Evidence base for risk and protective factors associated with smoking initiation and cessation:

A brief scope of the literature (September 2022)

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Contents

Introduction

This scoping report provides an overview of the evidence from a scoping search conducted by the Evidence Service to identify sources relevant to protective and risk factors associated with smoking initiation and cessation.

Sources adhering to robust systematic review principles[1] and Google Scholar were searched for both published and grey literature. Following conversations with topic experts, the tobacco reports and publications by U.S. Department of Health and Human Services (HHS) and the Norwegian Institute of Public Health were scanned to identify further potentially relevant evidence. The term “review” has been used in this report to refer to any piece of evidence produced using systematic methodology (including critical appraisal) i.e., systematic reviews, scoping reviews, rapid reviews etc.

Eligible reviews from non-robust sources were critically appraised using the Evidence Service critical appraisal checklist for systematic reviews. Only reviews considered to be of acceptable quality were included in this report. Four reviews were excluded as appraisal highlighted poor reporting of outcome measures and poor application of systematic review methodology (Wolford-Clevenger C et al. 2021; Mostardinha & Pereira 2019; Barlow et al. 2017; Seo & Huang 2012).

In total, sixteen reviews focussing on specific populations or individual risk/protective factors were identified. Due to the broad nature of the topic, an overarching review covering the breadth of the topic was not identified.

Factors associated with smoking initiation and cessation identified from the included reviews were extracted and briefly summarised within this report. Findings and conclusions included are those of the source authors and not an interpretation by the Evidence Service.

Some risk and protective factors may be relevant to certain populations only. This scoping report has not investigated in detail, which factors appear among all populations, or specific populations or their generalisability to other population groups. It has merely sought to identify risk and protective factors in relation to smoking initiation and cessation. It is important to consider this when interpreting the findings. If a specific factor is of interest, reading the sources in detail is advised, as it will provide more context. Additionally, consider the generalisability to Welsh context before utilising the review findings for policy initiatives.

[1] Follows core systematic review principles: comprehensive search strategy, selection of sources based on objective criteria, assessment of risk of bias of primary sources and/or is a methodology developed by an expert body e.g. NICE. For a full-list of sources searched, please refer to Sources searched section of the report.

Review question	
What protective/ motivational and risk factors (personal, interpersonal and structural) are associated with smoking initiation? *What protective/ motivational and risk factors (personal, interpersonal and structural) are associated with smoking cessation?*	
Sample	Any age group
Phenomenon of interest	Smoking initiation and cessation
Design	Systematic reviews of: Cross-sectional studies, cohort studies, case-control studies
Evaluation	Risk and protective factors
Research type	Quantitative, qualitative and mixed-methods
Other Study Considerations	
Date limit: Reviews from 2000 onwards OECD countries for generalisability to Welsh population context	

Did the search find any good quality reviews addressing the topic of interest?

Our search failed to identify a single robust review seeking to identify risk and protective factors of smoking initiation or cessation among the general public. Several reviews focussing on specific populations or individual risk/protective factors were identified. Each of these generally included a large number of primary studies. Identified reviews are summarised in tables 1, 2 and 3. An additional report was considered highly relevant, but it did not meet our inclusion criteria due to insufficient reporting of the methodology. As this may be of interest to stakeholders, it is summarised in table 4.

What evidence was identified that addressed the topic?

- Sixteen reviews investigating the risk and protective factors of smoking were identified. Of these, seven were conducted by NICE as part of the guidance update for NICE guideline NG209 *Tobacco: preventing uptake, promoting quitting and treating dependence*, published in November 2021, and updated August 2022. Two reviews by Cochrane and one review each by NIHR Health Technology Assessment Journal and EPPI Centre were also identified.

- Reviews were published from 2011 until 2021, and included literature published from 1984 until 2021. They included between two and 112 primary studies relevant

to their individual aim. Most deemed their included studies to be of moderate or poor quality.

- The majority of included primary studies were observational or qualitative in design and conducted within pre-1974 OECD countries, predominantly USA. Very few were conducted in the UK.

- Of the 16 systematic reviews, six focussed on factors associated with smoking initiation (one by Cochrane and one by EPPI Centre), seven focussed on factors associated with smoking cessation (four by NICE and one by Cochrane) and three focussed solely on e-cigarettes as a gateway to cigarette smoking initiation (two by NICE).

- Evidence suggests that cigarette smoking in children and young adults is influenced by a combination of multiple factors including biological, psychosocial, and environmental factors. These can function as a risk or a protective factor or both. Evidence suggests inter-relations between various factors determines an individual's overall risk profile.

- The following factors were identified amongst specific population groups, suggesting them to be population-specific:

	Accessibility	Affordability	Behavioural factors	Community influence	Coping strategy	E-cigarettes	Family influence	Health risks	Identity	Incentivisation	Media influence	Peer influence	Social norms
Smoking initiation													
Children and young adults	± (2)	± (1)	- (1)			- (2)	- (2)				- (1)	± (1)	- (1)
Adults						- (1)							
Smoking cessation													
Children and young adults						- (3)							
Adults						- (1)							-
Pregnant and postpartum women					- (1)	± (3)	± (2)	± (2)	± (1)	± (1)		± (2)	- (2)
Partners of pregnant and postpartum women					- (1)		± (2)	± (1)	- (1)				
Key: - risk factor, + protective factor, ± both risk/ protective factor, (n) denotes number of systematic reviews contributing to each factor in the specified population													

Factors influencing the uptake of smoking

Accessibility: One review suggests that a high density of tobacco outlets near schools may increase youth smoking (Marsh et al. 2021). Another review reports that enforcement of policies prohibiting retail sales of cigarettes to minors, such as sales of cigarettes using vending machines, and other means making tobacco accessible to youth in the commercial setting can limit opportunities to access (Sutcliffe et al. 2011).

Affordability: Evidence from a review indicates that cigarette prices can influence initiation, prevalence, and intensity of smoking among youth and young adults (Sutcliffe et al. 2011).

Behavioural factors: Evidence from a review suggests that perceptions of risk and seeing smoking as rebellious might be associated with smoking initiation in the youth (Sutcliffe et al. 2011).

E-cigarette use: Two reviews (one included children, young people and young adults while the second included only adults) concluded that exposure to e-cigarettes was significantly associated with an increase in intention to smoke (NICE 2021a and Baenziger et al. 2021). They also reported that exposure to e-cigarettes was significantly associated with an increase in ever smoking among those who used nicotine e-cigarettes, those who used e-cigarettes without nicotine as well as those who had no peer smoking at baseline. E-cigarettes as a gateway to cigarette initiation are an emerging area of research, therefore reviews on this topic are summarised separately in Table 3.

Family influence: A review observed no association between paternal prenatal smoking and smoking in offspring, whereas exposure to maternal prenatal tobacco smoking increased risk of tobacco smoking and dependence in the exposed offspring (Duko et al. 2021). Similarly, another review suggested sibling smoking might be a strong and significant risk factor of smoking initiation in children and young people (Leonardi-Bee et al. 2011).

Media influences: Evidence from a review indicates that depictions of smoking in the movies significantly increases the risk of smoking uptake in young people (Leonardi-Bee et al. 2016). It suggested that exposure to fictional characters who smoke can create an exaggerated social norm about the prevalence and acceptability of smoking. There is also evidence that prior exposure to tobacco industry marketing, such as advertising and promotion, is associated with future smoking among adolescents (Lovato et al. 2011).

Peer influence: Social influences were identified as a consistent predictor of adolescent smoking, acting as both risk and protective factors. Evidence from a review indicates that friends are the most significant source of cigarettes (Sutcliffe et al. 2011). Additionally, a positive social image of cigarette smoking i.e., youth who smoke are “liked by other youth,” are “exciting,” and are “cool or neat”; was associated with increased intentions to smoke.

Social Norms: Anti-smoking policies help establish anti-smoking social norms by discouraging smoking and forcing smokers to refrain from smoking in indoor

public places, including indoor workplaces and public houses. Restrictions may create perceptions of social disapproval among both adults and youth, and structuring the physical environment to make it inconvenient for youth to smoke may influence their decision to initiate smoking. Evidence indicates that youth who witness adolescents or adults smoking in public settings are more likely to perceive smoking as a socially acceptable behaviour (Sutcliffe et al. 2011). In this regard, perceptions of prevalent tobacco use on school grounds may promote social norms that encourage smoking uptake and persistence.

Factors influencing smoking cessation

Coping strategy: In a review of qualitative studies, pregnant and postpartum women described smoking as a resource for managing stress and suggested that attempting to quit could take away a stress management tool (Bauld et al. 2017). Their partners also described the importance of smoking to reduce stress with some partners describing their continuing to smoke as a mood management strategy and a 'time out'. The women and their partners in this review also talked about the enjoyment of smoking.

E-cigarette use: Evidence suggests that e-cigarette use in former smokers is associated with increased smoking relapse compared to never e-cigarette users (Baenziger et al. 2021). A NICE update in children and young adults, found an association between exposure to e-cigarettes with an increase in ever smoking. No effect was found on increased exposure to e-cigarettes on rate of decline in ever smoking as well as regular smoking (NICE 2021a). Another NICE update found no clear evidence about the impact of recreational e-cigarette use on future smoking habits among children and young adults who smoke (NICE 2021b). The update committee agreed that the imprecision of the association between e-cigarette use and future smoking among those who did smoke at baseline meant that no conclusions could be drawn on the association at this point.

Research in pregnant women indicates that beliefs about the safety as well as the e-cigarettes' ability to mimic a cigarette, influences their readiness to use these in pregnancy (NICE 2021e and Campbell et al. 2020).

Family influence: Evidence indicates that relationships with significant others may act as both a barrier and facilitator to women's ability to quit smoking during pregnancy and the postpartum period (NICE 2021e). Another review by Bauld et al. (2017) supported this finding. Partners and significant others acted as a facilitator by helping encourage and motivate their pregnant partner to stop smoking. The negative influence operated in one of two ways. The first, and most common, was when the partner smoked and their continued smoking affected the couple's interpersonal relationship in a variety of ways. The second was when the partner applied pressure on the woman to quit or maintain abstinence and this pressure had negative consequences. The review also showed inconsistent or manipulative behaviour by some smoking partners, who might offer cigarettes during stressful times and then reprimand women for smoking on other occasions.

Health risks: Evidence suggests that several factors influence women's readiness to use, continued use or stop NRT and/or e-cigarettes during pregnancy (NICE 2021e). These include the perceived views and support from other people as well as their beliefs and concerns about the safety, addictiveness, efficacy and side effects of nicotine. Factors that may act as both barriers and facilitators to women's ability to quit smoking during pregnancy and postpartum period are psychological well-being and changing connections with her baby through and after pregnancy, and appraisal of the risk of smoking. These factors have a dormant capacity to aid as well as impede smoking cessation with the tendency for the latter in disadvantaged smokers.

Another review suggests that beliefs about the risks of smoking stemmed from norms or knowledge influenced by mass media campaigns or, arguably, earlier interventions including health information in childhood or early adulthood (Bauld et al. 2017). Risk perceptions were often described as relating to smokers in the population, therefore a disembodied risk, rather than a personal one. Some women questioned the applicability of these risks to them or even if these risks were 'real' at all. Women understood low birthweight as a risk of smoking in pregnancy but also saw it as an advantage, with a smaller baby perceived to make labour and delivery easier. Smoking was also seen as potentially a tool to conform to a desired female form, as it was perceived to control weight gain.

Additionally, the review illustrated a particular and widespread scepticism amongst the partners of pregnant and postpartum women. Whilst they accepted there were some risks to smoking in pregnancy, they felt that specific information on how smoking was damaging to the babies or indeed to themselves, was missing. They also felt that there were inconsistencies in government advice, and smoking partners had negative views about tobacco control policies. Some men, however, recognised that their continued smoking would undermine their capacity to be a positive role model for their children and fundamentally, could harm their capacity to be around as their children grew up; given the real risks, continued smoking would pose to their life expectancy. First-time fathers were more concerned than those who already had children, where the mother had smoked during her pregnancy and the baby appeared healthy.

Identity: Women's perceptions that smoking was part of their identity was evident in a review of studies with pregnant and postpartum women (Bauld et al. 2017). It identified being pregnant represented a break for most women from the 'acceptability' of a smoker identity. This perception served as part of their motivation to stop or at least to try.

Another finding was the distinction in smoking identity between being pregnant and having had the baby. During the postpartum period, women in particular talked about 'reclaiming' part of their former self that they associated with smoking alongside specific more tangible benefits that they associated with tobacco use (e.g. weight control). Smoking cessation was perceived by some women as a temporary change undertaken for the baby in utero and while breastfeeding, particularly in the older studies in the reviews. As such, any return

to smoking in the postpartum period was seen as an assumed resumption and not a relapse.

Additionally the partners of these women, who continued to smoke, perceived being a smoker as conveying autonomy, independence and a positive masculine identity. Some men felt that they had a 'right' to smoke that was curtailed by tobacco control measures such as banning smoking in public places.

Incentivisation: There is some evidence that incentivising engagement with smoking cessation services, especially in the form of financial incentives, facilitates quitting attempts in pregnant women (NICE 2021d). Although encountering logistical problems with obtaining vouchers, may hinder their attempt to stop smoking.

Peer influence: Evidence indicates that relationships with significant others may act as both barriers to and facilitators to a women's ability to quit smoking during pregnancy and postpartum period (NICE 2021e). In another review, smoking in pregnancy – and, to a lesser extent, resuming smoking postpartum – aroused disapproval from some peers, particularly when the pregnancy was visible (Bauld et al. 2017). For some women, disapproval could facilitate positive changes in their smoking behaviour, although this was not the case for all. The findings from this review also suggests that pregnant women perceived stopping smoking as severing important social connections. For younger women, this was reported as particularly important in maintaining friendships and social standing.

Social norm: A prevalent theme to emerge in pregnant women was that smoking was considered a normal part of life in the communities where the studies took place (Bauld et al. 2017). Another review found that patients that witness healthcare staff smoking in healthcare settings (e.g. hospitals) are more likely to perceive smoking as an acceptable behaviour (Myers et al. 2012). In this regard, staff that smoke may not intervene with patients who smoke. Additionally, lack of time, knowledge and skills, and concerns that stopping smoking shortly before surgery may worsen surgery outcomes are the most commonly cited barriers to acute care staff intervening with patients who smoke.

Other types of evidence

Our search identified a substantial body of research predominantly in the form of narrative reviews, but as they did not meet our inclusion criteria, they were not included in this work.

However, a report by the U.S. Department of HHS highlighting a number of predictors of initiation and progression of tobacco use for adolescents and young adults (aged 12 to 25 years), was also identified. Although this report did not meet our inclusion criteria, it might be of interest to the stakeholders and therefore its main conclusions have been summarised in Table 4. The report highlight factors not included in the robust evidence identified above. These included educational attainment, extracurricular and organised activities, genetic, neurobiological and neurodevelopmental processes, race, ethnicity and cultural influences.

It is likely our search has not identified all the factors associated with smoking initiation and cessation. However, we are confident that we have identified all systematic review evidence on this topic from robust sources.

It is worth noting that risk factors are correlational and not necessarily causal in nature. While the term risk factor was used by the included reviews, they might have only assessed the association and not causality between the exposure and outcome.

List of sources searched:

Resource	Success or relevancy of the retrieval
Robust sources	
Cochrane Library (basic search) https://www.cochranelibrary.com/cdsr/reviews	Searched, results found
NICE (basic search) https://www.nice.org.uk/guidance	Searched, results found
Scottish Intercollegiate Guidelines Network (SIGN) clinical guidelines (basic search) https://www.sign.ac.uk/our-guidelines	Searched, nothing found
Agency for Healthcare Research and Quality (AHRQ) (basic search) https://www.ahrq.gov/research/findings/evidence-based-reports/search.html	Searched, nothing found
Canadian Agency for Drugs and Technologies in Health (CADTH) (basic search) https://www.cadth.ca/	Searched, nothing found
US Department of Veteran Affairs (basic search) https://www.hsrd.research.va.gov/publications/esp/reports.cfm	Searched, nothing found
National Institute for Health Research (NIHR) Health Technology Assessment (HTA) Journal (basic search) https://www.journalslibrary.nihr.ac.uk/hta/#/	Searched, results found
National Institute for Health Research (NIHR) Public Health Research (basic search) https://www.journalslibrary.nihr.ac.uk/phr/#/	Searched, nothing found
Campbell Collaboration systematic reviews (basic search) https://www.campbellcollaboration.org/better-evidence.html	Searched, nothing found
The Community Guide (basic search) https://www.thecommunityguide.org/publications	Searched, nothing found
Evidence for Policy and Practice Information and Co-ordination Centre (basic search) http://eppi.ioe.ac.uk/cms/Default.aspx?tabid=62	Searched, results found
Joanna Briggs Institute (basic search) https://journals.lww.com/jbisrir/Pages/default.aspx	Searched, results found
What Works Centre for Wellbeing (basic search) https://whatworkswellbeing.org/resources/	Searched, nothing found
Additional sources	
Google Scholar (basic search) https://scholar.google.com/	Searched, results found
U.S. Department of Health and Human Services | HHS.gov Topic specific page: Tobacco Reports And Publications	Searched, results found
Norwegian Institute of Public Health - NIPH (fhi.no) Topic specific page: Smoking and tobacco	Searched, nothing found

Search terms used:

An initial search was conducted using a combination of the following terms:

- Smoking, tobacco, initiation, risk factor, protective factor, predictor, quit, cessation, motivational factor, motivation, determinant, gender, socioeconomic status, poverty, LGBTQ+, children, adolescents, young people, adults

Tables:

Table1: Secondary sources of interest identified on risk and protective factors for smoking initiation

Reference	Aim/Question and Abstract or summary	Comments
Duko B et al. (2021) **Prenatal tobacco exposure and the risk of tobacco smoking and dependence in offspring: A systematic review and meta-analysis.** Drug and Alcohol Dependence, 227, p.108993.	**Aim:** To identify associations between **prenatal tobacco exposure and subsequent tobacco smoking/dependence in offspring**. **Methods:** Using the PRISMA guideline, authors searched PubMed, SCOPUS, EMBASE and PsychINFO. The methodological quality of all identified studies was assessed with the Newcastle-Ottawa Scale. Inverse variance weighted random effects meta-analysis was used to estimate pooled risk ratio (RR) and 95 % confidence intervals (CI). Outcomes were stratified by: tobacco smoking initiation, lifetime tobacco smoking, current tobacco smoking and tobacco dependence. Authors performed subgroup and leave-one-out sensitivity analyses. The protocol of this review was registered in PROSPERO. **Results:** Twenty -seven studies (26 cohort, 1 case-control) were included and were published between 1994 and 2021. Twelve studies were conducted in USA, two in the UK, four in Australia, three in Sweden, two in Brazil and one each in Canada, Finland and Germany. Authors found elevated pooled risks of tobacco smoking initiation [RR = 2.08, (95 % CI: 1.18–3.68)], ever tobacco smoking [RR = 1.21, (95 % CI: 1.05–1.38)], current tobacco smoking [RR = 1.70, (95 % CI: 1.48–1.95)] and tobacco dependence [RR = 1.50, (95 % CI: 1.31–1.73)] in offspring exposed to maternal prenatal tobacco use compared to non-exposed. We also noted higher risk estimate of current tobacco smoking in offspring exposed to heavy prenatal tobacco smoking [RR = 1.68, (95 % CI: 1.26–2.23)] when compared to prenatal exposure to lighter tobacco use [RR = 1.39, (95 % CI: 1.09–1.78)]. **There was no association observed between paternal smoking during pregnancy and tobacco smoking in offspring**. **Conclusion:** Authors concluded **offspring exposed to maternal prenatal tobacco smoking are at an increased risk of tobacco smoking/dependence**, indicating that tobacco smoking cessation during gestation may be imperative to reduce these risks in offspring.	**Generalisability:** The review included studies from a wide variety of settings. Therefore, the reported findings could be **partially generalisable to Wales**; however, the contextual environment of the different countries needs consideration.
Marsh L et al. (2021) **Association between density and proximity of tobacco retail outlets with**	**Aim:** To explore the density and proximity of tobacco retail outlets to homes, schools and communities and their association with smoking behaviours among **youth aged 18 years and under.** **Methods:** Quantitative evidence identified was published between 1990 and 2019. Authors included studies that examined the associations of tobacco retail outlet density and proximity with individual smoking status or population-level smoking prevalence; initiation of smoking;	**Generalisability:** The review included studies from a wide variety of settings. Therefore, the reported findings could be **partially generalisable to Wales**; however, the contextual

Reference	Aim/Question and Abstract or summary	Comments
smoking: A systematic review of youth studies. Health Place 67:102275.	frequency of tobacco use; sales to minors; purchasing by minors; susceptibility to smoking among non-smokers; perceived prevalence of smoking and quitting behaviours. **Results:** Thirty-five peer-reviewed papers met the inclusion criteria. The included studies were predominantly cross-sectional in design and the majority were conducted in USA. Two studies were conducted in Scotland. Included primary studies provided evidence of a relationship between density of tobacco retail outlets and smoking behaviours, particularly for the density near youths' home. A study using activity spaces also found a significant positive association between exposure to tobacco retail outlets and daily tobacco use. The review did not provide evidence of an association between the proximity of tobacco retail outlets to homes or schools and smoking behaviours among youth. **Conclusions:** The existing evidence supports a **positive association between tobacco retail outlet-density and smoking behaviours among youth, particularly for the density near youths' home.** The review provides evidence for the development and implementation of policies to reduce the density of tobacco retail outlets to reduce smoking prevalence among youth.	environment of the different countries needs consideration.
Leonardi-Bee J et al. (2016). **Smoking in movies and smoking initiation in adolescents: systematic review and meta-analysis.** Addiction, 111(10), pp.1750-1763.	**Aim:** To quantify cross-sectional and longitudinal associations between exposure to smoking in movies and initiating smoking in **adolescents**. **Methods:** MEDLINE, EMBASE, PsychINFO and International Bibliography of the Social Sciences, IBSS databases and grey literature were searched from inception to May 2015 for comparative epidemiological studies (cross-sectional and cohort studies) that reported the relationship between exposure to smoking in movies and smoking initiation in adolescence (10–19 years). Reference lists of studies and previous reviews were also screened. Two authors screened papers and extracted data independently. **Results:** Seventeen studies met the inclusion criteria of which nine were cross-sectional and eight were longitudinal in design. Seven studies were conducted in USA, three in the UK, two in Mexico, two in Germany, one in India and two studies were carried out in a group of six European countries. Random-effects meta-analysis of nine cross-sectional studies demonstrated higher exposure (typically highest versus lowest quantile) to smoking in movies was associated significantly with a doubling in risk of ever trying smoking [relative risk (RR) = 1.93, 95% confidence interval (CI) = 1.66–2.25]. In eight longitudinal studies (all deemed high quality), higher exposure to smoking in movies was associated significantly with a 46% increased risk of initiating smoking (RR = 1.46; 95% CI = 1.23–1.73). These pooled estimates were significantly different from each other (P = 0.02). Moderate levels of heterogeneity were seen in the meta-analyses.	**Generalisability:** The review included studies from a wide variety of settings. Therefore, the reported findings could be **partially generalisable to Wales**; however, the contextual environment of the different countries needs consideration.

Reference	Aim/Question and Abstract or summary	Comments
	Conclusions: The cross-sectional **association between young people reporting having seen smoking imagery in films and smoking status is greater than the prospective association**. Both associations are substantial, but it is not clear whether they are causal.	
Leonardi-Bee J et al. (2011) **Exposure to parental and sibling smoking and the risk of smoking uptake in childhood and adolescence: a systematic review and meta-analysis** Thorax 66:847-855.	**Aim:** To investigate the relationship between smoking by family members and uptake of smoking among **children and adolescents** and combine this information in meta-analyses to provide summary estimates of the magnitude of the effects of smoking by different family members. Estimates were used to calculate the number of children and young people in England and Wales, who take up smoking each year because of smoking by others in their household. **Methods:** Studies were identified by searching four databases to March 2009 and proceedings from international conferences. Meta-analyses were performed using random effects, with results presented as pooled ORs with 95% CIs. **Results:** Fifty-eight studies published between 2000 and 2009 were included in the meta-analyses. The majority of the studies were conducted in the USA or Europe and measured adolescent smoking status by self-reports, although two assessed cotinine in saliva. The relative odds of uptake of smoking in children were increased significantly if at least one parent smoked (OR 1.72, 95% CI 1.59 to 1.86). More so by smoking by the mother (OR 2.19, 95% CI 1.73 to 2.79) than the father (OR 1.66, 95% CI 1.42 to 1.94), and if both parents smoked (OR 2.73, 95% CI 2.28 to 3.28). Smoking by a sibling increased the odds of smoking uptake by 2.30 (95% CI 1.85 to 2.86) and smoking by any household member by 1.92 (95% CI 1.70 to 2.16). After adjusting for overestimation of RRs it is estimated that, in England and Wales, around 17 000 young people take up smoking by the age of 15 each year as a consequence of exposure to household smoking. **Conclusions: Parental and sibling smoking is a strong and significant determinant of the risk of smoking uptake by children and young people** and, as such, is a major and entirely avoidable health risk. Children should be protected from exposure to smoking behaviour, especially by family members.	**Generalisability:** The review included studies from a wide variety of settings. Therefore, the reported findings could be **partially generalisable to Wales**; however, the contextual environment of the different countries needs consideration.
Lovato et al. (2011) **Impact of tobacco advertising and promotion on increasing adolescent smoking behaviours**.	**Aim:** To assess the effects of tobacco advertising and promotion on non-smoking **adolescents'** future smoking behaviour. **Methods:** Cochrane Tobacco Group specialized register, the Cochrane Central Register of Controlled Trials, MEDLINE, the Cochrane Library, Sociological Abstracts, PsycLIT, ERIC, WorldCat, Dissertation Abstracts, ABI Inform and Current Contents were searched to August 2011. The reviewers independently assessed relevant studies for inclusion. Data extraction was undertaken by one reviewer and checked by a second.	**Generalisability:** The review included studies from a wide variety of settings. Therefore, the reported findings could be **partially generalisable to Wales**; however, the contextual environment of the different countries needs consideration.

Reference	Aim/Question and Abstract or summary	Comments
Cochrane Database of Systematic Reviews, Issue 10.	**Results:** Nineteen longitudinal studies that followed up over 29,000 baseline non-smokers met the inclusion criteria. These included a variety of different age groupings that ranged between eight and 18 years of age at baseline. Eleven studies were conducted in USA, two in Australia, two in England, two in Germany and two in Spain. The years during which data were collected ranged between 1983 and 2008. The studies measured exposure or receptivity to advertising and promotion in a variety of ways, including having a favourite advertisement or an index of receptivity based on awareness of advertising and ownership of a promotional item. One study measured the number of tobacco advertisements in magazines read by participants. All studies assessed smoking behaviour change in participants who reported not smoking at baseline. In 18 of the 19 studies the non-smoking adolescents who were more aware of tobacco advertising or receptive to it, were more likely to have experimented with cigarettes or become smokers at follow up. There was variation in the strength of association, and the degree to which potential confounders were controlled for. **Conclusions:** Longitudinal studies consistently suggest that exposure to **tobacco advertising and promotion is associated with the likelihood that adolescents will start to smoke**. Based on the strength and specificity of this association, evidence of a dose-response relationship, the consistency of findings across numerous observational studies, temporality of exposure and smoking behaviours observed, as well as the theoretical plausibility regarding the impact of advertising, we conclude that tobacco advertising and promotion increases the likelihood that adolescents will start to smoke.	
Sutcliffe K et al. (2011) Young people's access to tobacco: a mixed-method systematic review. London: **EPPI-Centre**, Social Science Research Unit, Institute of Education, University of London.	**Aim:** To summarise the research exploring how **young people aged 11-18 years** access tobacco in the UK. The review was commissioned to support the development of policies to reduce rates of smoking among young people; it sought to understand the relative importance of both retail and social sources of tobacco for young people. This review focusses on evidence with contextual relevance for the UK. Thus, authors appraised and synthesised UK-based surveys (n=9) and qualitative studies (n=10). **Methods:** Survey data were pooled across the studies to analyse the prevalence and range of sources used by young people, and a statistical meta-analysis was performed to determine whether associations exist between sources used and the smoking status of young people. Thematic analysis of the qualitative studies was used to identify the significant features of a range of different access methods, and revealed barriers and facilitators of tobacco access across sources. **Results:** The six qualitative studies included approximately 500 young people from Scotland and England. Three studies sampled young people from a range of socioeconomic backgrounds; the others accessed young people from disadvantaged or deprived areas only.	**Generalisability:** All the included studies in this review were conducted in England and Scotland. Therefore, **the reported findings could be generalisable to Wales**.

Reference	Aim/Question and Abstract or summary	Comments
	Each of the studies involved both young men and women aged predominantly between 13 and 16 years, and three included both smokers and non-smokers. The earliest study was conducted in 2003 and the most recent in 2010; two of the studies collected data from young people after the legal age of purchase was raised to 18 in the UK in 2007. Barriers of tobacco access for young people identified: • Age and appearance: 'If you look old enough they are going to serve you' • Cost: The high price of smoking for young people: 'you get skanked' • Risk: 'Worth a try'? Facilitators of tobacco access for young people identified: • Sociability: A way to make new friends • Visibility of sources and smoking behaviour: 'I saw them smoking on the field and buying off mates and stuff ' • Complicity of adults: 'They don't care if it's harming us or if it's the law.	

Table 2: Secondary sources of interest identified on risk and protective factors for smoking cessation

Reference	Aim/Question and Abstract or summary	Comments
National Institute for Health and Care Excellence (2021) Tobacco: preventing uptake, promoting quitting and treating dependence: update. Review E: Evidence reviews for smokefree class competitions. London: NICE [NICE guideline NG209]	**Review questions:** The qualitative section of this NICE review aimed to answer: Are smokefree class competitions acceptable to **children and young people**? Do they affect their ability to cope with stress or pressure, or their self-esteem and self-efficacy? What are the barriers and facilitators to successful adoption of the intervention by the population? **Methods:** This review is an update of part of an existing review. A new systematic search of relevant databases was undertaken in October 2018 for studies published since 2008 (when the previous search was conducted) and in the English language. For smoke-free class competitions only, qualitative evidence relating to their acceptability and barriers or facilitators to their successful adoption will be examined where available. **Results: None of the included studies identified any barriers or facilitators to smokefree class competitions for children and young people.**	**Evidence gap:** None of the included studies identified any barriers or facilitators to smoke-free class competitions for children and young people.
National Institute for Health and Care Excellence (2021c) Tobacco: preventing uptake, promoting quitting and treating dependence: update. Review H: Evidence reviews for opt-out stop smoking support. London: NICE [NICE guideline NG209]	**Review questions:** The qualitative section of this NICE review aimed to answer: • Is opt-out provision of stop smoking support acceptable to **women who are pregnant**? • What are the barriers and facilitators to taking up the support? **Methods:** This update review undertook a systematic search in April 2019 for relevant studies published since 1998. The CASP checklist was used to assess quality of qualitative studies, while the Effective Practice and Organisation of Care (EPOC) RoB tool was used to assess quantitative studies. GRADE was used to assess the confidence of the evidence. Qualitative evidence on opt-out referral systems for pregnant women who smoke on the acceptability, barriers or facilitators of these interventions will be examined where available. **Results:** Two studies were included for the qualitative component of this review; one employed a mixed methods approach (qualitative element of relevance to this review question) while the other was a qualitative study. Both studies were conducted in the UK. Themes around expectations, acceptability and impact of opt-out referral pathway were identified. **None of the**	**Evidence gap:** None of the included studies identified any barriers or facilitators to Opt-out provision to stop smoking for pregnant women.

Reference	Aim/Question and Abstract or summary	Comments
	included studies identified any barriers or facilitators to Opt-out provision to stop smoking for pregnant women.	
National Institute for Health and Care Excellence (2021d) Tobacco: preventing uptake, promoting quitting and treating dependence: update. Review I: Evidence reviews for incentives during pregnancy. London: NICE [NICE guideline NG209]	**Review questions:** The qualitative section of this NICE review aimed to answer: Are incentives to increase smoking cessation acceptable to **pregnant women** who smoke and to healthcare providers who would deliver them? What are the barriers and facilitators to uptake of incentives? **Methods:** NICE decided to search for studies in the past 20 years (from when protocols were written). This limit is applied because before this point it is likely that the context of stop smoking support would be too different to be relevant and applicable to the guideline. This update review undertook a systematic search in April 2019 for relevant studies published in the English language since 1998. Where available, qualitative evidence on acceptability of incentives as well as barriers and facilitators to delivering incentives for smoking cessation to pregnant women who smoke will be examined. Identified **Results:** The search identified three studies out of which two studies were qualitative and one included a mixed methods approach (qualitative component of relevance to this review question). All three studies were conducted in the UK. Only one study reported themes around factors perceived as facilitating and inhibiting the quit attempt. **Factors perceived as facilitating the quit attempt are:** • Women who were incentivised were more motivated to engage with smoking cessation services. • Women felt that financial incentives facilitated quitting attempts and provided a goal to resist smoking urges. • Women in the incentivised group reported monitoring was conducted routinely to confirm smoking status in order to attain vouchers, whereas women in the control group reported that monitoring was not consistently implemented. **Factors perceived as inhibiting the quit attempt:** • Women reported encountering logistical problems with obtaining vouchers, which hindered their attempt to stop smoking.	**Generalisability:** All the included studies in this review were conducted in UK. Therefore, **the reported findings could be generalisable to Wales.**
National Institute for Health and Care Excellence (2021e) Tobacco: preventing uptake, promoting	**Review question:** The qualitative section of this NICE review aimed to answer: What are the barriers or facilitators for **women who smoke and are pregnant** to taking up NRT and e-cigarettes interventions? **Methods:** A Cochrane qualitative review for NICE was completed on the factors that influence the uptake and use of NRT and e-cigarettes by pregnant women who smoke (Campbell 2019).	**Generalisability:** All the included studies in this review were conducted in UK. Therefore, **the reported**

Reference	Aim/Question and Abstract or summary	Comments
quitting and treating dependence: update. Review J: Evidence reviews for nicotine replacement therapies and e-cigarettes in pregnancy. London: NICE [NICE guideline NG209]	This review included studies that explored views, opinions, and experiences of pregnant women who smoke or smoked in pregnancy on the use of any type of NRT or e-cigarettes in pregnancy for smoking cessation or harm reduction. A broad search strategy completed in February 2019 was used to identify relevant studies from several databases and grey literature. **Results:** This is a new review for this guideline and was completed in October 2019 for NICE (Campbell 2019). Twenty-one studies (497 participants) were included in this review, twelve were conducted in the UK, four in Australia, three in USA, one in New Zealand and one in Canada. The focus of this NICE evidence review is on qualitative studies conducted in the UK context. Whilst analyses presented in the Cochrane review are derived from both UK and non-UK studies, greater consideration was placed on findings elicited from UK studies in this evidence review. Out of the 12 UK studies included in the Cochrane view, 8 studies focused on women's views on NRT, 2 studies focused on e-cigarettes and 2 studies reported views on both interventions. Thematic data synthesis was used by Campbell (2019) to identify 6 overarching themes and 18 key review findings relating to factors influencing women's decisions about using, continuing to use or stopping NRT and/or e-cigarettes: Theme 1: **Safety concerns about nicotine** – Women's beliefs about safety of nicotine containing products influence their readiness to use it in pregnancy Theme 2: **Concerns about addictiveness of nicotine** – women's beliefs about addictiveness of nicotine influence their readiness to use NRT in pregnancy Theme 3: **Beliefs about effectiveness of nicotine-containing products** – women's beliefs about the effectiveness of nicotine-containing products influence their use in pregnancy Theme 4: **Side effects associated with NRT** – Women's beliefs about and experiences with side effects of NRT influence their readiness to use NRT in pregnancy Theme 5: **Influence of others** – Women's readiness to use nicotine-containing products in pregnancy is influenced by the perceived views of and support from other people Theme 6**: Characteristics of nicotine-containing products** – women's views on characteristics (such as cost, convenience and ability to mimic a cigarette) of the nicotine-containing products can influence their readiness to use these in pregnancy	**findings could be generalisable to Wales.**
Campbell K et al. 2020. Factors influencing the uptake and use of nicotine replacement therapy and e-	**Aim:** To explore factors affecting uptake and use of NRT and e-cigarettes in **pregnancy**. **Methods:** Authors searched MEDLINE(R), CINAHL and PsycINFO on 1 February 2019. They manually searched OpenGrey database and screened references of included studies and relevant reviews. They also conducted forward citation searches of included studies. **Results:** Authors included 21 studies (497 participants): 15 focused on NRT, 3 on e-cigarettes, and 3 on both. Of these twelve were conducted in the UK, four in Australia, three in USA, one	**Generalisability:** The review included studies from a wide variety of settings. Therefore, the reported findings could be **partially generalisable to Wales**; however, the contextual

Reference	Aim/Question and Abstract or summary	Comments
cigarettes in pregnant women who smoke: a qualitative evidence synthesis. **Cochrane Database of Systematic Reviews**, Issue 5.	in New Zealand and one in Canada. Most studies contributed few relevant data; substantially fewer data were available on determinants of e-cigarettes. Many studies focused predominantly on issues relating to smoking cessation, and determinants of NRT/e-cigarette use was often presented as one of the themes. Authors identified six descriptive themes and 18 findings within those themes; from these they developed three overarching analytical themes representing key determinants of uptake and adherence to NRT and/or e-cigarettes in pregnancy. The analytical themes show that **women's desire to protect their unborn babies from harm is one of the main reasons they use these products**. Furthermore, **women consider advice from health professionals when deciding whether to use NRT or e-cigarettes**; when health professionals tell women that NRT or e-cigarettes are safer than smoking and that it is okay for them to use these in pregnancy, women report feeling more confident about using them. Conversely, women who are told that NRT or e-cigarettes are as dangerous or more dangerous than smoking and that they should not use them during pregnancy feel less confident about using them. **Women's past experiences with NRT can also affect their willingness to use NRT in pregnancy**; women who feel that NRT had worked for them (or someone they know) in the past were more confident about using it again. However, women who had negative experiences were more reluctant to use NRT.	environment of the different countries needs consideration.
Bauld et al. 2017. Barriers to and facilitators of smoking cessation in pregnancy and following childbirth: literature review and qualitative study. **Health Technol Assess**; 21(36)	**Aim of review 1:** To explore the barriers to and facilitators of smoking cessation experienced by **women during pregnancy and postpartum**. **Methods**: A synthesis of qualitative research using meta-ethnography. Five electronic databases (searched January 1990–May 2013) were searched comprehensively, updating and extending the search for an earlier review to identify qualitative research related to the review's aims. **Results:** Thirty-eight studies reported in 42 papers were included. Four factors were identified that acted as both barriers to and facilitators of women's ability to quit smoking in pregnancy and postpartum: psychological well-being, relationships with significant others, changing connections with her baby through and after pregnancy, and appraisal of the risk of smoking. **Conclusion:** The synthesis indicates that **barriers and facilitators are not fixed and mutually exclusive categories; instead, they are factors with a latent capacity to help or hinder smoking cessation. For disadvantaged smokers, these factors are more often experienced as barriers to, than facilitators of quitting.**	**Generalisability:** It is difficult to assess the generalisability of this review to Welsh context as countries of the included studies were not reported. However, the reviews were accompanied with qualitative research in one area in Scotland and another in England. Authors note that the findings were similar between the review studies and their interviews.

Reference	Aim/Question and Abstract or summary	Comments
	Aim of review 2: To synthesise qualitative research of **partners' views of smoking in pregnancy and postpartum** was conducted using meta-ethnography. **Methods:** A synthesis of qualitative research of partners' views of smoking in pregnancy and postpartum was conducted using meta-ethnography. Searches were undertaken from 1990 to January 2014 using terms for partner/household, pregnancy, postpartum, smoking and qualitative in seven electronic databases. The review was reported in accordance with the ENTREQ statement. **Results:** Nine studies reported in 14 papers were included, detailing the experience of 158 partners; the majority were interviewed during the postpartum period. Partners were all male, with a single exception. Socioeconomic measures indicated that most participants were socially disadvantaged. The synthesis identified recurring smoking-related perceptions and experiences that hindered (barriers) and encouraged (facilitators) partners to consider quitting during the woman's pregnancy and into the postpartum period. These were represented in five lines of argument relating to smoking being an integral part of everyday life, becoming and being a father, the couple's relationship, perceptions of the risks of smoking, and their harm reduction and quitting strategies. **Conclusions:** The cluster of identified barriers to and facilitators of quitting offers pointers for policy and practice. **The workplace emerges as an important space for and influence on partners' smoking habits**, suggesting alternative cessation intervention locations for future parents. Conversely, **health and community settings are seen to offer little support to fathers**. **Interventions centred on valued personal traits, like willpower and autonomy, may have particular salience**. The review points, too, to the **potential for health information that directly addresses perceived weaknesses in official advice, for example around causal mechanisms and effects, and around the contrary evidence of healthy babies born to smokers.**	
Myers et al. 2012. Review 3: Barriers & facilitators for smoking cessation interventions in acute & maternity services. **NICE; NG209.**	**Review questions:** How can community, primary, **acute and maternity care** providers collaborate more effectively to provide joined up services for smoking cessation? What barriers and facilitators affect the delivery of effective interventions? **Methods:** The authors systematically searched reviews and trials published between 1990 and December 2011 in English, but they also included literature published in early 2012 identified as relevant while work on the review was underway. **Results:** Authors found 112 studies that contained data relevant to the above research questions. Majority of the studies were conducted in pre-1974 OECD countries. **Barriers to implementing evidence based stop-smoking interventions in acute care**:	**Generalisability:** The review included studies from a wide variety of settings. Therefore, the reported findings could be **partially generalisable to Wales**; however, the contextual environment of the different countries needs consideration.

Reference	Aim/Question and Abstract or summary	Comments
	• Smoking among health care staff is a barrier to engaging with smokers; • Lack of time, knowledge and skills are the most commonly cited barriers to acute care staff intervening with patients who smoke; • Smokers awaiting surgery can be advised to stop at any time: The concerns that stopping smoking shortly before surgery may worsen surgery outcomes represents a common barrier to interventions with surgery patients. **Facilitators to implementing evidence based stop-smoking interventions in acute care**: • Training healthcare professionals can have a positive effect on their practice; • Prompts, reminders, automated systems, and audit and feedback can assist HCPs in screening and offering smoking cessation treatment; • Organisational support is a key facilitator of stop-smoking activities.	

Table 3: Secondary sources of interest identified on e-cigarettes as a gateway to smoking initiation

Reference	Aim/Question and Abstract or summary	Comments
Baenziger O et al. 2021. E-cigarette use and combustible tobacco cigarette smoking uptake among non-smokers, including relapse in former smokers: umbrella review, systematic review and meta-analysis. BMJ Open; 11:e045603. doi: 10.1136/bmjopen-2020-045603	**Aim:** To review and summarise the current evidence on the uptake of combustible cigarette smoking following e-cigarette use in **non-smokers**—including never-smokers, people not currently smoking and past smokers—through an umbrella review, systematic review and meta-analysis. **Methods:** This summary of the global evidence comprises an umbrella review of systematic reviews and a top-up systematic review of primary research not included in the systematic reviews of the umbrella review. The protocol was published online through PROSPERO. For both the umbrella review and the top-up systematic review, six databases were searched: PubMed, Scopus, Web of Science, PsychINFO (Ovid), Medline (Ovid) and Wiley Cochrane Library up to April 2020. **Results:** Of 6225 results, 25 studies of non-smokers— never, not current and former smokers—with a baseline measure of e-cigarette use and an outcome measure of combustible smoking uptake were included. All 25 studies found increased risk of smoking uptake with e-cigarette exposure, although magnitude varied substantially. Using a random-effects model, comparing e-cigarette users versus non-e-cigarette users, among never-smokers at baseline the OR for smoking initiation was 3.19 (95% CI 2.44 to 4.16, I2 85.7%) and among non-smokers at baseline the OR for current smoking was 3.14 (95% CI 1.93 to 5.11, I 2 91.0%). Among former smokers, smoking relapse was higher in e-cigarette users versus non-users (OR=2.40, 95%CI 1.50 to 3.83, I2 12.3%). **Conclusions:** Across multiple settings, **non-smokers who use e-cigarettes are consistently more likely than those avoiding e-cigarettes to initiate combustible cigarette smoking and become current smokers**. The magnitude of this risk varied, with an average of around three times the odds. Former smokers using e-cigarettes have over twice the odds of relapse as non-e-cigarettes users. This study is the first to our knowledge to review and pool data on the latter topic.	**Generalisability:** The review included studies from a wide variety of settings. Therefore, the reported findings could be **partially generalisable to Wales**; however, the contextual environment of the different countries needs consideration.
National Institute for Health and Care Excellence (2021a) Tobacco: preventing uptake, promoting quitting and treating	**Aim:** To determine the likelihood of taking up smoking in **children, young people and young adults** who use e-cigarettes. **Methods:** A systematic search was undertaken in January 2019 for studies published since 1998 and in the English language. It was decided to search for studies in the past 20 years (from when protocols were written). This limit is applied because before this point it is judged that the context – specifically the acceptability and prevalence of smoking – is too different to	**Generalisability:** The review included studies from a wide variety of settings. Therefore, the reported findings could be partially generalisable to Wales; however, the contextual

Reference	Aim/Question and Abstract or summary	Comments
dependence: update. Review F: Future cigarette use among children, young people and young adults who do not smoke and use e-cigarettes. London: NICE [NICE guideline NG209].	be relevant and applicable to the guideline. Searches for literature on e-cigarettes will also be limited due to the novelty of the technology. **Results:** Nineteen studies were identified for inclusion in this review. Majority of the studies were conducted in pre-1974 OECD countries. The review reports the following evidence summaries regarding exposure to e-cigarettes: • **Significantly associated with an increase in ever smoking**. This effect was found among groups where susceptibility was not reported, those who were susceptible at baseline, and those who were not susceptible at baseline. Effects were not significantly different by age or level of e-cigarette use at baseline. • **Significantly associated with an increase in ever smoking among those who used nicotine e-cigarettes and those who used e-cigarettes without nicotine**. Subgroups were significantly different: those using e-cigarettes with nicotine had higher risk of ever smoking than those without nicotine. • **Significantly associated with an increase in ever smoking among those who had no peer smoking at baseline**. • **Significantly associated with an increase in habitual smoking**. • **Significantly associated with an increase in intention to smoke**. • **An effect was not detected of an increased exposure of the population to e-cigarettes on rate of decline in ever smoking as well as regular smoking**.	environment of the different countries needs consideration.
National Institute for Health and Care Excellence (2021b) Tobacco: preventing uptake, promoting quitting and treating dependence: update. Review G: Future cigarette use among children, young people and adults who use e-cigarettes and cigarettes. London: NICE [NICE guideline NG209]	Aim: To determine the likelihood of stopping smoking in **children, young people and young adults** who smoke and use e-cigarettes recreationally (not specifically for cessation). **Methods:** A systematic search was undertaken in January 2019 for studies published since 1998 and in the English language. It was decided to search for studies in the past 20 years (from when protocols were written). This limit is applied because before this point it is judged that the context – specifically the acceptability and prevalence of smoking – is too different to be relevant and applicable to the guideline. Searches for literature on e-cigarettes will also be limited due to the novelty of the technology. **Results:** Two prospective cohort studies both conducted in the USA were included in this review. The review reports the following evidence summaries: • An effect was not detected for exposure to e-cigarettes on past-month continued smoking. • An effect was not detected of exposure to e-cigarettes on number of days people smoked cigarettes.	**Generalisability:** The review included studies from a wide variety of settings. Therefore, the reported findings could be **partially generalisable to Wales**; however, the contextual environment of the different countries needs consideration.

Reference	Aim/Question and Abstract or summary	Comments
	The committee agreed that the imprecision of the association between e-cigarette use and future smoking among those who did smoke at baseline (GRADE profile 7) meant that no conclusions could be drawn on the association at this point, particularly as only one study contributed to the outcome. Likewise, there was no significant difference in the number of past 30 days people had smoked between those using and not using e-cigarettes at baseline. This led the committee to conclude that there was no clear evidence about the impact of e-cigarette use on future smoking habits among those who smoke. The committee chose not to make recommendations based on this evidence. The review also aimed to consider whether the above association is present. **The committee discussed the difficulties with this and the types of evidence available, noting that it is difficult to decide whether there is a causal link between e-cigarette use and future smoking status.**	

Table 4: Other relevant literature identified through searching that did not meet our inclusion criteria

Reference	Aim/Question and Abstract or summary	Comments
Summary of ' U.S. Department of Health and Human Services. Preventing Tobacco Use Among Youth and Young Adults: A Report of the Surgeon General. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2012.	This is a report based on an extensive review of existing scientific literature. It investigates the predictors of initiation and progression of tobacco use for two groups: **adolescents** (girls and boys aged 12–17 years) **and young adults** (women and men aged 18–25 years). **Chapter four**, which updates Chapter 4 of the 1994 report, may be particularly relevant as this examines the social, environmental, cognitive and genetic influences on the use of tobacco among youth. Chapter five looks at the tobacco industry's influence on the use of tobacco among youth, and chapter six looks at efforts to prevent and reduce tobacco use among young people. **Large Social and Physical Environments:** Factors found in these environments may establish norms that affect tobacco use. For example, youth who participate in religious activity are less likely to smoke. The expression of other cultural values, such as using cigarettes as gifts, may conversely, stimulate tobacco use. Educational attainment and academic achievement are consistently (and negatively) associated with tobacco use from early adolescence to young adulthood. In addition, persons of lower SES may be more likely to smoke because of differential norms or as a reaction to pressures, such as discrimination, or targeted marketing. Physical environments favourable to tobacco use may also influence tobacco use through implicit norms that favour use. **Small Social Groups:** The evidence is sufficient to conclude that there is a causal relationship between peer group social influences and the initiation and maintenance of smoking behaviours during adolescence. Adolescents are more likely to smoke if they have friends who smoke. Social network analyses have demonstrated that peer group structure uniquely contributes to the prediction of youth smoking behaviour. Youth who are able to mix successfully within small social groups are relatively less likely to conform to the tobacco use behaviour of others than are isolates. The fact that popular youth are relatively more likely to smoke in schools that have relatively greater concentrations of smokers suggests that smoking behaviour among peer networks is also contingent on school-level norms and attempts to be liked by others in the group. Research on group identification indicates that youth who self-identify as belonging to deviant groups are most likely to be smokers.	It was not possible to identify the methods used in this report. Therefore, whether systematic review methodology was used, could not be established. Thus, this report could not be included in our summary. It is also important to note that this report was conducted in 2012 and is likely to have been superseded by other systematic reviews

Reference	Aim/Question and Abstract or summary	Comments
	Smoking by parents and older siblings and the quality of family relationships and parenting practices are generally predictive of all levels of smoking among adolescents. However, smoking by children is inconsistently related to disapproval of smoking by the parents, and the effects of parental smoking may be mediated by such variables as the degree of monitoring and supervision provided by parents. **Intrapersonal Cognitive Processes:** Beliefs about the consequences of tobacco use, decision-making capabilities, and the ability to regulate or monitor one's behaviour, all of which reflect deliberate or controlled cognitive processes, are predictive of tobacco use. Cognitive processes clearly play a key role in whether a person engages in risky behaviours, but more research is needed to clarify the interplay of controlled and automatic cognitive processes. **Genetic Factors and Neurobiological and Neurodevelopmental Processes:** The evidence is suggestive that tobacco use is a heritable trait, more so for regular use than for onset. The expression of genetic risk for smoking among young people may be moderated by small-group factors (e.g., peer smoking, parental monitoring, and engagement in team sports) and larger social environmental factors (e.g., school-level norms, the prevalence of smoking among popular kids). In addition, although available studies show mixed results, some evidence indicates that a mother's smoking during pregnancy may increase the likelihood that her offspring will become regular smokers. **Tobacco industry's influences:** The evidence is sufficient to conclude that there is a causal relationship between advertising and promotional efforts of the tobacco companies and the initiation and progression of tobacco use among young people. The evidence is sufficient to conclude that there is a causal relationship between depictions of smoking in the movies and the initiation of smoking among young people. The evidence is sufficient to conclude that increases in cigarette prices reduce the initiation, prevalence, and intensity of smoking among youth and young adults.	

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ISBN: 978-1-83766-115-2