or unpublished clinical trials • duplicates. Sources will be searched from 1998 to current. The database search strategies will not use any search filters for specific study types. **Cost effectiveness evidence** A separate search will be done for cost effectiveness evidence. The following databases will be searched again with agreed study-type search filters applied to a strategy based on the one in Appendix A: • Embase via Ovid • MEDLINE via Ovid • MEDLINE-in-Process (including Epub Ahead-of-Print) via Ovid In addition, the following sources will be searched without study-type filters: • Campbell Collaboration via https://campbellcollaboration.org/library.html • • EconLit via Ovid • HTA database via CRD https://www.crd.york.ac.uk/CRDWeb/ • NHS EED via CRD https://www.crd.york.ac.uk/CRDWeb The main website results will be rescanned to check if there are any results potentially relevant to cost effectiveness.

		Citation searching Forward citation searching will be conducted using Web of Science (WOS) Core Collection. Only those references which NICE can access through its WOS subscription will be added to the search results. Only papers published in 1998-Current and in the English language will be included in the search results. Duplicates will be removed in WOS before downloading. **Websites** The following websites will be searched with an appropriate strategy: • EconBiz via https://www.econbiz.de • Health Services/Technology Assessment Texts (HSTAT) https://www.ncbi.nlm.nih.gov/books/NBK16710 • NICE Evidence Search https://www.evidence.nhs.uk • Tobacco Control Database for the WHO European Region http://data.euro.who.int/tobacco The websites of relevant organisations, including the ones below, will be browsed: • Action on Smoking and Health (ASH) http://ash.org.uk/home • British Independent Retailers Association (BIRA) https://bira.co.uk • British Retail Consortium https://brc.org.uk • Chartered Trading Standards Institute (CTSI) https://www.tradingstandards.uk • Federation of Independent Retailers (NFRN) https://nfrnonline.com • Local Government Association https://www.local.gov.uk • National Centre for Smoking Cessation and Training http://www.ncsct.co.uk • National Trading Standards http://www.nationaltradingstandards.uk • Northern Ireland Assembly http://www.niassembly.gov.uk/

		• Public Health England https://www.gov.uk/government/organisations/public-health-england • Royal College of Paediatrics and Child Health https://www.rcpch.ac.uk/ • Royal College of Physicians https://www.rcplondon.ac.uk • Scottish Government https://www.gov.scot • Smokefree NHS https://www.nhs.uk/smokefree • Smoking Toolkit Study http://www.smokinginengland.info • Treat Tobacco http://www.treatobacco.net/en/index.php • UK Centre for Tobacco and Alcohol Studies http://ukctas.net/index.html • University of Bath Tobacco Control Research Group https://researchportal.bath.ac.uk/en/organisations/uk-centre-for-tobacco-control-studies • University of Stirling Centre for Tobacco Control Research https://www.stir.ac.uk/about/faculties-and-services/health-sciences-sport/research/research-groups/centre-for-tobacco-control-research/publications • Welsh Government https://gov.wales/?lang=en The website results will be reviewed on screen and documents in English and published from 1998-Current that are potentially relevant to review question 2.1 or 2.2 will be listed with their title and abstract (if available) in a Word document. The initial screening decision will be made using this Word file. Any items selected for review at full text will be added to EPPI-Reviewer. **Quality assurance** The guidance Information Services team at NICE will quality assure the principal search strategy and peer review the strategies for the other databases.

		Any revisions or additional steps will be agreed by the review team before being implemented. Any deviations and a rationale for them will be recorded alongside the search strategies. **Search results** The database search results will be downloaded to EndNote before duplicates are removed using automated and manual processes. The de-duplicated file will be exported in RIS format for loading into EPPI-Reviewer for data screening.
XIV	Identify if an update	Although direct sales of tobacco to children was covered under PH14 [published July 2008], proxy purchasing was not. This is a new review question for this update.
XV	Author contacts	Please see the guideline development page.
XVI	Highlight if amendment to previous protocol	For details please see section 4.5 of Developing NICE guidelines: the manual
XVII	Search strategy – for one database	For details please see appendix B
XVIII	Data collection process – forms/duplicate	A standardised evidence table format will be used, and published as appendix D (effectiveness evidence tables) or H (economic evidence tables).
XIX	Data items – define all variables to be collected	For details please see evidence tables in appendix D (effectiveness evidence tables) or H (economic evidence tables).
XX	Methods for assessing bias at outcome/study level	Standard study checklists will be used to critically appraise individual studies. For details please see Appendix H of Developing NICE guidelines: the manual

		The risk of bias across all available evidence will be evaluated for each outcome using an adaptation of the 'Grading of Recommendations Assessment, Development and Evaluation (GRADE) toolbox' developed by the international GRADE working group http://www.gradeworkinggroup.org/ GRADE will be used to assess confidence in the findings from quantitative evidence synthesis. GRADE-CERQual will be used to assess confidence in the findings from qualitative evidence syntheses.
XXI	Criteria for quantitative synthesis (where suitable)	For details please see section 6.4 of Developing NICE guidelines: the manual Non-randomised studies are at risk of confounding. These studies should adjust for confounders which are decided by the committee to have important potential to affect the result, or the allocation into intervention or control groups. These factors are: - Peer or family smoking - Baseline smoking status (where sample includes people who smoke) - Socioeconomic status Where adjusted results are provided, these will be used in analysis. Where no adjustment has taken place, this will be considered when assessing risk of bias.
XXII	Methods for analysis – combining studies and exploring (in)consistency	**Heterogeneity**

		Data from different studies will be pooled in a meta-analysis where they are investigating the same outcome and where the resulting meta-analysis may be useful for decision-making. Cluster and individual randomised controlled trials will be pooled. Randomised and non-randomised controlled studies investigating the same outcomes will be pooled. Results will be stratified by design (cluster, individual, randomised and non-randomised for a maximum of four groups stratified) and the P value of the interaction between study design and effect evaluated. A P value of <0.2 will be considered significant. If interaction is significant, results will be presented separately for each group, but if not, will be presented with one averaged effect estimate. It is anticipated that studies included in the review will be heterogeneous with respect to participants, interventions, comparators, setting and study design. Where significant between study heterogeneity in methodology, population, intervention or comparator is identified by the reviewer in advance of data analysis, random effects models will be used. If methodological heterogeneity is not identified in advance but the I2 value is ≥50%, random effects models will also be used. If the I^2 value is above 50%, heterogeneity will be judged to be serious and so will be downgraded by one level in GRADE. If the I^2 value is above 75%, heterogeneity will be judged to be very serious and will be downgraded by two levels in GRADE. If the studies are found to be too heterogeneous to be pooled statistically, a narrative synthesis will be conducted. **Imprecision**

		No minimally important difference (MID) thresholds relevant to this guideline were identified from the COMET database or other published source. MIDs were agreed by committee. Uncertainty is introduced where confidence intervals cross the MID threshold. If the confidence interval crosses one lower MID threshold, this indicates 'serious' risk of imprecision. Crossing both MID thresholds indicates 'very serious' risk of imprecision in the effect estimate. Where the MID is 'any significant change' there is effectively only one threshold (the line of no effect), and so only one opportunity for downgrading. In this instance, outcomes will be downgraded again if they are based on small samples (<300 people). MIDs for outcomes will be included in the methods section of the individual reviews.
XXIII	Meta-bias assessment – publication bias, selective reporting bias	For details please see Appendix H of Developing NICE guidelines: the manual.
XXIV	Assessment of confidence in cumulative evidence	For details please see sections 6.4 and 9.1 of Developing NICE guidelines: the manual.
XXV	Rationale/context – Current management	For details please see the introduction to the evidence review.
XXVI	Describe contributions of authors and guarantor	A multidisciplinary committee will develop the guideline. The committee will be convened by Public Health Internal Guidelines Development (PH-IGD) team and chaired by Sharon Hopkins in line with section 3 of Developing NICE guidelines: the manual. Staff from Public Health Internal Guidelines Development team will undertake systematic literature searches, appraise the evidence, conduct meta-analysis where appropriate and draft the guideline in collaboration with the committee. Cost-

		effectiveness analysis will be conducted by YHEC where appropriate. For details please see Developing NICE guidelines: the manual.
XXVII	Sources of funding/support	PH-IGD is funded and hosted by NICE
XXVIII	Name of sponsor	PH-IGD is funded and hosted by NICE
XXIX	Roles of sponsor	NICE funds PH-IGD to develop guidelines for those working in the NHS, public health and social care in England.
XXX	PROSPERO registration number	[If registered, add PROSPERO registration number]

Review protocol for reducing illicit sales

ID	Field (based on PRISMA-P	Content
I	Review question	2.2a. Which interventions are effective and cost effective at reducing the supply of illicit tobacco to children, young people and young adults, through engaging and educating retailers and the general public? 2.2b. Do these interventions change perceptions of the social acceptability of supply of illicit tobacco? In what way, and what aspects of interventions are perceived as having caused the change?
II	Type of review question	Mixed methods
III	Objective of the review	This review aims to ascertain which interventions that attempt to engage and educate both retailers and the general public are effective at reducing supply of illicit tobacco to

		children, young people and young adults. As illicit tobacco supply may be concentrated in areas of deprivation, this is an important equality consideration. Illicit tobacco includes brands with no legal market in the country of sale, genuine brands brought into the country and sold without duty being paid, or illegally manufactured tobacco made to look like recognised brands (Fresh, 2018 as part of the Keep it Out campaign, www.keep-it-out.co.uk.for-retailers/; Illicit Tobacco Partnership).
IV	Eligibility criteria – population/disease/condition/issue/domain	**Included**: Children, young people and young adults[6]. Studies where the sample includes both people who do and do not smoke habitually[7] will be included. **Excluded**: People aged 25 or over. **Included settings:** • Retail settings. • Community settings. • Educational settings

[6] For the purposes of this guidance, children are aged 5-11, young people are 12-17 and young adults are 18-24 inclusive.
[7] 'Smoking' or 'smoking habitually' refers, unless specifically stated otherwise, to people who smoke weekly or more often. Smoking experimentally is defined as smoking less than weekly.

V	Eligibility criteria – intervention(s)/exposure(s)/prognostic factor(s)	**Included**: Interventions that have a stated and measured aim of educating or engaging with retailers and sellers of illicit tobacco, families and friends of children, children themselves, or the general public to prevent the supply of illicit tobacco to children, young people and young adults. Retailers and sellers may operate in physical premises, or online. Interventions could include: • Education or engagement programmes for retailers and sellers through training, mass media campaigns etc. • Education or engagement programmes for the general public or families and friends of young people through training, mass media campaigns etc. • Interventions which raise awareness of retailers, general public, families of young people or young people themselves. **Excluded**: Interventions which aim to inform family members and peers who smoke about the influence they exert on children and young people's choices about tobacco. Interventions which focus on enforcement measures such as new legal requirements or enforcement of existing legal requirements, or test purchasing. Interventions on national advertising changes.

		Interventions aiming to reduce the sale of legal tobacco products directly to children and young people either directly or by proxy. Interventions to encourage or support children and young people to quit smoking.
VI	Eligibility criteria – comparator(s)/control or reference (gold) standard	**Included**: Other active interventions, including: • Other education or engagement interventions. • Enforcement or legislative interventions, e.g. licensing, pricing interventions etc. • Awareness raising interventions. • Interventions combining education or engagement with other elements. No intervention.
VII	Outcomes and prioritisation	**Quantitative outcomes** <u>Critical outcomes</u> • Relative risk of a tobacco sale being a sale of illicit tobacco • Children and young people's self-report of how they obtain their tobacco Trials where interventions are allocated by cluster and analysis is at the individual level are vulnerable to unit of analysis error. To mitigate for this, studies should correct for

		clustering. If no adjustment has been carried out, the review team will adjust the effect estimates by inflating standard errors, as described in the Cochrane manual. Important outcomes • Tobacco use status at longest available follow-up. Measured as relative risk of using tobacco. Where biochemically validated measures are available, these will be preferred to self-reported measures. • Adverse or unintended (positive or negative) effects. • Health-related quality of life (using validated patient-report measures, for example EQ-5D). **Qualitative outcomes (2.1b)** Do eligible interventions change perceptions (of retailers, families and friends of children, children themselves, or the general public) of the social acceptability of illicit tobacco? In what way, and what aspects of interventions are perceived as having caused the change? **Cost/resource use associated with the intervention** The following outcomes will be extracted in reviews of the health economic evidence, where available: • cost per quality-adjusted life year

		• cost per unit of effect • net benefit • net present value • cost/resource impact or use associated with the intervention or its components
VIII	Eligibility criteria – study design	**Included study designs**: • Systematic reviews of randomised controlled trials (RCTs) • RCTs (including cluster RCTs) • Non-randomised controlled trials • Controlled before and after studies • Interrupted time series In the absence of sufficient data, the following study designs will be considered. Otherwise, they will be excluded: • 'Before-and-after' intervention studies (i.e. where there is at least one follow up measure after baseline) and interrupted time series studies. <u>Qualitative studies:</u>

		• Focus groups, interview-based studies or surveys with open-ended responses. Must be related to an eligible intervention. Economic studies: • Cost-utility (cost per QALY) • Cost benefit (i.e. net benefit) • Cost-effectiveness (Cost per unit of effect) • Cost minimization • Cost-consequence **Excluded study designs**: • Cohort studies • Cross-sectional surveys • Correlation studies • Case control studies
IX	Other inclusion exclusion criteria	**Studies**

		Although direct sales of tobacco to children was covered under PH14, supply of illicit tobacco was not. This is a new review question for this update. **Exclusion criteria** • Mixed populations (for example, study samples that also include people 25 and over, with insufficient disaggregation to enable data relevant to this review to be extracted). Only papers published in the English language will be included. Only studies carried out in OECD countries will be included (for effectiveness data) and in the UK (for qualitative data). Only studies published in 1998 onwards will be included. Only full published studies (not protocols or summaries even where they include some data) will be included. **Systematic reviews** Relevant systematic reviews (SRs) identified from database searches will be citation searched. Highly relevant systematic reviews may be included as a primary source of data. These SRs will be assessed against the inclusion criteria for this protocol, and their quality will be assessed using the ROBIS tool. Where the SR is highly relevant and of high quality, details or data from the systematic review may be used. In addition to any SRs meeting the above criteria, other primary studies will be included if they were published after the publication date of the SR and meet the protocol inclusion criteria.

		Full economic analyses and costing studies identified from searches will be included. Costing data will not be used for the purpose of the effectiveness review. Health economics reviews and modelling will be conducted by the York Health Economics Consortium (YHEC).

X	Proposed sensitivity/sub-group analysis, or meta-regression	•
		
		The following factors will be of interest in any meta-regression or subgroup analyses:
		
		• Primary target of intervention
		  ○ Child versus other
		• Mode of delivery
		  ○ education and engagement through direct training compared with mass media campaigns
		  ○ single mode vs multi-mode.
		• Other intervention aspects
		  ○ longevity.

XI	Selection process – duplicate screening/selection/analysis	The review will use the priority screening function within the EPPI-reviewer systematic reviewing software. Double screening will be carried out for 10% of titles and abstracts by a second reviewer. Disagreements will be resolved by discussion. Inter-rater reliability will be assessed and reported. If below 90%, a second round of 10% double screening will be considered. The study inclusion and exclusion lists will be checked with members of the PHAC to ensure no studies are excluded inappropriately.
XII	Data management (software)	EPPI Reviewer will be used: • to store lists of citations

		• to sift studies based on title and abstract • to record decisions about full text papers • to order freely available papers via retrieval function • to request papers via NICE guideline Information Services • to store extracted data Cochrane Review Manager 5 will be used to perform meta-analyses. Any meta-regression analyses will be undertaken using the R software package. Qualitative data will be summarised using secondary thematic analysis. A matrix approach will be used to compare findings with quantitative evidence.
XIII	Information sources – databases and dates	The same search will be used to identify evidence for both RQ2.1 and RQ2.2 because of the overlapping concepts. The following methods will be used to identify the evidence: • the databases listed below will be searched with an appropriate strategy. • the websites listed below will be searched or browsed with an appropriate strategy. • studies included in the surveillance reviews for PH14 will be added to the search results. • selected studies that are potentially relevant to the current review will be identified from the bibliography of any systematic reviews identified during the search process that are not being included in their own right. • forward citation searching will be done using selected studies prioritised from the scoping searches, surveillance reviews or any relevant systematic reviews identified in the search process. **Database strategies** The database strategy will be adapted as appropriate from the one used in PH14 in 2007, taking into account the resources available to this review, the subscriptions that

		NICE has, changes in indexing policies and the final scope for the current evidence reviews. The principal search strategy is listed in Appendix A. The search strategy will take this broad approach: Tobacco AND (Proxy sales OR Under age sales) OR Tobacco AND Retail AND Young people OR Tobacco AND Illicit activities AND Retail OR Tobacco AND Illicit activities AND Young people AND 1998-Current AND Limits Feedback on the principal database strategy was sought from PHAC members and an additional search will be done to cover: Tobacco AND Online sales AND 1998-Current AND Limits The principal search strategy will be developed in MEDLINE (Ovid interface) and then adapted, as appropriate, for use in the other sources listed, taking into account their size, search functionality and subject coverage. The databases will be: • Applied Social Science Index and Abstracts (ASSIA) via ProQuest • Cochrane Central Register of Controlled Trials (CENTRAL) via Wiley • Cochrane Database of Systematic Reviews (CDSR) via Wiley • EconLit via Ovid

		• Embase via Ovid • Health Management Information Consortium (HMIC) via Ovid • MEDLINE via Ovid • MEDLINE-in-Process (including Epub Ahead-of-Print) via Ovid • PsycINFO via Ovid • Social Policy and Practice (SPP) via Ovid **Database search limits** Database functionality will be used, where available, to exclude: • non-English language papers • animal studies • editorials, letters and commentaries • conference abstracts and posters • registry entries for ongoing or unpublished clinical trials • duplicates. Sources will be searched from 1998 to current. The database search strategies will not use any search filters for specific study types. **Cost effectiveness evidence** A separate search will be done for cost effectiveness evidence. The following databases will be searched again with agreed study-type search filters applied to a strategy based on the one in Appendix A: • Embase via Ovid • MEDLINE via Ovid • MEDLINE-in-Process (including Epub Ahead-of-Print) via Ovid

		In addition, the following sources will be searched without study-type filters: • Campbell Collaboration via https://campbellcollaboration.org/library.html • EconLit via Ovid • HTA database via CRD https://www.crd.york.ac.uk/CRDWeb/ • NHS EED via CRD https://www.crd.york.ac.uk/CRDWeb The main website results will be rescanned to check if there are any results potentially relevant to cost effectiveness. **Citation searching** Forward citation searching will be conducted using Web of Science (WOS) Core Collection. Only those references which NICE can access through its WOS subscription will be added to the search results. Only papers published in 1998-Current and in the English language will be included in the search results. Duplicates will be removed in WOS before downloading. **Websites** The following websites will be searched with an appropriate strategy: • EconBiz via https://www.econbiz.de • Health Services/Technology Assessment Texts (HSTAT) https://www.ncbi.nlm.nih.gov/books/NBK16710 • NICE Evidence Search https://www.evidence.nhs.uk • Tobacco Control Database for the WHO European Region http://data.euro.who.int/tobacco The websites of relevant organisations, including the ones below, will be browsed:

		• Action on Smoking and Health (ASH) http://ash.org.uk/home • British Independent Retailers Association (BIRA) https://bira.co.uk • British Retail Consortium https://brc.org.uk • Chartered Trading Standards Institute (CTSI) https://www.tradingstandards.uk • Federation of Independent Retailers (NFRN) https://nfrnonline.com • HM Revenue & Customs https://www.gov.uk/government/organisations/hm-revenue-customs • Illicit Tobacco Partnership https://www.illicit-tobacco.co.uk/problem/illicit-tobacco • Local Government Association https://www.local.gov.uk • National Centre for Smoking Cessation and Training http://www.ncsct.co.uk • National Trading Standards http://www.nationaltradingstandards.uk • Northern Ireland Assembly http://www.niassembly.gov.uk/ • Public Health England https://www.gov.uk/government/organisations/public-health-england • Royal College of Paediatrics and Child Health https://www.rcpch.ac.uk/ • Royal College of Physicians https://www.rcplondon.ac.uk • Scottish Government https://www.gov.scot • Smokefree NHS https://www.nhs.uk/smokefree • Smoking Toolkit Study http://www.smokinginengland.info • Treat Tobacco http://www.treatobacco.net/en/index.php • UK Centre for Tobacco and Alcohol Studies http://ukctas.net/index.html • University of Bath Tobacco Control Research Group https://researchportal.bath.ac.uk/en/organisations/uk-centre-for-tobacco-control-studies

		• University of Stirling Centre for Tobacco Control Research https://www.stir.ac.uk/about/faculties-and-services/health-sciences-sport/research/research-groups/centre-for-tobacco-control-research/publications • Welsh Government https://gov.wales/?lang=en The website results will be reviewed on screen and documents in English and published from 1998-Current that are potentially relevant to review question 2.1 or 2.2 will be listed with their title and abstract (if available) in a Word document. The review team will make an initial screening decision using this Word file. Any items selected for review at full text will be added to EPPI-Reviewer. **Quality assurance** The guidance Information Services team at NICE will quality assure the principal search strategy and peer review the strategies for the other databases. Any revisions or additional steps will be agreed by the review team before being implemented. Any deviations and a rationale for them will be recorded alongside the search strategies. **Search results** The database search results will be downloaded to EndNote before duplicates are removed using automated and manual processes. The de-duplicated file will be exported in RIS format for loading into EPPI-Reviewer for data screening.
XIV	Identify if an update	Although direct sales of tobacco to children was covered under PH14 [published July 2008], supply of illicit tobacco was not. This is a new review question for this update.
XV	Author contacts	Please see the guideline development page.

XVI	Highlight if amendment to previous protocol	For details please see section 4.5 of Developing NICE guidelines: the manual
XVII	Search strategy – for one database	For details please see appendix B
XVIII	Data collection process – forms/duplicate	A standardised evidence table format will be used, and published as appendix D (effectiveness evidence tables) or H (economic evidence tables).
XIX	Data items – define all variables to be collected	For details please see evidence tables in appendix D (effectiveness evidence tables) or H (economic evidence tables).
XX	Methods for assessing bias at outcome/study level	Standard study checklists will be used to critically appraise individual studies. For details please see Appendix H of Developing NICE guidelines: the manual The risk of bias across all available evidence will be evaluated for each outcome using an adaptation of the 'Grading of Recommendations Assessment, Development and Evaluation (GRADE) toolbox' developed by the international GRADE working group http://www.gradeworkinggroup.org/ GRADE will be used to assess confidence in the findings from quantitative evidence synthesis. GRADE-CERQual will be used to assess confidence in the findings from qualitative evidence syntheses.
XXI	Criteria for quantitative synthesis (where suitable)	For details please see section 6.4 of Developing NICE guidelines: the manual Non-randomised studies are at risk of confounding. These studies should adjust for confounders which are decided by the committee to have important potential to affect the result, or the allocation into intervention or control groups. These factors are:

		- Peer or family smoking - Baseline smoking status (where sample includes people who smoke) - Socioeconomic status Where adjusted results are provided, these will be used in analysis. Where no adjustment has taken place, this will be considered when assessing risk of bias.
XXII	Methods for analysis – combining studies and exploring (in)consistency	**Heterogeneity** Data from different studies will be pooled in a meta-analysis where they are investigating the same outcome and where the resulting meta-analysis may be useful for decision-making. Cluster and individual randomised controlled trials will be pooled. Randomised and non-randomised controlled studies investigating the same outcomes will be pooled. Results will be stratified by design (cluster, individual, randomised and non-randomised for a maximum of four groups stratified) and the P value of the interaction between study design and effect evaluated. A P value of <0.2 will be considered significant. If interaction is significant, results will be presented separately for each group, but if not, will be presented with one averaged effect estimate. It is anticipated that studies included in the review will be heterogeneous with respect to participants, interventions, comparators, setting and study design. Where significant between study heterogeneity in methodology, population, intervention or comparator is identified by the reviewer in advance of data analysis, random effects models will be used. If methodological heterogeneity is not identified in advance but the I2 value is ≥50%, random effects models will also be used.

		If the I^2 value is above 50%, heterogeneity will be judged to be serious and so will be downgraded by one level in GRADE. If the I^2 value is above 75%, heterogeneity will be judged to be very serious and will be downgraded by two levels in GRADE. If the studies are found to be too heterogeneous to be pooled statistically, a narrative synthesis will be conducted. **Imprecision** No minimally important difference (MID) thresholds relevant to this guideline were identified from the COMET database or other published source. MIDs were agreed by committee. Uncertainty is introduced where confidence intervals cross the MID threshold. If the confidence interval crosses one lower MID threshold, this indicates 'serious' risk of imprecision. Crossing both MID thresholds indicates 'very serious' risk of imprecision in the effect estimate. Where the MID is 'any significant change' there is effectively only one threshold (the line of no effect), and so only one opportunity for downgrading. In this instance, outcomes will be downgraded again if they are based on small samples (<300 people). MIDs for outcomes will be included in the methods section of the individual reviews.
XXIII	Meta-bias assessment – publication bias, selective reporting bias	For details please see Appendix H of Developing NICE guidelines: the manual.
XXIV	Assessment of confidence in cumulative evidence	For details please see sections 6.4 and 9.1 of Developing NICE guidelines: the manual.
XXV	Rationale/context – Current management	For details please see the introduction to the evidence review.

XXVI	Describe contributions of authors and guarantor	A multidisciplinary committee will develop the guideline. The committee will be convened by Public Health Internal Guidelines Development (PH-IGD) team and chaired by Sharon Hopkins in line with section 3 of Developing NICE guidelines: the manual. Staff from Public Health Internal Guidelines Development team will undertake systematic literature searches, appraise the evidence, conduct meta-analysis where appropriate and draft the guideline in collaboration with the committee. Cost-effectiveness analysis will be conducted by YHEC where appropriate. For details please see Developing NICE guidelines: the manual.
XXVII	Sources of funding/support	PH-IGD is funded and hosted by NICE
XXVIII	Name of sponsor	PH-IGD is funded and hosted by NICE
XXIX	Roles of sponsor	NICE funds PH-IGD to develop guidelines for those working in the NHS, public health and social care in England.
XXX	PROSPERO registration number	[If registered, add PROSPERO registration number]

1

Appendix B – Literature search strategies

Search approach

A joint search was done for RQ C and RQ D because there was overlap in the search terms required to describe the retail setting adequately.

Three searches were done to cover RQ C and RQ D.

- The main search was done on 3 October 2018
- A top-up search for children aged 5-11 was done on 14 December 2018
- A top-up search for online sales was done on 29 November 2018.

The MEDLINE searches below were run after QA, peer review and consultation with the committee. The strategies were adapted as appropriate to the other databases listed in the protocol (see the sources tables below).

Additional search results were obtained from the surveillance review for PH14, the scoping searches for this topic and from forwards citation searching using Web of Science.

Further searches were undertaken for grey literature using the websites listed in the protocol. These results were screened separately in Word.

Full details of all the search strategies are available in a separate document from the NICE guidance Information Services team.

Main search

Sources searched to identify the evidence

Database name	Date	Platform	Database segment or version	No. of records
Applied Social Science Index and Abstracts (ASSIA)	03/10/18	ProQuest	1987 - current	750
Cochrane Central Register of Controlled Trials (CENTRAL)	03/10/18	Wiley	Cochrane Central Register of Controlled Trials Issue 10 of 12, October 2018	222
Cochrane Database of Systematic Reviews (CDSR)	03/10/18	Wiley	Cochrane Database of Systematic Reviews Issue 10 of 12, October 2018	7
EconLit	03/10/18	Ovid	Econlit 1886 to September 27, 2018	87
Embase	03/10/18	Ovid	Embase 1974 to 2018 October 2	2381
Health Management Information Consortium (HMIC)	03/10/18	Ovid	HMIC Health Management Information Consortium 1979 to July 2018	203
MEDLINE	03/10/18	Ovid	Ovid MEDLINE(R) 1946 to October 02, 2018	2860
MEDLINE-in-Process (including Epub Ahead-of-Print)	03/10/18	Ovid	Ovid MEDLINE(R) Epub Ahead of Print October 02, 2018, Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations October 02, 2018	372

PsycINFO	03/10/18	Ovid	PsycINFO 1806 to September Week 4 2018	1289
Social Policy and Practice (SPP)	03/10/18	Ovid	Social Policy and Practice 201807	109
Surveillance reviews for PH14	03/10/18	-	-	3
Scoping searches	03/10/18	-	-	12
Forwards citation searching	03/10/18	Web of Science	Web of Science Core Collection (1990-present)	446

Database strategy – main search as run in MEDLINE and adapted for other sources

Database(s): **Ovid MEDLINE(R)** 1946 to October 02, 2018

#	Searches	Results
1	exp "tobacco use"/	1882
2	tobacco/	28800
3	"tobacco use disorder"/	10417
4	"tobacco use cessation"/	1029
5	"tobacco use cessation products"/	1493
6	smoking/	133565
7	exp Pipe smoking/	58
8	smoking reduction/	14
9	"smoking cessation"/	25974
10	Smokers/	442
11	exp Smoking Devices/	7739
12	smoking prevention/	17400
13	(smoking* or smoker* or antismok* or anti smok* or anti-smok*).ti,ab.	201985
14	(tobacco* or cigar* or cigs).ti,ab.	122142
15	(bidi or bidis or beedi or beedis or kretek* or hand roll* or handroll* or rollies).ti,ab.	473
16	(waterpipe* or water pipe* or dokha or dokhas or hookah or hookahs or hooka or hookas or shisha or shishas or sheesha or sheeshas).ti,ab.	1401
17	or/1-16	299291
18	((proxy* or proxies*) adj3 (trading* or trade or trades or sold* or sale* or sell or sells or supply* or supplied or supplies or retail* or vend or vends or vending or shopping or shopped or selling* or purchas* or bought* or buys or buy or buying or consumer* or customer* or shop or shops or obtain* or procur*)).ti,ab.	163
19	((proxy* or proxies*) adj3 (parent* or mother* or father* or family* or families* or relatives or friend* or sibling* or brother* or sister* or adult or adults or older*)).ti,ab.	1059
20	((underage* or under age* or under-age*) adj3 (trading* or trade or trades or sold* or sale* or sell or sells or supply* or supplied or supplies or retail* or vend or vends or vending or shopping or shopped or selling* or purchas* or bought* or buys or buy or buying or consumer* or customer* or shop or shops or obtain* or procur*)).ti,ab.	124
21	(age* adj3 (verify* or verifies* or verification* or verified* or proof* or prove*)).ti,ab.	3177
22	((identity* or identification* or ID) adj3 (verify* or verifies* or verification* or verified* or proof* or prove* or evidence* or show* or demand* or request*)).ti,ab.	10986
23	or/18-22	15460
24	17 and 23	335

25	small business/	231
26	commerce/	22696
27	(retail* or newsagent* or shopkeeper* or shop keeper* or vendor* or supermarket* or store keeper* or storekeeper* or merchant* or tobacconist* or shop or shops or shopping or shopped or store or stores or "off licence*" or "off license*" or offlicence* or offlicense* or business* or commerce* or commercial* or trading* or trade or trades or trader* or "sales assistant*" or shopworker* or seller* or "super market*").ti,ab.	304064
28	or/25-27	317333
29	Minors/	2467
30	Adolescent Behavior/ or Adolescent/ or Adolescent Health/ or Adolescent Development/	1887587
31	Child Behavior/ or Child/ or Child Development/	1602200
32	young adult/	689957
33	students/	50411
34	(young* adj2 (adult* or person* or people* or men or man or women or woman or male* or female*)).ti,ab.	183246
35	(child* or adolescen* or kid or kids or youth* or youngster* or minor or minors or underage* or under-age* or "under age*" or teen or teens or teenager* or juvenile* or boy or boys or boyhood or girl or girls or girlhood or schoolchild* or "school age*" or schoolage* or pupil or pupils or student*).ti,ab.	1774885
36	("under 18" or "under eighteen*" or "under 25" or "under twenty five*").ti,ab.	3067
37	(("twelve" or "thirteen" or "fourteen" or "fifteen" or "sixteen" or "seventeen" or "eighteen" or "nineteen" or "twenty" or "twenty one" or "twenty two" or "twenty three" or "twenty four") adj2 (year or years or age or ages or aged)).ti,ab.	37018
38	(("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") adj2 (year or years or age or ages or aged)).ti,ab.	732933
39	or/29-38	4032414
40	17 and 28 and 39	2187
41	Law enforcement/	3312
42	Crime/	14755
43	Criminal behavior/	180
44	Fraud/	6976
45	((illicit* or illegal* or counterfeit* or fake* or black market* or unbrand* or disguise* or disguising or prohibit* or smuggl* or bootleg* or contraband* or untax* or unlawful* or crime* or criminal* or law enforcement* or legal* or genuine* or lawful* or branded or "trade mark*" or taxed or fraud*) adj3 (tobacco* or cigar* or cigs or smoking* or smoker* or antismok* or anti smok* or anti-smok* or bidi or bidis or beedi or beedis or kretek* or hand roll* or handroll* or rollies or waterpipe* or water pipe* or dokha or dokhas or hookah or hookahs or hooka or hookas or shisha or shishas or sheesha or sheeshas)).ti,ab.	1998
46	((tax* or taxes or taxation* or duty or duties or customs or excise*) adj3 (avoid* or evad* or evasion* or unpaid* or paid* or pay*)).ti,ab.	810
47	or/41-46	26656
48	17 and 47 and 28	470
49	17 and 47 and 39	1399
50	24 or 40 or 48 or 49	3794
51	Animals/ not (Animals/ and Humans/)	4467667

52	50 not 51	3771
53	limit 52 to (letter or historical article or comment or editorial or news or case reports)	168
54	52 not 53	3603
55	limit 54 to english language	3343
56	limit 55 to yr="1998 -Current"	2860

Age 5-11 years top up

Sources searched to identify the evidence

Database name	Date	Platform	Database segment or version	No. of records
Applied Social Science Index and Abstracts (ASSIA)	14/12/18	ProQuest	Not searched for the Top Up – no ages used in the main search.	0
Cochrane Central Register of Controlled Trials (CENTRAL)	14/12/18	Wiley	Cochrane Central Register of Controlled Trials Issue 12 of 12, December 2018	41
Cochrane Database of Systematic Reviews (CDSR)	14/12/18	Wiley	Cochrane Database of Systematic Reviews Issue 12 of 12, December 2018	2
EconLit	14/12/18	Ovid	Econlit 1886 to December 06, 2018	12
Embase	14/12/18	Ovid	Embase 1974 to 2018 December 13	511
Health Management Information Consortium (HMIC)	14/12/18	Ovid	HMIC Health Management Information Consortium 1979 to September 2018	29
MEDLINE	14/12/18	Ovid	Ovid MEDLINE(R) 1946 to December 13, 2018	359
MEDLINE-in-Process (including Epub Ahead-of-Print)	14/12/18	Ovid	Ovid MEDLINE(R) Epub Ahead of Print December 13, 2018, Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations December 13, 2018	60
PsycINFO	14/12/18	Ovid	PsycINFO 1806 to December Week 2 2018	143
Social Policy and Practice (SPP)	14/12/18	Ovid	Social Policy and Practice 201810	13

Database strategy – age top up as run in MEDLINE and adapted for other sources

Database(s): **Ovid MEDLINE(R)** 1946 to December 13, 2018

#	Searches	Results
1	exp "tobacco use"/	2060
2	tobacco/	29029
3	"tobacco use disorder"/	10490
4	"tobacco use cessation"/	1039
5	"tobacco use cessation products"/	1512
6	smoking/	134225
7	exp Pipe smoking/	71

8	smoking reduction/	15
9	"smoking cessation"/	26188
10	Smokers/	542
11	exp Smoking Devices/	7986
12	smoking prevention/	17465
13	(smoking* or smoker* or antismok* or anti smok* or anti-smok*).ti,ab.	203756
14	(tobacco* or cigar* or cigs).ti,ab.	123176
15	(bidi or bidis or beedi or beedis or kretek* or hand roll* or handroll* or rollies).ti,ab.	478
16	(waterpipe* or water pipe* or dokha or dokhas or hookah or hookahs or hooka or hookas or shisha or shishas or sheesha or sheeshas).ti,ab.	1431
17	or/1-16	301814
18	small business/	235
19	commerce/	22921
20	(retail* or newsagent* or shopkeeper* or shop keeper* or vendor* or supermarket* or store keeper* or storekeeper* or merchant* or tobacconist* or shop or shops or shopping or shopped or store or stores or "off licence*" or "off license*" or offlicence* or offlicense* or business* or commerce* or commercial* or trading* or trade or trades or trader* or "sales assistant*" or shopworker* or seller* or "super market*").ti,ab.	307789
21	or/18-20	321178
22	(("five" or "six" or "seven" or "eight" or "nine" or "ten" or "eleven") adj2 (year or years or age or ages or aged)).ti,ab.	174937
23	(("5" or "6" or "7" or "8" or "9" or "10" or "11") adj2 (year or years or age or ages or aged)).ti,ab.	659755
24	or/22-23	796637
25	17 and 21 and 24	331
26	Law enforcement/	3337
27	Crime/	14809
28	Criminal behavior/	198
29	Fraud/	7018
30	((illicit* or illegal* or counterfeit* or fake* or black market* or unbrand* or disguise* or disguising or prohibit* or smuggl* or bootleg* or contraband* or untax* or unlawful* or crime* or criminal* or law enforcement* or legal* or genuine* or lawful* or branded or "trade mark*" or taxed or fraud*) adj3 (tobacco* or cigar* or cigs or smoking* or smoker* or antismok* or anti smok* or anti-smok* or bidi or bidis or beedi or beedis or kretek* or hand roll* or handroll* or rollies or waterpipe* or water pipe* or dokha or dokhas or hookah or hookahs or hooka or hookas or shisha or shishas or sheesha or sheeshas)).ti,ab.	2020
31	((tax* or taxes or taxation* or duty or duties or customs or excise*) adj3 (avoid* or evad* or evasion* or unpaid* or paid* or pay*)).ti,ab.	816
32	or/26-31	26815
33	17 and 32 and 24	178
34	25 or 33	482
35	Animals/ not (Animals/ and Humans/)	4492299
36	34 not 35	481
37	limit 36 to (letter or historical article or comment or editorial or news or case reports)	10

38	36 not 37	471
39	limit 38 to english language	429
40	limit 39 to yr="1998 -Current"	359

Online sales top up

Sources searched to identify the evidence

Database name	Date	Platform	Database segment or version	No. of records
Applied Social Science Index and Abstracts (ASSIA)	29/11/18	ProQuest	1987 - current	77
Cochrane Central Register of Controlled Trials (CENTRAL)	29/11/18	Wiley	Cochrane Central Register of Controlled Trials Issue 11 of 12, November 2018	37
Cochrane Database of Systematic Reviews (CDSR)	29/11/18	Wiley	Cochrane Database of Systematic Reviews Issue 11 of 12, November 2018	6
EconLit	29/11/18	Ovid	Econlit 1886 to November 22, 2018	19
Embase	29/11/18	Ovid	Embase 1974 to 2018 November 28	314
Health Management Information Consortium (HMIC)	29/11/18	Ovid	HMIC Health Management Information Consortium 1979 to September 2018	186
MEDLINE	29/11/18	Ovid	Ovid MEDLINE(R) 1946 to November 28, 2018	347
MEDLINE-in-Process (including Epub Ahead-of-Print)	29/11/18	Ovid	Ovid MEDLINE(R) Epub Ahead of Print November 28, 2018, Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations November 28, 2018	93
PsycINFO	29/11/18	Ovid	PsycINFO 1806 to November Week 4 2018	164
Social Policy and Practice (SPP)	29/11/18	Ovid	Social Policy and Practice 201810	27

Database strategy – sales top up as run in MEDLINE and adapted for other sources

Database(s): **Ovid MEDLINE(R)** 1946 to November 28, 2018

#	Searches	Results
1	exp "tobacco use"/	2008
2	tobacco/	28976
3	"tobacco use disorder"/	10469
4	"tobacco use cessation"/	1037
5	"tobacco use cessation products"/	1512
6	smoking/	134065
7	exp Pipe smoking/	64
8	smoking reduction/	14
9	"smoking cessation"/	26127

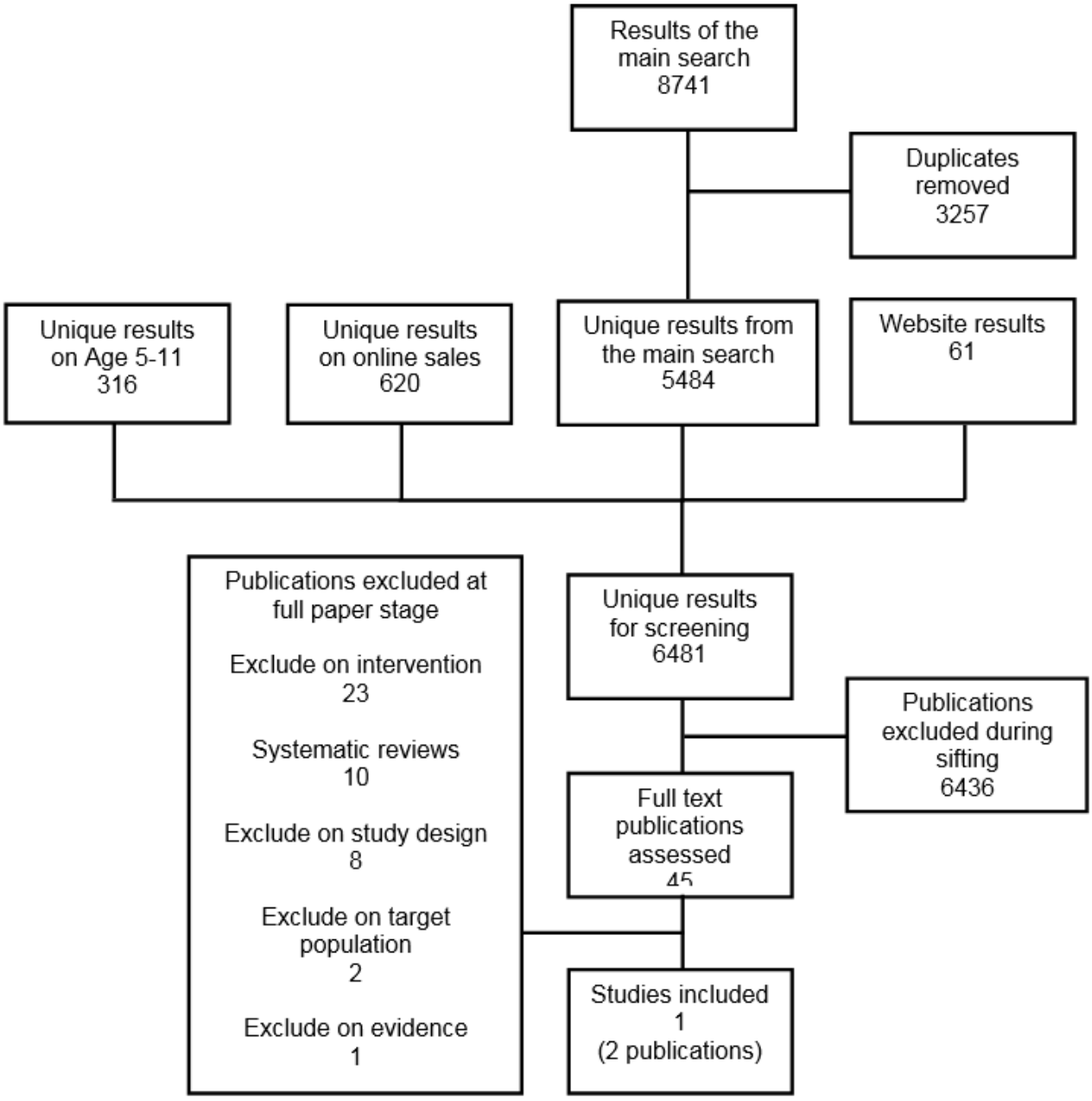
10	Smokers/	510
11	exp Smoking Devices/	7913
12	smoking prevention/	17444
13	(smoking* or smoker* or antismok* or anti smok* or anti-smok*).ti,ab.	203332
14	(tobacco* or cigar* or cigs).ti,ab.	122917
15	(bidi or bidis or beedi or beedis or kretek* or hand roll* or handroll* or rollies).ti,ab.	476
16	(waterpipe* or water pipe* or dokha or dokhas or hookah or hookahs or hooka or hookas or shisha or shishas or sheesha or sheeshas).ti,ab.	1418
17	or/1-16	301216
18	commerce/	22870
19	Entrepreneurship/	2139
20	small business/	234
21	or/18-20	25011
22	exp internet/	70976
23	Multimedia/	1802
24	Minicomputers/	976
25	Electronic Mail/	2469
26	Text Messaging/	2066
27	exp Microcomputers/	19739
28	mobile applications/	3571
29	or/22-28	97278
30	21 and 29	979
31	(etail* or etrading* or etrade or etrades or eshopping or eshopped or eselling* or econsumer* or ecustomer* or eshop or eshops or ecommerc* or ebusiness* or "e-tail*" or "e-trading*" or "e-trade" or "e-trades" or "e-shopping" or "e-shopped" or "e-selling*" or "e-consumer*" or "e-customer*" or "e-shop" or "e-shops" or "e-commerc*" or "e-business*").ti,ab.	281
32	((computer* or digital* or digitis* or digitiz* or electronic* or wireless or online* or smartphone* or smart-phone* or smart telephone* or iphone* or i-phone* or ipad* or i-pad* app or apps or internet* or net or www or web or website* or webpage* or webcast* or portal* or search engine* or multimedia* or text messag* or texting or texter* or texted or SMS or e-mail* or email* or electronic mail* or encrypt* or blog* or vlog*) adj3 (trading* or trade or trades or sold* or sale* or sell or sells or supply* or supplied or supplies or retail* or vend or vends or vending or shopping or shopped or selling* or purchas* or bought* or buys or buy or buying or consumer* or customer* or shop or shops or obtain* or procur* or auction* or marketplace* or market or markets or business* or entrepreneur* or enterprise* or corporation* or company* or companies* or commerc*)).ti,ab.	12121
33	((Bebo* or Facebook* or YouTube* or Twitter* or LinkedIn* or Pinterest* or Google* or Tumblr* or Instagram* or WhatsApp* or Reddit* or Flickr* or SnapChat* or Yahoo* or Bing* or MSN* or Wikipedia* or Myspace* or Amazon* or Ebay* or Bitcoin* or DarkWeb* or Darknet* or P2P or Tor) adj3 (trading* or trade or trades or sold* or sale* or sell or sells or supply* or supplied or supplies or retail* or vend or vends or vending or shopping or shopped or selling* or purchas* or bought* or buys or buy or buying or consumer* or customer* or shop or shops or obtain* or procur* or auction* or marketplace* or market or markets or business* or entrepreneur* or enterprise* or corporation* or company* or companies* or commerc*)).ti,ab.	425
34	or/30-33	13280
35	17 and 34	411

36	Animals/ not (Animals/ and Humans/)	4487157
37	35 not 36	410
38	limit 37 to (letter or historical article or comment or editorial or news or case reports)	21
39	37 not 38	389
40	limit 39 to english language	371
41	limit 40 to yr="1998 -Current"	347

Key to search operators

/	Medical Subject Heading (MeSH) term
.ti	Searches the title field
.ab	Searches the abstract field
*	Truncation symbol (searches all word endings after the stem)
adj*n*	Adjacency operator to retrieve records containing the terms within a specified number (*n*) of words of each other

Appendix C – Public health evidence study selection



Appendix D – Public Health evidence tables

Gautam 2014

Proxy purchasing effectiveness evidence (RQ C.i.)

Bibliographic reference/s	**Gautam J., Glover M., Scragg R., Bullen C., 2014. Parental and retail supply of tobacco to minors: findings from a community-based social supply intervention study. *Health Policy,* 117, p120-127**
Study name	Keeping Kids Smokefree (KKS)
Registration	Registered with the Australian and New Zealand Clinical Trials Registry (ACTR Number: ACTRN12611000591954).
Study type	Controlled before-and-after [authors report the study as quasi-experimental]
Study dates	2007-2009
Objective	To evaluate the impact of the KKS intervention on commercial and social supply of tobacco to minors.
Country/ Setting	New Zealand Community setting. Intermediate school (11-13y/o) setting used to identify students but intervention takes place in community and homes. Urban.
Number of participants / clusters	**Two intervention schools, two control schools.** **Parents**: 3770 completed baseline questionnaire (81% response rate). Not split by intervention and control. I: 369 completed both BL and FU (29%) C: 695 completed both BL and FU (45%) **Students**: I: 945 completed baseline questionnaire (71% response rate) 980/1111 completed FU (88%) C: 1305 completed baseline questionnaire (80% response rate) 1501/1592 completed FU (94%) [note: student data not panel data due to changing school years and loss of student data] No power calculation
Attrition	Parents: Attrition in I vs C unclear due to lack of reporting. High overall attrition. Students: Slightly higher non-completion in intervention than control (12% VS 6% non-completion) No analysis to investigate differences between completers and non-completers (and not relevant for students as not panel data).
Participant /community characteristics.	**Parents** (baseline data for parents included in analysis [those completing BL and FU]):

Factor	Intervention n=354	Control n=656	Significance (P Value)
Maori (ethnicity) %	**39**	**15.7**	<0.01
Pacific Island (ethnicity) %	38.7	42.5	Not reported
Other (ethnicity) %	**22.3**	**41.6**	Not reported

Bibliographic reference/s	**Gautam J., Glover M., Scragg R., Bullen C., 2014. Parental and retail supply of tobacco to minors: findings from a community-based social supply intervention study. *Health Policy,* 117, p120-127**
Study name	Keeping Kids Smokefree (KKS)

Current smokers (parents) %	**37**	**21**	<0.01

Bold denotes NICE team suspected significant differences.
No demographic data for all baseline completers available.

Students (completing BL and FU):

Factor	Intervention n=945	Control n=1501	Significance (P Value)
Maori (ethnicity) %	**41**	**20**	Not reported
Pacific Island (ethnicity) %	43	45	Not reported
Other (ethnicity) %	**16**	**35**	Not reported
Ever smoked %	**23**	**15**	Not reported
Female %	47	52	Not reported
% between 11-12	92	91	Not reported

Bold denotes NICE team suspected significant differences.
No demographic data for all baseline completers available.

- Schools and parents approached had high proportions of Maori and Pacific Island students. Schools categorised as 'low decile' (high socioeconomic deprivation). Intervention schools were lower deciles (1 and 2) than control schools (2 and 3)
- No other baseline data available.
- Students with relevant outcome were those who answered yes when asked if they had obtained cigarettes for themselves or someone else in past 30 days. This is a small proportion (<4%) of the respondents.
- Sample may be representative but not stated by authors

Method of allocation	Intervention allocation controlled by investigators but not randomly allocated. Attempts to reduce confounding: - Attempted matching of intervention schools to control schools on decile (measure of SES), school size and ethnic composition. Could not fully match on decile. - Socioeconomic status differed between study groups and was not controlled for. - Allocation at the school level.
Inclusion criteria	Purposively selected intermediate schools (11-13y/o) in New Zealand, categorised as 'low decile'.
Exclusion criteria	Schools for <11 or >13y/o; 'high decile'.

Intervention	**TIDieR Checklist criteria**	**Details**

Bibliographic reference/s	**Gautam J., Glover M., Scragg R., Bullen C., 2014. Parental and retail supply of tobacco to minors: findings from a community-based social supply intervention study. *Health Policy,* 117, p120-127**	
Study name	Keeping Kids Smokefree (KKS)	
	Brief Name	KKS
	Rationale/theory/Goal	Bronfenbrenner's ecological model and a holistic Maori model of health (Te Whare Tapa Wha) underpinned design of intervention
	Intervention elements	Controlled purchase: test purchasing. Required to tell truth if asked. Illegal sale reported to Ministry of Health. Refusing a sale rewarded with congratulatory letter. Implemented through whole study period. Information Campaigns: Biannual information campaigns to retailers explaining study, reminding of legal obligations, reminded of right to refuse sale. Implemented in second year of intervention. KKS wallet card: credit card-style cards with anti-proxy purchasing messages encouraging reporting under-18 sales distributed to parents and other adults during health promotion events, community meetings etc. Implemented in second year of intervention. KKS DVD: Free DVD supplied to every student's home for parents. Messages included 'do not supply children with cigarettes'. Implemented in third year of intervention. Social supply artwork: Competition for students to create art aimed at adults to reduce supplying cigarettes. Displayed on local buses in final month of study. Additional: competitions to encourage children to get adults to quit for entries into prize draw. Weekly sessions in schools where KKS staff offered support (to parents, teachers) to quit.
	Provider	CPO: KKS study partner with the regional provider of health protection services, Auckland Regional Public Health Service (ARPHS). Info campaigns: "KKS staff". Remainder unreported.
	Method of delivery	Not possible to blind.
	Duration	3 years (2007, 2008, 2009) (relevant interventions only began in year 2 – year 1 was test purchasing only)
	Intensity	Appears to increase in intensity as intervention elements are brought in
	Tailoring/adaptation	Put together by research team and local healthcare providers, consultation with school (who declined to be included fully due to perceived workload).
	Planned treatment fidelity	NA
	Actual treatment fidelity	NA

<table>
<tr><td>Bibliographic reference/s</td><td colspan="2">Gautam J., Glover M., Scragg R., Bullen C., 2014. Parental and retail supply of tobacco to minors: findings from a community-based social supply intervention study. Health Policy, 117, p120-127</td></tr>
<tr><td>Study name</td><td colspan="2">Keeping Kids Smokefree (KKS)</td></tr>
<tr><td></td><td>Other details</td><td>The only intervention elements which are in scope are Info campaigns, KKS wallet card, KKS DVD, social supply artwork.
The only intervention elements which aim to reduce proxy purchasing / proxy supply are KKS wallet cards, KKS DVD, social supply artwork.</td></tr>
<tr><td>Comparison</td><td>TIDieR Checklist criteria</td><td>Details</td></tr>
<tr><td></td><td>Brief Name</td><td>Control group</td></tr>
<tr><td></td><td>Rationale/theory/Goal</td><td>No further information given but appears to have no active intervention. No information about other changes occurring during the study period. Surveyed with same data collection tool as intervention group.</td></tr>
<tr><td></td><td>Other details</td><td>Not reported</td></tr>
<tr><td>Follow up</td><td colspan="2">3 years (start 2007 to end 2009)

Authors report that student data during 2008 was lost. Student data only available for 2007 and 2009, meaning baseline (2007) and follow-up (2009) survey completers had no overlap.</td></tr>
<tr><td>Data collection</td><td colspan="2">Students and parents of students invited to take part in a survey (separate survey for students vs parents). Advance notice flyers sent beforehand. Packs including consent forms sent with pre-addressed, postage-paid surveys. Reminders sent to home addresses if not returned. Phone calls used to obtain consent if no form received. No information on validating or piloting questionnaire
Incentives: Families eligible for prizes (fun park tickets, movie tickets) if returned. Teachers with most forms returned won restaurant meal / retail voucher / movie tickets. Winning class won free lunch.
Parent survey included questions on whether children had access to parents' cigarettes, and willingness to provide cigarettes to children.
Student survey included questions on past 30-day smoking. If student smoked, they were asked how they obtained cigarettes (options included shop, another person, another student, stole, friends, parents, sibling, someone else bought, other way.
No information on blinding of assessors.</td></tr>
<tr><td>Critical outcomes measures and effect size. (time points)</td><td colspan="2"><u>Parents willingness to provide cigarettes to their children if underage and smoking (negative outcome)</u>

<table>
<tr><td></td><td>Intervention group n= 354</td><td>Control group n= 656</td><td>aOR (95% C.I)*</td><td>aRR** calculated by analyst</td><td>aRR*** adjusted for clustering</td></tr>
<tr><td colspan="6">Critical Outcome</td></tr>
<tr><td>Number of parents willing to</td><td>19 (5.4%)</td><td>16 (2.4%)</td><td>1.76 (0.84–3.71)</td><td>1.73 (0.84, 3.48)</td><td>1.73 (0.12, 25.95)</td></tr>
</table></td></tr>
</table>

Bibliographic reference/s	**Gautam J., Glover M., Scragg R., Bullen C., 2014. Parental and retail supply of tobacco to minors: findings from a community-based social supply intervention study. *Health Policy,* 117, p120-127**
Study name	Keeping Kids Smokefree (KKS)

provide cigarettes					

*Adjusted for ethnicity, gender, current smoking status.

**The control group prevalence used to calculate the aRR was control group prevalence (16/656).

***Effect estimate with standard error inflated to adjust for clustering. This is the result used in any analysis.

Children's self-report of where they obtain their cigarettes (negative outcome)

	Intervention group n= 36	Control group n= 18	aOR (95% C.I)	aRR* calculated by analyst	**aRR** adjusted for clustering**
Critical Outcome					
Number of children who smoke and report parent as usual source of cigarettes.	5 (14%)	0 (0%)	Not presented in the paper	5.65 (0.33, 96.85)	**5.65 (0.23, 136.24)**

*Not adjusted for any confounders as calculated from raw data.

** Effect estimate with standard error inflated to adjust for clustering. This is the result used in any analysis.

Data also collected on student access from shops, and student access from parents leaving cigarettes around, but these are out of scope.

Important outcomes	None reported
Statistical Analysis	Pearson's Chi-Square used to detect differences between groups. Logistic regression to examine if study group was related to change in parents' behaviour (controlling for ethnicity, gender, current smoking status where possible). Student results provided descriptively due to small cell counts.

Risk of bias (ROB) ROBINS-I tool	**Outcome: parents willingness to provide cigarettes**	**Judgement**	**Comments**
	Pre-intervention: bias due to confounding	Moderate	Confounders present and mainly adjusted for in analysis. Decile (SES) not adjusted for and may affect results (explaining poor results in intervention group).

Bibliographic reference/s	**Gautam J., Glover M., Scragg R., Bullen C., 2014. Parental and retail supply of tobacco to minors: findings from a community-based social supply intervention study. *Health Policy,* 117, p120-127**		
Study name	Keeping Kids Smokefree (KKS)		
	Pre-intervention: bias in selection of participants into study	Serious	All eligible invited, but response rates for students were maximum 80% and lower for parents. No adjustment for selection bias. Start of follow-up and start of intervention don't completely coincide (intervention graduated)
	At intervention: Bias in classification of interventions	Low	Intervention fairly well defined and defined based on information collected at time of intervention.
	Post-intervention: bias due to deviations from intended interventions	Low	Exposure to intervention at community level so adherence to intervention not relevant.
	Post-intervention: bias due to missing data	Moderate	Attrition issues present. Data for students in 2008 lost, so no overlap between students at baseline and students at follow-up. Attrition for parents high overall (>66%) but unclear whether different between I and C groups.
	Post-intervention: bias in measurement of outcomes	Serious	Outcome was subjective (self-reported in both outcomes) and assessors not reported as being blinded. High probability of people feeling the need to report socially desirable results. Likely to affect I group more, due to intervention messaging.
	Post-intervention: Bias in selection of the reported result	Serious	Few results presented for students due to low result numbers
	Overall Risk of Bias	**Serious**	
	Outcome: children's self-report of where they obtain cigarettes	**Judgement**	**Comments**
	Pre-intervention: bias due to confounding	Serious	Confounders present and not adjusted for in analysis (as raw data used). Decile (SES) not adjusted for and may affect results (explaining poor results in intervention group).
	Overall Risk of Bias	**Serious**	
Source of funding	All authors employed by University of Auckland. No others reported.		

Bibliographic reference/s	**Gautam J., Glover M., Scragg R., Bullen C., 2014. Parental and retail supply of tobacco to minors: findings from a community-based social supply intervention study. *Health Policy,* 117, p120-127**
Study name	Keeping Kids Smokefree (KKS)
Comments	Part of this intervention included test purchasing, which is outside of scope. Potential reporting bias – little information on student survey outcomes.
Additional references	Glover M., Scragg R., Nosa V., Bullen C. 2010. Keeping Kids Smokefree: Rationale, design, and implementation of a community, school, and family-based intervention to modify behaviors related to smoking among Maori and Pacific Island children in New Zealand. Applied Research and Evaluation, 30(3) p205-222.

Appendix E – Forest plots

No meta-analysis was undertaken.

Appendix F – GRADE tables

Profile 1: Parents willing to provide cigarettes to their children (Critical)

Quality assessment							No of participants		Effect		Confidence
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Keeping Kids Smokefree	Control	Relative (95% CI)	Absolute	
Parent willingness to provide cigarettes to their children (follow-up mean 3 years; assessed with: Self-report survey)											
1 Gautam 2014	controlled before and after study	serious[1]	NA	serious[2]	serious[3]	none	19/354 (5.4%)	16/656 (2.4%)	RR 1.73 (0.12, 25.95)	15 more per 1000 (from 27 fewer to 659 more)	⊕OOO VERY LOW

Profile 2: Children who smoke reporting that parents are main source of cigarettes (Critical)

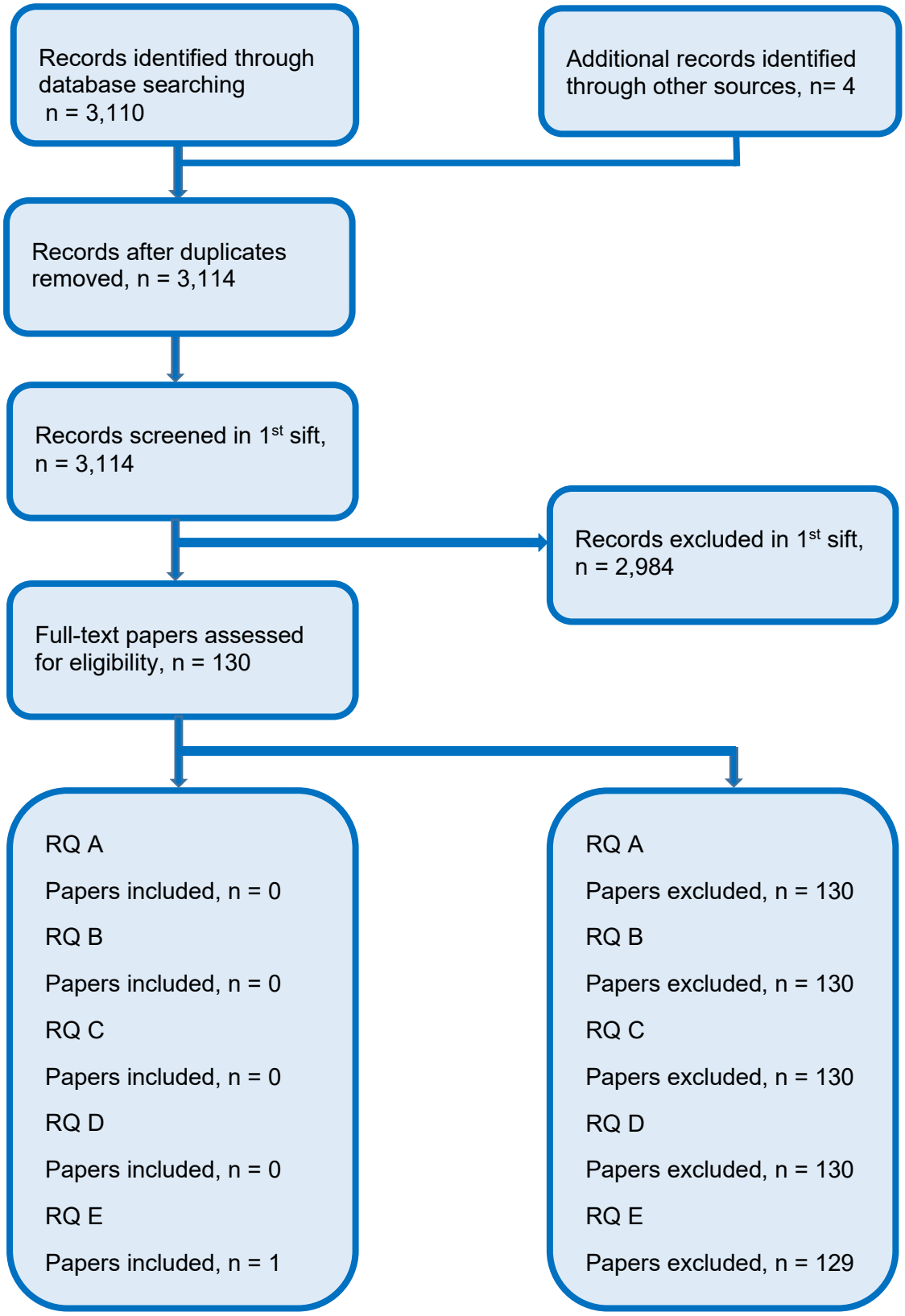
Quality assessment							No of patients		Effect		Confidence
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Keeping Kids Smokefree	Control	Relative (95% CI)	Absolute	
Children's self-report of where they obtain their cigarettes (follow-up mean 3 years; assessed with: Self-report survey)											
1 Gautam 2014	controlled before and after study	very serious[4]	NA	serious[2]	very serious[5]	none	5/36 (13.9%)	0/18 (0%)	RR 5.65 (0.24 to 136.24)	-[6]	⊕OOO VERY LOW

[1] Outcome subjective and measurement unblinded. High attrition (>66%).
[2] Study takes place in New Zealand with mainly indigenous groups.
[3] Confidence intervals cross MID.
[4] Outcome subjective and measurement unblinded. High attrition (>66%). No adjustment for any confounders but apparent large differences in baseline characteristics.
[5] Confidence intervals cross MID and small sample size (<300 people).
[6] No absolute effect may be calculated because the control risk is 0.

Appendix G – Economic evidence study selection

The following flowchart shows the record selection process for review questions C.i. and D.i.

Figure 1: Flow chart of economic evidence study selection for the guideline



Appendix H - Economic evidence tables

No economic studies were included in Reviews C and D.

Appendix I – Health economic evidence profiles

No economic studies were included in Reviews C and D.

Appendix J – Health economic analysis

No economic studies were included in Reviews C and D.

Appendix K – Excluded studies

Public health studies

Reviews C and D combined

Study Citation	Reason for excluding
Allen Michele L, Garcia-Huidobro Diego, Porta Carolyn, Curran Dorothy, Patel Roma, Miller Jonathan, and Borowsky Iris (2016) Effective Parenting Interventions to Reduce Youth Substance Use: A Systematic Review. Pediatrics 138(2),	Exclude on intervention: parenting intervention on reducing use
Baker P J (2006) Developing a Blueprint for evidence-based drug prevention in England. Drugs-Education Prevention and Policy 13(1), 17-32	Exclude on study design: development of prevention programme
Batstone G, Edwards M (2000) Preventing the uptake of smoking in young people. Journal of Clinical Excellence 1(4), 258	Exclude on study design: review
Berkley Patton, and Jannette Y (2005) Evaluation of a comprehensive community effort to reduce substance abuse among adolescents in a Kansas community. Dissertation Abstracts International: Section B: The Sciences and Engineering 65(9-B), 4811	Exclude on intervention: reducing substance use
Biglan A, and Hinds E (2009) Evolving Prosocial and Sustainable Neighborhoods and Communities. In: , editors. Annual Review of Clinical Psychology. : , p169-196	Exclude on study design: narrative review
Biglan A, Ary D V, Smolkowski K, Duncan T, and Black C (2000) A randomised controlled trial of a community intervention to prevent adolescent tobacco use. Tobacco Control 9(1), 24-32	Exclude on intervention: community prevention programme
Brown Tamara, Platt Stephen, and Amos Amanda (2014) Equity impact of interventions and policies to reduce smoking in youth: systematic review. Tobacco control 23(e2), e98-105	Exclude on intervention: equity impact of interventions on smoking
Burstein Aaron J (2006) Stopping internet-based tobacco sales through domain name seizure. Health matrix (Cleveland, and Ohio : 1991) 16(2), 279-334	Exclude on study design: regulatory
Carson K V, Brinn M P, Labiszewski N A, Esterman A J, Chang A B, and Smith B J (2011) Community interventions for preventing smoking in young people. Cochrane Database of Systematic Reviews (7),	Exclude on intervention: interventions on smoking behaviour
Chen Vincent, and Forster Jean L (2006) The long-term effect of local policies to restrict retail sale of tobacco to youth. Nicotine & tobacco research : official journal of the Society for Research on Nicotine and Tobacco 8(3), 371-7	Exclude on intervention: enforcement
Courser M W, Holder H D, Collins D, Johnson K, and Ogilvie K (2007) An evaluation of retail outlets as part of a community prevention trial to reduce sales of harmful legal products to youth. Evaluation Review 31(4), 343-363	Exclude on target population: community prevention with retailers
Cummings K M (1999) Community-wide interventions for tobacco control. Nicotine & tobacco research : official journal of the Society for Research on Nicotine and Tobacco 1 Suppl 1, S113-6	Exclude on study design: narrative review
Cummings K Michael, Hyland Andrew, Perla Jeanne, and Giovino Gary A (2003) Is the prevalence of youth smoking affected by efforts	Exclude on intervention: enforcement

to increase retailer compliance with a minors' access law?. Nicotine & tobacco research : official journal of the Society for Research on Nicotine and Tobacco 5(4), 465-71	
Department of Health : (2002) Statistics on activity undertaken to prevent the sale of tobacco products to children aged under 16 years in England, 2001. Statistical Bulletin (16),	Exclude on study design: survey
DiFranza Joseph R (2012) Which interventions against the sale of tobacco to minors can be expected to reduce smoking?. Tobacco control 21(4), 436-42	Exclude on intervention: enforcement interventions
Donaghy Edward, Bauld Linda, Eadie Douglas, McKell Jennifer, Pringle Brian, and Amos Amanda (2013) A qualitative study of how young Scottish smokers living in disadvantaged communities get their cigarettes. Nicotine & tobacco research : official journal of the Society for Research on Nicotine and Tobacco 15(12), 2053-9	Exclude on intervention: related to regulation
Ennis S L, Leroux J, and Warner P J (1999) Knowledge of Ontario's tobacco control act in the community of Scarborough. Canadian Journal of Public Health 90(2), 83-84	Exclude on intervention: related to regulation
Fisher L (2000) Internet tobacco sales. Cancer causes & control : CCC 11(7), 675-6	Exclude on study design: note/letter
Forster Jean L, Murray David M, Wolfson Mark, Blaine Therese M, Wagenaar Alexander C, and Hennrikus Deborah J (1998) The effects of community policies to reduce youth access to tobacco. American Journal of Public Health 88(8), 1193-1198	Exclude on intervention: enforcement and policies
Gemson D H, Moats H L, Watkins B X, Ganz M L, Robinson S, and Healton E (1998) Laying down the law: reducing illegal tobacco sales to minors in central Harlem. American journal of public health 88(6), 936-9	Exclude on target population: retailers
Gendall Philip, Hoek Janet, Marsh Louise, Edwards Richard, and Healey Benjamin (2014) Youth tobacco access: trends and policy implications. BMJ open 4(4), e004631	Exclude on study design: survey
Gilbertson Troy (2007) Retail point-of-sale guardianship and juvenile tobacco purchases: assessing the prevention capabilities of undergraduate college students. Journal of drug education 37(1), 1-30	Exclude on intervention: point of sale guardianship
Hruba D, and Kachlik P (1998) Smoking and me: An interventional pilot study about school children smoking behaviour. Scripta Medica Facultatis Medicae Universitatis Brunensis Masarykianae 71(5), 329-338	Not able to obtain
Hrubá D, and Zaloudíková I (2008) Where do our children learn to smoke?. Central european journal of public health 16(4), 178-181	Exclude on intervention: prevention
Hublet Anne, Schmid Holger, Clays Els, Godeau Emmanuelle, Gabhainn Saoirse Nic, Joossens Luk, Maes Lea, and Network Hbsc Research (2009) Association between tobacco control policies and smoking behaviour among adolescents in 29 European countries. Addiction (Abingdon, and England) 104(11), 1918-26	Exclude on intervention: tobacco policies
Jason L A, Pokorny S B, Ji P, and Kunz C (2005) Developing community - School-university partnerships to control youth access to tobacco. Journal of Educational and Psychological Consultation 16(3), 201-222	Exclude on intervention: implementation of community interventions
Jason Leonard A, Pokorny Steven B, Curie Carrie J, and Townsend Stephanie M (2002) Introduction: Preventing youth access to	Exclude on study design: narrative review

tobacco. Special Issue: Preventing youth access to tobacco. 24(1), 1-13	
Krevor B S, Lieberman A, and Gerlach K (2002) Application of consumer protection authority in preventing tobacco sales to minors. Tobacco control 11(2), 109-11	Exclude on study design: case study
Landrine H, Klonoff E A, and Alcaraz R (1998) Minors' access to single cigarettes in California. Preventive medicine 27(4), 503-5	Exclude on study design: access to single cigarettes
Lantz P M, Jacobson P D, Warner K E, Wasserman J, Pollack H A, Person J, and Ahlstrom A (2000) Investing in youth tobacco control: a review of smoking prevention and control strategies. Tobacco Control 9(1), 47-63	Exclude on study design: narrative review
McNeill Ann, Iringe-Koko Belinda, Bains Manpreet, Bauld Linda, Siggens Geoffrey, and Russell Andrew (2014) Countering the demand for, and supply of, illicit tobacco: an assessment of the 'North of England Tackling Illicit Tobacco for Better Health' Programme. Tobacco control 23(e1), e44-50	Exclude on evidence: implementation
Nunez-Smith Marcella, Wolf Elizabeth, Huang Helen Mikiko, Chen Peggy G, Lee Lana, Emanuel Ezekiel J, and Gross Cary P (2010) Media exposure and tobacco, illicit drugs, and alcohol use among children and adolescents: a systematic review. Substance abuse 31(3), 174-92	Exclude on intervention: media exposure
Papanastasiou Natalie, Hill Sarah, and Amos Amanda (2018) Evidence from qualitative studies of youth about the impacts of tobacco control policy on young people in Europe: a systematic review. Nicotine & tobacco research : official journal of the Society for Research on Nicotine and Tobacco ,	Exclude on intervention: impact of tobacco control policies
Rainio Susanna U, and Rimpela Arja H (2009) Home-based sourcing of tobacco among adolescents. Preventive medicine 48(4), 378-82	Exclude on study design: surveys
Ribisl Kurt M, Kim Annice E, and Williams Rebecca S (2002) Are the sales practices of internet cigarette vendors good enough to prevent sales to minors?. American journal of public health 92(6), 940-1	Abstract
Richardson R, and Sowden A (2000) Preventing the uptake of smoking in young people. Nursing Times 96(9), 43-44	Exclude on study design: narrative review
Richter Kimber Kay Paschall (1999) Three case studies evaluating a community-based initiative to reduce adolescent substance abuse. Dissertation Abstracts International: Section B: The Sciences and Engineering 59(8-B), 4451	Exclude on intervention: reducing substance abuse
Silver Diana, Macinko James, Giorgio Margaret, Bae Jin Yung, and Jimenez Geronimo (2016) Retailer compliance with tobacco control laws in New York City before and after raising the minimum legal purchase age to 21. Tobacco control 25(6), 624-627	Exclude on intervention: enforcement
Speizer Ilene S, Bean Melanie K, Obando C Patricia, and Fries Elizabeth (2008) Middle school students' perceived access to cigarettes in Virginia. American journal of health behavior 32(4), 399-410	Exclude on study design: survey
Spoth Richard, Trudeau Linda, Redmond Cleve, and Shin Chungyeol (2016) Replicating and extending a model of effects of universal preventive intervention during early adolescence on young adult substance misuse. Journal of consulting and clinical psychology 84(10), 913-21	Exclude on study design: modelling

Thomas S, Fayter D, Misso K, Ogilvie D, Petticrew M, Sowden A, Whitehead M, and Worthy G (2008) Population tobacco control interventions and their effects on social inequalities in smoking: systematic review. Tobacco control 17(4), 230-7	Exclude on interventions: enforcement interventions
Watson A, and Grove N (1999) Larimer County Tobacco and Youth Project. American Journal of Public Health 89(4), 597-598	Exclude on study design: brief review
White V M, Hayman J, and Hill D J (2008) Can population-based tobacco-control policies change smoking behaviors of adolescents from all socio-economic groups? Findings from Australia: 1987-2005. Cancer Causes and Control 19(6), 631-640	Exclude on intervention: association between socio-economic status and smoking prevalence
Wilson, Nance et al (2006) Training students as facilitators in the Youth Empowerment Strategies (YES!) project. Journal of Community Practice 14(1/2), 201-217	Exclude on intervention: student training

Economic studies

Reference	Reason for exclusion	RQs
Ahmad S. Closing the youth access gap: The projected health benefits and cost savings of a national policy to raise the legal smoking age to 21 in the United States. Health Policy. 2005;75(1):74-84.	Ineligible intervention	A, B, C, D, E
Ahmad S. The cost-effectiveness of raising the legal smoking age in California. Med Decis Making. 2005;25(3):330-40.	Ineligible intervention	A, B, C, D, E
ASH. Cost benefit analysis of the FCTC protocol on illicit trade in tobacco products. 2009. Available from: http://ash.org.uk/information-and-resources/reports-submissions/reports/cost-benefit-analysis-of-the-fctc-protocol-on-illicit-trade-in-tobacco-products/	Ineligible patient population	A, B, C, D, E
Ashley EM, Nardinelli C, Lavaty RA. Estimating the benefits of public health policies that reduce harmful consumption. Health Econ. 2015;24(5):617-24.	Ineligible intervention	A, B, C, D, E
Atusingwize E, Lewis S, Langley T. Economic evaluations of tobacco control mass media campaigns: A systematic review. Tob Control. 2015;24(4):320-27.	Ineligible study design	A, B, C, D, E
Bains N, Pickett W, Hoey J. The use and impact of incentives in population-based smoking cessation programs: A review. American journal of health promotion : AJHP. 1998;12(5):307-20.	Ineligible study design	A, B, C, D, E
Beltramini RF, Bridge PD. Relationship between tobacco advertising and youth smoking: Assessing the effectiveness of a school-based, antismoking intervention program. J Consum Aff. 2001;35(2):263-77.	Ineligible outcomes	A, B, C, D, E
Berrios X, Bedregal P, Guzman B. Cost-effectiveness of health promotion in Chile: Experience with "Mirame!" program. Rev Med Chil. 2004;132(3):361-70.	Ineligible intervention	A, B, C, D, E

Reference	Reason for exclusion	RQs
Blyth A, Maskrey V, Notley C, Barton GR, Brown TJ, Aveyard P, et al. Effectiveness and economic evaluation of self-help educational materials for the prevention of smoking relapse: Randomised controlled trial. Health Technol Assess. 2015;19(59)	Ineligible intervention	A, B, C, D, E
Bold KW, Hanrahan TH, O'Malley SS, Fucito LM. Exploring the utility of web-based social media advertising to recruit adult heavy-drinking smokers for treatment. J Med Internet Res. 2016;18(5):e107.	Ineligible outcomes	A, B, C, D, E
Brown, Kotz, Michie, Stapleton, Walmsley, West. How effective and cost-effective was the national mass media smoking cessation campaign 'stoptober'? Drug Alcohol Depend. 2013;135:52-58.	Ineligible intervention	A, B, C, D, E
Brown HS, Stigler M, Perry C, Dhavan P, Arora M, Reddy KS. The cost-effectiveness of a school-based smoking prevention program in India. Health Promot Int. 2013;28(2):178-86.	Ineligible intervention	A, B, C, D, E
Brubach AL. The case and context for "The Real Cost" campaign. Am J Prev Med. 2019;56(2S1):S5-S8.	Ineligible outcomes	A, B, C, D, E
Burford O, Jiwa M, Carter O, Parsons R, Hendrie D. Internet-based photoaging within Australian pharmacies to promote smoking cessation: Randomized controlled trial. J Med Internet Res. 2013;15(3):e64.	Ineligible intervention	A, B, C, D, E
Campbell R, Starkey F, Holliday J, Audrey S, Bloor M, Parry-Langdon N, et al. An informal school-based peer-led intervention for smoking prevention in adolescence (ASSIST): A cluster randomised trial. Lancet. 2008;371(9624):1595-602.	Ineligible intervention	A, B, C, D, E
Cha S, Ganz O, Cohn AM, Ehlke SJ, Graham AL. Feasibility of biochemical verification in a web-based smoking cessation study. Addict Behav. 2017;73:204-08.	Ineligible intervention	A, B, C, D, E
Chaiton MO, Mecredy GC, Cohen JE, Tilson ML. Tobacco retail outlets and vulnerable populations in Ontario, Canada. IJERGQ. 2013;10(12):7299-309.	Ineligible outcomes	A, B, C, D, E
Chaloupka FJ, Jha P, de Beyer J, Heller P. The economics of tobacco control. BNE. 2004;0(63):1-9.	Ineligible outcomes	A, B, C, D, E
Chen YF, Madan J, Welton N, Yahaya I, Aveyard P, Bauld L, et al. Effectiveness and cost-effectiveness of computer and other electronic aids for smoking cessation: A systematic review and network meta-analysis. Health Technol Assess. 2012;16(38):1-v.	Ineligible intervention	A, B, C, D, E
Cheung KL, Wijnen B, de Vries H. A Review of the Theoretical Basis, Effects, and Cost Effectiveness of Online Smoking Cessation Interventions in the Netherlands: A Mixed-Methods Approach. J Med Internet Res. 2017;19(6):e230.	Ineligible study design	A, B, C, D, E
Clayforth C, Pettigrew S, Mooney K, Lansdorp-Vogelaar I, Rosenberg M, Slevin T. A cost-effectiveness analysis of online, radio and print tobacco control advertisements targeting 25-39 year-old males. Aust N Z J Public Health. 2014;38(3):270-74.	Ineligible intervention	A, B, C, D, E

Reference	Reason for exclusion	RQs
Cole S, Suter C, Nash C, Pollard J. Impact of a temporary NRT enhancement in a state quitline and web-based program. Am J Health Promot. 2018;32(5):1206-13.	Ineligible intervention	A, B, C, D, E
Coleman T, Agboola S, Leonardi-Bee J, Taylor M, McEwen A, McNeill A. Relapse prevention in UK Stop Smoking Services: Current practice, systematic reviews of effectiveness and cost-effectiveness analysis. Health Technol Assess. 2010;14(49):1-181.	Ineligible intervention	A, B, C, D, E
Cotter T, Hung WT, Perez D, Dunlop S, Bishop J. Squeezing new life out of an old Sponge: how to modernise an anti-smoking media campaign to capture a new market. Aust N Z J Public Health. 2011;35(1):75-80.	Ineligible outcomes	A, B, C, D, E
Dallery J, Meredith S, Jarvis B, Nuzzo PA. Internet-based group contingency management to promote smoking abstinence. Exp Clin Psychopharmacol. 2015;23(3):176-83.	Ineligible patient population	A, B, C, D, E
DiFranza JR, Peck RM, Radecki TE, Savageau JA. What is the potential cost-effectiveness of enforcing a prohibition on the sale of tobacco to minors? Prev Med. 2001;32(2):168-74.	Ineligible intervention	A, B, C, D, E
DiFranza JR, Savageau JA, Fletcher KE. Enforcement of underage sales laws as a predictor of daily smoking among adolescents: A national study. BMC Public Health. 2009;9:107.	Ineligible outcomes	A, B, C, D, E
Dobbie F, Hiscock R, Leonardi-Bee J, Murray S, Shahab L, Aveyard P, et al. Evaluating Long-term Outcomes of NHS Stop Smoking Services (ELONS): A prospective cohort study. Health Technol Assess. 2015;19(95)	Ineligible outcomes	A, B, C, D, E
Eddy DM, Peskin B, Shcheprov A, Pawlson G, Shih S, Schaaf D. Effect of smoking cessation advice on cardiovascular disease. Am J Med Qual. 2009;24(3):241-49.	Ineligible intervention	A, B, C, D, E
Fellows JL, Bush T, McAfee T, Dickerson J. Cost effectiveness of the Oregon quitline "free patch initiative". Tob Control. 2007;16(Suppl 1):I47-I52.	Ineligible intervention	A, B, C, D, E
Fishman PA, Ebel BE, Garrison MM, Christakis DA, Wiehe SE, Rivara FP. Cigarette tax increase and media campaign cost of reducing smoking-related deaths. Am J Prev Med. 2005;29(1):19-26.	Ineligible intervention	A, B, C, D, E
Fleischer NL, Thrasher JF, Reynales-Shigematsu LM, Cummings KM, Meza R, Zhang Y, et al. Mexico SimSmoke: How changes in tobacco control policies would impact smoking prevalence and smoking attributable deaths in Mexico. Glob Public Health. 2017;12(7):830-45.	Ineligible outcomes	A, B, C, D, E
Froelicher ES, Sohn M, Max W, Bacchetti P. Women's initiative for nonsmoking - VII: Evaluation of health service utilization and costs among women smokers with cardiovascular disease. J Cardpulm Rehabil. 2004;24(4):218-28.	Ineligible patient population	A, B, C, D, E
Gao K, Wiederhold MD, Kong L, Wiederhold BK. Clinical experiment to assess effectiveness of virtual reality teen smoking cessation program. Stud Health Technol Inform. 2013;191:58-62.	Ineligible outcomes	A, B, C, D, E

Reference	Reason for exclusion	RQs
Graham AL, Chang Y, Fang Y, Cobb NK, Tinkelman D, S., Niaura R, S., et al. Cost-effectiveness of internet and telephone treatment for smoking cessation: An economic evaluation of The iQUITT Study. Tob Control. 2013;22(6):1-7.	Ineligible intervention	A, B, C, D, E
Graham AL, Fang Y, Moreno JL, Streiff SL, Villegas J, Munoz RF, et al. Online advertising to reach and recruit Latino smokers to an internet cessation program: Impact and costs. J Med Internet Res. 2012;14(4):e116.	Ineligible intervention	A, B, C, D, E
Graham AL, Milner P, Saul JE, Pfaff L. Online advertising as a public health and recruitment tool: Comparison of different media campaigns to increase demand for smoking cessation interventions. J Med Internet Res. 2008;10(5):e50.	Ineligible intervention	A, B, C, D, E
Halpin HA, McMenamin SB, Rideout J, Boyce-Smith G. The costs and effectiveness of different benefit designs for treating tobacco dependence: Results from a randomized trial. Inquiry. 2006;43(1):54-65.	Ineligible intervention	A, B, C, D, E
Higashi H, Truong KD, Barendregt JJ, Nguyen PK, Vuong ML, Nguyen TT, et al. Cost effectiveness of tobacco control policies in Vietnam: The case of population-level interventions. Appl Health Econ Health Policy. 2011;9(3):183-96.	Ineligible patient population	A, B, C, D, E
Hill A. A cost-effectiveness evaluation of single and combined smoking cessation interventions in Texas. Tex Med. 2006;102(8):50-55.	Ineligible intervention	A, B, C, D, E
Hoeflmayr D, Hanewinkel R. Do school-based tobacco prevention programmes pay off? The cost-effectiveness of the 'Smoke-free Class Competition'. Public Health. 2008;122(1):34-41.	Ineligible outcomes	A, B, C, D, E
Hollingworth W, Cohen D, Hawkins J, Hughes RA, Moore LAR, Holliday JC, et al. Reducing smoking in adolescents: Cost-effectiveness results from the cluster randomized assist (a stop smoking in schools trial). Nicotine Tob Res 2012;14(2):161-68.	Ineligible intervention	A, B, C, D, E
Hollis JF, McAfee TA, Fellows JL, Zbikowski SM, Stark M, Riedlinger K. The effectiveness and cost effectiveness of telephone counselling and the nicotine patch in a state tobacco quitline. Tob Control. 2007;16(Suppl 1):i53-i59.	Ineligible patient population	A, B, C, D, E
Holtgrave DR, Wunderink KA, Vallone DM, Healton CG. Cost-utility analysis of the National Truth Campaign to prevent youth smoking. Am J Prev Med. 2009;36(5):385-8.	Ineligible intervention	A, B, C, D, E
Hurley SF, Matthews JP. Cost-effectiveness of the Australian National Tobacco Campaign. Tob Control. 2008;17(6):379-84.	Ineligible patient population	A, B, C, D, E
Ip P, Lam T-H, Chan SS-C, Ho FK-W, Lo LA, Chiu IW-S, et al. Use of Internet viral marketing to promote smoke-free lifestyles among Chinese adolescents. PLoS ONE. 2014;9(6):e99082.	Ineligible outcomes	A, B, C, D, E
Jha P, Chaloupka FJ, Moore J, Gajalakshmi V, Gupta PC, Peck R, et al. Tobacco Addiction. 2006	Ineligible intervention	A, B, C, D, E

Reference	Reason for exclusion	RQs
Johansson PM, Tillgren PE, Guldbrandsson KA, Lindholm LA. A model for cost-effectiveness analyses of smoking cessation interventions applied to a quit-and-win contest for mothers of small children. Scand J Public Health. 2005;33:343-52.	Ineligible intervention	A, B, C, D, E
Kahende JW, Loomis BR, Adhikari B, Marshall L. A review of economic evaluations of tobacco control programs. IJERGQ. 2009;6(1):51-68.	Ineligible study design	A, B, C, D, E
Katzman B, Markowitz S, McGeary KA. The impact of lending, borrowing, and anti-smoking policies on cigarette consumption by teens. 2002	Ineligible outcomes	A, B, C, D, E
Kruger J, Brennan A, Strong M, Thomas C, Norman P, Epton T. The cost-effectiveness of a theory-based online health behaviour intervention for new university students: An economic evaluation. BMC Public Health. 2014;14:1011.	Ineligible outcomes	A, B, C, D, E
Kuklinski, Margaret R, Briney, John S, Hawkins, J D, et al. Cost-benefit analysis of communities that care outcomes at eighth grade. Prev Sci. 2012;13(2):150-61.	Ineligible intervention	A, B, C, D, E
Lai T, Habicht J, Reinap M, Chisholm D, Baltussen R. Costs, health effects and cost-effectiveness of alcohol and tobacco control strategies in Estonia. Health Policy. 2007;84:75-88.	Ineligible intervention	A, B, C, D, E
Lantz PM, Jacobson PD, Warner KE, Wasserman J, Pollack HA, Berson J, et al. Investing in youth tobacco control: A review of smoking prevention and control strategies. Tob Control. 2000;9(1):47-63.	Ineligible outcomes	A, B, C, D, E
Leao T, Kunst AE, Perelman J. Cost-effectiveness of tobacco control policies and programmes targeting adolescents: A systematic review. Eur J Public Health. 2018;28(1):39-43.	Ineligible study design	A, B, C, D, E
Lightwood J. The economics of smoking and cardiovascular disease. Prog Cardiovasc Dis. 2003;46(1):39-78.	Ineligible outcomes	A, B, C, D, E
MacMonegle AJ, Nonnemaker J, Duke JC, Farrelly MC, Zhao X, Delahanty JC, et al. Cost-effectiveness analysis of The Real Cost Campaign's effect on smoking prevention. Am J Prev Med. 2018;55(3):319-25.	Ineligible intervention	A, B, C, D, E
McAfee TA, Bush T, Deprey TM, Mahoney LD, Zbikowski SM, Fellows JL, et al. Nicotine patches and uninsured quitline callers: A randomized trial of two versus eight weeks. Am J Prev Med. 2008;35(2):103-10.	Ineligible intervention	A, B, C, D, E
McAlister AL, Rabius V, Geiger A, Glynn TJ, Huang P, Todd R. Telephone assistance for smoking cessation: One year cost effectiveness estimations. Tob Control. 2004;13(1):85-86.	Ineligible intervention	A, B, C, D, E
Medical Advisory, Secretariat. Population-based smoking cessation strategies: A summary of a select group of evidence-based reviews. Ont Health Technol Assess Ser. 2010;10(1):1-44.	Ineligible study design	A, B, C, D, E

Reference	Reason for exclusion	RQs
Medical Advisory, Secretariat. Population-based strategies for smoking cessation. Medical Advisory, Secretariat; 03 Mar 2010 2010. Available from: http://www.crd.york.ac.uk/CRDWeb/ShowRecord.asp?ID=32010000111.	Ineligible study design	A, B, C, D, E
Miller LS, Max W, Sung HY, Rice D, Zaretsky M. Evaluation of the economic impact of California's Tobacco Control Program: A dynamic model approach. Tob Control. 2010;19(Suppl 1):i68-i76.	Ineligible intervention	A, B, C, D, E
Mosbaek CH, Austin DF, Stark MJ, Lambert LC. The association between advertising and calls to a tobacco quitline. Tob Control. 2007;16(Suppl 1):I24-I29.	Ineligible intervention	A, B, C, D, E
National Institute for Health and Care Excellence. School-based interventions to prevent the uptake of smoking among children. National Institute for Health and Care Excellence; 16 Mar 2011 2010. Available from: http://www.crd.york.ac.uk/CRDWeb/ShowRecord.asp?ID=32011000331.	Ineligible study design	A, B, C, D, E
Ngalesoni F, Ruhago G, Mayige M, Oliveira TC, Robberstad B, Norheim OF, et al. Cost-effectiveness analysis of population-based tobacco control strategies in the prevention of cardiovascular diseases in Tanzania. PLoS ONE. 2017;12(8):e0182113.	Ineligible intervention	A, B, C, D, E
Nghiem N, Cleghorn CL, Leung W, Nair N, Deen FSvd, Blakely T, et al. A national quitline service and its promotion in the mass media: Modelling the health gain, health equity and cost-utility. Tob Control. 2018;27(4):434-41.	Ineligible intervention	A, B, C, D, E
Nishio A, Saito J, Tomokawa S, Kobayashi J, Makino Y, Akiyama T, et al. Systematic review of school tobacco prevention programs in African countries from 2000 to 2016. PLoS ONE. 2018;13(2):e0192489.	Ineligible study design	A, B, C, D, E
O'Connor R, Fix B, Celestino P, Carlin-Menter S, Hyland A, Cummings KM. Financial incentives to promote smoking cessation: Evidence from 11 quit and win contests. JPHMP. 2006;12(1):44-51.	Ineligible intervention	A, B, C, D, E
Ohinmaa A, Chatterley P, Nguyen T, Jacobs P. Telehealth in substance abuse and addiction: Review of the literature on smoking, alcohol, drug abuse and gambling. Institute of Health Economics; 05 Jan 2011 2010. Available from: http://www.crd.york.ac.uk/CRDWeb/ShowRecord.asp?ID=32010001722.	Ineligible study design	A, B, C, D, E
Oncken CA, Dietz PM, Tong VT, Belizan JM, Tolosa JE, Berghella V, et al. Prenatal tobacco prevention and cessation interventions for women in low- and middle-income countries. Acta Obstet Gynecol Scand. 2010;89(4):442-53.	Ineligible outcomes	A, B, C, D, E
Ong MK, Glantz SA. Cardiovascular health and economic effects of smoke-free workplaces. Am J Med. 2004;117(1):32-38.	Ineligible intervention	A, B, C, D, E

Reference	Reason for exclusion	RQs
Paech D, Mernagh P, Weston A. A systematic review of economic evaluations for tobacco control programs. Health Services Assessment Collaboration; 22 Dec 2010 2010. Available from: http://www.crd.york.ac.uk/CRDWeb/ShowRecord.asp?ID=32010001693.	Ineligible study design	A, B, C, D, E
Parker DR, Windsor RA, Roberts MB, Hecht J, Hardy NV, Strolla LO, et al. Feasibility, cost, and cost-effectiveness of a telephone-based motivational intervention for underserved pregnant smokers. Nicotine Tob Res 2007;9(10):1043-51.	Ineligible intervention	A, B, C, D, E
Patnode CD, O'Connor E, Whitlock EP, Perdue LA, Soh C. Primary care relevant interventions for tobacco use prevention and cessation in children and adolescents: a systematic evidence review for the U.S. Preventive Services Task Force. Agency for Healthcare R, Quality; 25 Oct 2013 2012. Available from: http://www.crd.york.ac.uk/CRDWeb/ShowRecord.asp?ID=32013000758.	Ineligible study design	A, B, C, D, E
Pearson AL, Cleghorn CL, van der Deen FS, Cobiac LJ, Kvizhinadze G, Nghiem N, et al. Tobacco retail outlet restrictions: health and cost impacts from multistate life-table modelling in a national population. Tob Control. 2016;26:579-85.	Ineligible intervention	A, B, C, D, E
Pearson AL, van der Deen FS, Wilson N, Cobiac L, Blakely T. Theoretical impacts of a range of major tobacco retail outlet reduction interventions: modelling results in a country with a smoke-free nation goal. Tob Control. 2015;24(e1):e32-8.	Ineligible outcomes	A, B, C, D, E
Pechmann C, Delucchi K, Lakon CM, Prochaska JJ. Randomised controlled trial evaluation of Tweet2Quit: A social network quit-smoking intervention. Tob Control. 2017;26(2):188-94.	Ineligible intervention	A, B, C, D, E
Pesis-Katz I, Williams GC, Niemiec CP, Fiscella K. Cost-effectiveness of intensive tobacco dependence intervention based on self-determination theory. Am J Manag Care. 2011;17(10):e393-e98.	Ineligible intervention	A, B, C, D, E
Pifarre M, Carrera A, Vilaplana J, Cuadrado J, Solsona S, Abella F, et al. TControl: A mobile app to follow up tobacco-quitting patients. Comput Methods Programs Biomed. 2017;142:81-89.	Ineligible intervention	A, B, C, D, E
Popp J, Nyman JA, Luo X, Bengtson J, Lust K, An L, et al. Cost-effectiveness of enhancing a Quit-and-Win smoking cessation program for college students. Eur J Health Econ. 2018;19(9):1319-33.	Ineligible intervention	A, B, C, D, E
Prenger R, Pieterse ME, Braakman-Jansen LM, van der Palen J, Christenhusz LC, Seydel ER. Moving beyond a limited follow-up in cost-effectiveness analyses of behavioral interventions. Eur J Health Econ. 2013;14(2):297-306.	Ineligible intervention	A, B, C, D, E
Raikou M, Mcguire A. Cost-effectiveness of a mass media campaign and a point of sale intervention to prevent the uptake of smoking in children and young people. London: London School of Economics and Political Science: LSE Health; February 2008. 1-28. Available from: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.542.3009&rep=rep1&type=pdf.	Ineligible intervention	A, B, C, D, E

Reference	Reason for exclusion	RQs
Rait MA, Prochaska JJ, Rubinstein ML. Recruitment of adolescents for a smoking study: Use of traditional strategies and social media. Transl Behav Med. 2015;5(3):254-9.	Ineligible intervention	A, B, C, D, E
Ramirez AG, Chalela P, Akopian D, Munoz E, Gallion KJ, Despres C, et al. Text and mobile media smoking cessation service for young adults in South Texas: Operation and cost-effectiveness estimation. Health Promot Pract. 2017;18(4):581-85.	Ineligible intervention	A, B, C, D, E
Ranson MK, Jha P, Chaloupka FJ, Nguyen SN. Global and regional estimates of the effectiveness and cost-effectiveness of price increases and other tobacco control policies. Nicotine Tob Res 2002;4(3):311-19.	Ineligible intervention	A, B, C, D, E
Rasmussen SR. The cost effectiveness of telephone counselling to aid smoking cessation in Denmark: A modelling study. Scand J Public Health. 2013;41(1):4-10.	Ineligible patient population	A, B, C, D, E
Rigotti NA. Youth access to tobacco. Nicotine & tobacco research : official journal of the Society for Research on Nicotine and Tobacco. 1999;1 (Suppl 2):S93-7.	Ineligible study design	A, B, C, D, E
Rigotti NA, Bitton A, Kelley JK, Hoeppner BB, Levy DE, Mort E. Offering population-based tobacco treatment in a healthcare setting: A randomized controlled trial. Am J Prev Med. 2011;41(5):498-503.	Ineligible patient population	A, B, C, D, E
Ross H, Powell LM, Bauer JE, Levy DT, Peck RM, Lee H-R. Community-based youth tobacco control interventions: Cost effectiveness of the Full Court Press project. Appl Health Econ Health Policy. 2006;5(3):167-76.	Ineligible intervention	A, B, C, D, E
Sanders A, Robinson C, Taylor SC, Post SD, Goldfarb J, Shi R, et al. Using a media campaign to increase engagement with a mobile-based youth smoking cessation program. Am J Health Promot. 2018;32(5):1273-79.	Ineligible intervention	A, B, C, D, E
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Schmidt AM, Ranney LM, Goldstein AO. Communicating program outcomes to encourage policymaker support for evidence-based state tobacco control. IJERGQ. 2014;11(12):12562-74.	Ineligible intervention	A, B, C, D, E
Schmitt CL, Malarcher AM, Clark PI, Bombard JM, Strauss W, Stillman FA. Community guide recommendations and state level	Ineligible outcomes	A, B, C, D, E

Reference	Reason for exclusion	RQs
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Schulz DN, Smit ES, Stanczyk NE, Kremers SP, de Vries H, Evers SM. Economic evaluation of a web-based tailored lifestyle intervention for adults: Findings regarding cost-effectiveness and cost-utility from a randomized controlled trial. J Med Internet Res. 2014;16(3):e91.	Ineligible intervention	A, B, C, D, E
Secker-Walker RH, Holland RR, Lloyd CM, Pelkey D, Flynn BS. Cost effectiveness of a community based research project to help women quit smoking. Tob Control. 2005;14:37-42.	Ineligible intervention	A, B, C, D, E
Secker-Walker RH, Worden JK, Holland RR, Flynn BS, Detsky AS. A mass media programme to prevent smoking among adolescents: Costs and cost effectiveness. Tob Control. 1997;6(3):207-12.	Ineligible patient population	A, B, C, D, E
Sharma R, Shewade HD, Gopalan B, Badrel RK, Rana JS. Earned print media in advancing tobacco control in Himachal Pradesh, India: A descriptive study. BMJ global health. 2017;2(2):e000208.	Ineligible patient population	A, B, C, D, E
Shearer J, Shanahan M. Cost effectiveness analysis of smoking cessation interventions. Aust N Z J Public Health. 2006;30(5):428-34.	Ineligible intervention	A, B, C, D, E
Simpson SA, Nonnemaker JM. New York tobacco control program cessation assistance: Costs, benefits, and effectiveness. IJERGQ. 2013;10(3):1037-47.	Ineligible intervention	A, B, C, D, E
Singh K, Chandrasekaran AM, Bhaumik S, Chattopadhyay K, Gamage AU, Silva PD, et al. Cost-effectiveness of interventions to control cardiovascular diseases and diabetes mellitus in South Asia: A systematic review. BMJ Open. 2018;8(4):e017809.	Ineligible patient population	A, B, C, D, E
Smit ES, Evers SMAA, de Vries H, Hoving C. Cost-effectiveness and cost-utility of Internet-based computer tailoring for smoking cessation. J Med Internet Res. 2013;15(3):e57.	Ineligible intervention	A, B, C, D, E
Smith MW, An LC, Fu SS, Nelson DB, Joseph AM. Cost-effectiveness of an intensive telephone-based intervention for smoking cessation. J Telemed Telecare. 2011;17(8):437-40.	Ineligible intervention	A, B, C, D, E
Smith PM, Cameron R, McDonald PW, Kawash B, Madill C, Brown KS. Telephone counseling for population-based smoking cessation. Am J Health Behav. 2004;28(3):231-41.	Ineligible intervention	A, B, C, D, E
Smith SS, Keller PA, Kobinsky KH, Baker TB, Fraser DL, Bush T, et al. Enhancing tobacco quitline effectiveness: Identifying a superior pharmacotherapy adjuvant. Nicotine Tob Res 2013;15(3):718-28.	Ineligible patient population	A, B, C, D, E
Stanczyk NE, Smit ES, Schulz DN, de Vries H, Bolman C, Muris JW, et al. An economic evaluation of a video- and text-based computer-tailored intervention for smoking cessation: a cost-effectiveness and cost-utility analysis of a randomized controlled trial. PLoS ONE. 2014;9(10):e110117.	Ineligible intervention	A, B, C, D, E

Reference	Reason for exclusion	RQs
Stephens T, Kaiserman MJ, McCall DJ, Sutherland-Brown C. School-based smoking prevention: Economic costs versus benefits. Chronic Dis Can. 2000;21(2):62-7.	Ineligible intervention	A, B, C, D, E
Stevens W, Thorogood M, Kayikki S. Cost-effectiveness of a community anti-smoking campaign targeted at a high risk group in London. Health Promot Int. 2002;17(1):43-50.	Ineligible intervention	A, B, C, D, E
Tengs TO, Osgood ND, Chen LL. The cost-effectiveness of intensive national school-based anti-tobacco education: Results from the tobacco policy model. Prev Med. 2001;33:558-70.	Ineligible intervention	A, B, C, D, E
Tomson T, Helgason AR, Gilljam H. Quitline in smoking cessation: A cost-effectiveness analysis. Int J Technol Assess Health Care. 2004;20(4):469-74.	Ineligible intervention	A, B, C, D, E
US Community Preventive Services Task Force. Tobacco use and secondhand smoke exposure: Mass-reach health communication interventions. Force UCPST; 2013. Available from: https://www.thecommunityguide.org/findings/tobacco-use-and-secondhand-smoke-exposure-mass-reach-health-communication-interventions.	Ineligible study design	A, B, C, D, E
Van den Bruel A, Cleemput I, Van Linden A, Schoefs D, Ramaekers D, Bonneux L. Effectiveness and cost-effectiveness of treatments for smoking cessation. Belgian Health Care Knowledge C; 20 Aug 2005 2004. Available from: http://www.crd.york.ac.uk/CRDWeb/ShowRecord.asp?ID=32005000669.	non-English language	A, B, C, D, E
Vemer P, Rutten-van Molken MP, Kaper J, Hoogenveen RT, van Schayck CP, Feenstra TL. If you try to stop smoking, should we pay for it? The cost utility of reimbursing smoking cessation support in the Netherlands. Addiction. 2010;105(6):1088-97.	Ineligible intervention	A, B, C, D, E
Vijgen SM, van Baal PH, Hoogenveen RT, de Wit GA, Feenstra TL. Cost-effectiveness analyses of health promotion programs: A case study of smoking prevention and cessation among Dutch students. Health Educ Res. 2008;23(2):310-18.	Ineligible intervention	A, B, C, D, E
Villanti AC, Curry LE, Richardson A, Vallone DM, Holtgrave DR. Analysis of media campaign promoting smoking cessation suggests it was cost-effective in prompting quit attempts. Health Aff. 2012;31(12):2708-16.	Ineligible intervention	A, B, C, D, E
Vodopivec-Jamsek V, de Jongh T, Gurol-Urganci I, Atun R, Car J. Mobile phone messaging for preventive health care. Cochrane Database Syst Rev. 2012;12:CD007457.	Ineligible study design	A, B, C, D, E
Wang LY, Crossett LS, Lowry R, Sussman S, Dent CW. Cost-effectiveness of a school-based tobacco-use prevention program. Arch Pediatr Adolesc Med. 2001;155(9):1043-50.	Ineligible intervention	A, B, C, D, E
Warner KE, Jacobson PD, Kaufman NJ. Innovative approaches to youth tobacco control: introduction and overview. Tob Control. 2003;12 (Suppl 1):i1-15.	Ineligible study design	A, B, C, D, E

Reference	Reason for exclusion	RQs
Weir BW, Cantrell J, Holtgrave DR, Greenberg MS, Kennedy RD, Rath JM, et al. Cost and threshold analysis of the FinishIt Campaign to prevent youth smoking in the United States. IJERGQ. 2018;15(8)	Ineligible intervention	A, B, C, D, E
White J, Hawkins J, Madden K, Grant A, Er V, Angel L, et al. Adapting the ASSIST model of informal peer-led intervention delivery to the Talk to FRANK drug prevention programme in UK secondary schools (ASSIST + FRANK): Intervention development, refinement and a pilot cluster randomised controlled trial. 2017	Ineligible intervention	A, B, C, D, E
White JS, Dow WH, Rungruanghiranya S. Commitment contracts and team incentives: A randomized controlled trial for smoking cessation in Thailand. Am J Prev Med. 2013;45(5):533-42.	Ineligible intervention	A, B, C, D, E
White VM, Warne CD, Spittal MJ, Durkin S, Purcell K, Wakefield MA. What impact have tobacco control policies, cigarette price and tobacco control programme funding had on Australian adolescents' smoking? Findings over a 15-year period. Addiction. 2011;106(8):1493-502.	Ineligible outcomes	A, B, C, D, E
Wilson LM, Avila Tang E, Chander G, Hutton HE, Odelola OA, Elf JL, et al. Impact of tobacco control interventions on smoking initiation, cessation, and prevalence: A systematic review. J Environ Public Health. 2012;2012:961724.	Ineligible study design	A, B, C, D, E
Wolfenden L, Nathan NK, Sutherland R, Yoong SL, Hodder RK, Wyse RJ, et al. Strategies for enhancing the implementation of school-based policies or practices targeting risk factors for chronic disease. Cochrane Database Syst Rev. 2017;11:CD011677.	Ineligible outcomes	A, B, C, D, E
Wong S, Ordean A, Kahan M, Gagnon R, Hudon L, Basso M, et al. Substance use in pregnancy. J Obstet Gynecol. 2011;33(4):367-84.	Ineligible intervention	A, B, C, D, E
Wu Q, Parrott S, Godfrey C, Gilbert H, Nazareth I, Leurent B, et al. Cost-effectiveness of computer-tailored smoking cessation advice in primary care: A randomized trial (ESCAPE). Nicotine Tob Res 2013;16(3):270-78.	Ineligible intervention	A, B, C, D, E
Xu X, Alexander RJ, Simpson SA, Goates S, Nonnemaker JM, Davis KC, et al. A cost-effectiveness analysis of the first federally funded antismoking campaign. Am J Prev Med. 2014:epub.	Ineligible intervention	A, B, C, D, E
Yang W, Zou Q, Tan E, Watkins L, Beronja K, Hogan PF, et al. Future health and economic impact of comprehensive tobacco control in DoD: A microsimulation approach. Mil Med. 2018;183(1-2):e104-e12.	Ineligible patient population	A, B, C, D, E
Yousuf H, Reintjens R, Slipszenko E, Blok S, Somsen GA, Tulevski II, et al. Effectiveness of web-based personalised e-Coaching lifestyle interventions. Neth Heart J. 2019;27(1):24-29.	Ineligible outcomes	A, B, C, D, E

Appendix L – Research recommendations

No research recommendations have been made for this review.