Guideline Development Group for the Identification, Diagnosis & Treatment of Tobacco Addiction

Assessment of Criteria for the Drafting of Recommendations as per GradePro

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QUESTION ***: What interventions should be offered by healthcare professionals to people using health services, to identify people who smoke and help them stop?***	
POPULATION:	• *General adult population (aged 18+ years)* • *Persons with mental health problems requiring secondary mental health services*
INTERVENTION:	*Identifying smokers in routine clinical care and offering them support to quit smoking*
COMPARISON:	*Current services/No service*
MAIN OUTCOMES:	*Long-term smoking cessation (≥ 6 months)*
SETTING:	*Primary care settings, Secondary care settings, Community care settings and mental health services*
PERSPECTIVE:	*Health Sector* ☐ *Population* ☑ *Individual* ☐ A population perspective has been adopted. However, this CJF incorporates evidence from a HIQA HTA which adopted a quasi-societal perspective in its cost-effectiveness analysis and as such, costs including out-of-pocket costs falling to the individual are considered. Furthermore, through the public and patient representatives involved in the considered judgement process, acceptability and feasibility of the interventions from the individual perspective have been considered.
BACKGROUND:	***Smoking among Adults in Ireland:*** The most recent Healthy Ireland Survey (2018) reports that 20% of people aged 15 years and older describe themselves as current smokers; this compares to a smoking prevalence of 29% in 2007 *(SLAN 2007)*. In terms of numbers, there are approximately 770,000 adults who smoke in Ireland in 2018. Current government policy *Tobacco Free Ireland* sets a target that less than 5% of the population will be current smokers by 2025. This target requires a significant reduction in the current smoking prevalence rate that will not be achievable through preventing smoking initiation alone; it will require increasing the incidence of quit attempts across the population of current smokers and increasing the odds of success. ***Smoking & Mental Health:*** People with mental health problems are recognised as a high-prevalence smoking population, with smoking prevalence increasing with increasing severity of mental disorder. A recent Irish study in a psychiatric inpatient setting reported a smoking prevalence of 34% (*Burns et al, 2018*). *Tobacco Free Ireland* recognises the particular needs of people with mental health problem, and this group is prioritised in the HSE *Tobacco Free Ireland Programme Plan 2018-2021*.

Quitting Behaviours:

Successive surveys inform us that most smokers want to quit smoking; almost 60% of current smokers in 2018 have a positive intention to quit, and 40% of current smokers have made at least one quit attempt in the last 12 months. However, just 9% of those who smoked in the past 12 months, have successfully quit; almost half of them did so through willpower alone, and use of evidence-based smoking cessation supports is poor. The majority of those who attempted to quit their smoking did so due to concerns about their health (65%), however, just 40% of smokers reported having discussed quitting with their General practitioner, and less than one-third of smokers had discussed quitting with other health professionals. *(Healthy Ireland Survey 2018)*

People with mental health problems who smoke, are no less likely to want to quit than other persons who smoke, but they do make less quit attempts due to perceived difficulties with quitting smoking (*RCP, 2013).* There is now good evidence that those with mental health problems or difficulties are capable of quitting smoking and that treating their tobacco dependence does not seem to harm their mental health recovery, in fact, it may even enhance it *(Morozova et al, 2015)*.

Background to this Guideline:

A proposal for a national clinical guideline for the identification and treatment of smokers was submitted to the National Clinical Effectiveness Committee (NCEC), Department of Health, in July 2017 by the HSE Tobacco Free Ireland Programme. This submission was assessed according to the NCEC Preliminary Prioritisation Process for National Clinical Guidelines (2015) and in September 2017, this guideline was prioritised by NCEC and was listed on the NCEC schedule of guidelines.

The guideline development plan was to adapt International guidelines and to contextualise them to the Irish healthcare system, drawing on the HIQA Health Technology Assessment of smoking cessation interventions as an additional source of evidence. The search for relevant smoking cessation guidelines was conducted using a systematic search strategy of scientific databases (including guideline websites; PubMed; and Google ®) from January 2006 to June 2017. The quality of the CPGs was independently assessed by at least two assessors using the Appraisal of Guidelines for Research & Evaluation II (AGREE II) instrument, and specific recommendations in guidelines were evaluated. Domain scores were considered of sufficient quality when ≥ 60%. The HIQA HTA was also quality appraised.

Ten guidelines were retrieved; three were deemed of very poor quality across all domains and removed. In addition, two guidelines scored poorly on the 'rigour of development' domain and were removed. A currency/permissions survey highlighted intellectual property rights with another guideline. The current evidence base included in the development of this guideline includes:

- Ministry of Health. 2014. *The New Zealand Guidelines for Helping People to Stop Smoking*. Wellington: Ministry of Health

	• US Preventative Services Task Force. *Tobacco Smoking Cessation in Adults, Including pregnant women: behavioural & pharmacotherapy interventions*. 2015. • *CAN-ADAPTT Smoking Cessation Clinical Practice Guideline (General & Pregnant Women)*. 2012. • HIQA. *Health Technology Assessment for Smoking Cessation Services in Ireland*. 2017 • And finally, a report on evidence scoping to assure currency of National Stop Smoking Guideline recommendations by the guideline development groups' Evidence Team (Dr Paul Kavanagh, Ms Aishling Sheridan and Dr Keith Ian Quintyne). This guideline group will use the GRADE Evidence-to-Decision Framework as per GradePRO to move from evidence to recommendations as detailed in this document.
CONFLICT OF INTERESTS:	Conflict of interest statements were submitted by members of the Guideline Development Group. The Chair reviewed all conflict of interest statements. No interests stated were deemed to be conflicts in relation to the recommendations of this guideline.

ASSESSMENT

1.	**Problem** Is the problem a priority? *(The more serious or urgent a problem is, the more likely it is that an option that addresses the problem will be a priority)*		
	JUDGEMENT	**RESEARCH EVIDENCE**	**ADDITIONAL CONSIDERATIONS**
	○ No ○ Probably no ○ Probably yes ● Yes ○ Varies ○ Don't know	• Tobacco use is the leading cause of preventable death in Ireland; one-in-five deaths (5,900) in Ireland in 2016 were attributable to smoking or exposure to second-hand smoke. *(SOTC 2018)* • In addition, 55,000 hospital admissions per year are as a result of smoking and exposure to second-hand-smoke; these are potentially preventable. *(SOTC 2018)* • The total annual cost to the health service is estimated to be over €460 million and the total cost of lost productivity is over €1 billion. *(ICF International, 2016)* • In 2018, ○ 20% of Irish adults are current smokers. ○ Six-in-ten smokers have a positive intention to quit smoking, but just one-in-ten successfully quit. ○ Almost half (42%) of those who successfully quit smoking in the last 12 months did so through willpower alone and 41% used e-cigarettes. *(HI Survey 2018)* **Persons with Mental Health Problems:** • Patients diagnosed with severe mental illness are up to three times more likely to be smokers than the general population. • Smoking prevalence reaches figures of up to 70% for certain sub groups, such as in-patients and patients with schizophrenia. • Mental illness is associated with higher levels of nicotine dependence, intensity of smoking, and smoking severity.	• Current government policy, ***Tobacco Free Ireland*** has set a target for Ireland to be tobacco-free (prevalence of smoking <5%) by 2025. *(DoH)* ○ One of the recommendations within the TFI policy is to "*Develop comprehensive national smoking cessation guidelines. These to include the minimum level of service provision that each service provider needs to have in place*." ○ Persons with mental health problems are identified as a priority group. • **HSE *Tobacco Free Ireland Programme Plan 2018-2021*** identifies people with mental health problems as a priority group. • ***A Vision for Change*** identifies the particular physical needs of people with mental health problems, including smoking, and the requirement to respond to these. • In addition, tobacco use is recognised as a **global problem**: WHO report on the global tobacco epidemic, 2017: monitoring tobacco use and prevention policies; Executive Summary. Geneva: World Health Organization; 2017. Licence: CC BY-NC-SA 3.0 IGO.

		• The burden of disease attributable to smoking in psychiatric populations is substantial. Smoking is believed to account for the majority of excess mortality among individuals with serious mental illness. A recent study of Older Irish adults reported that those with mental health difficulties were more likely to smoke, and more likely to report smoking-related diseases than those without mental health difficulties (*Burns et al 2017*). • Life expectancy among people with severe mental illness is 10 to 25 years less than that among the general population. *(HIQA HTA)*	• Within the **HSE**, o the **Mental Health Service** Operational Plan includes Service Improvement Project on Physical Health. o HSE **Best Practice Guidance** for mental health services document which sets out standards to measure regulatory compliance, including Tobacco Management. o TFI publication on smoking & mental health – a briefing for frontline staff. • The **Mental Health Commission** Judgement Support Framework includes regulations relating to physical health of persons with mental health problems, and also to the premises where they live/are treated. • In September 2017, this guideline was **prioritised by NCEC** and was listed on the NCEC schedule of guidelines. (prioritisation submission & response available on request)

2.	**Desirable Effects** How substantial are the desirable anticipated effects? *(How large are the desirable effects of the intervention taking into account the importance of the outcomes (how much they are valued), and the size of the effect (the likelihood of experiencing a benefit or how much of an improvement individuals would be likely to experience?)*		
	JUDGEMENT	**RESEARCH EVIDENCE**	**ADDITIONAL CONSIDERATIONS**
	○ Trivial ○ Small ○ Moderate ● Large ○ Varies ○ Don't know	• Smoking causes death and disability on a large scale and it is well documented that cigarette smoking has been causally linked to diseases of nearly every organ of the body, to diminish health status and to foetal harm. *(US Department of Health & Human Services, A Report of the Surgeon General, 2014).* The burden of hospitalisation and death attributable to smoking that could be avoided through elimination of this risk factor has been quantified in Ireland: 55,000 hospitalisations and 5,900 deaths *(SOTC 2018).* • Stopping smoking results in immediate health benefits, and stopping smoking before age 40 years avoids more than 90% of the excess mortality caused by continuing smoking, while stopping before 30 years avoids more than 97% of the excess mortality. (*Pirie et al, Lancet, 2013 & Jha et al, N Engl J Med, 2013*) • Mental health and quality of life benefits are also associated with smoking cessation compared to continuing smoking. *(Taylor et al, BMJ 2014)* • Intervention from health professionals has been shown repeatedly, in randomised controlled trials, to increase the percentage of smokers who stop and remain abstinent for 6 months or more (*West et al, 2000*). • Behavioural interventions and pharmacological interventions, in combination, or alone are effective in assisting those who want to quit smoking: ○ Group behaviour therapy is the most effective behavioural intervention, almost twice as effective as an active control (defined as brief advice or written materials). ○ Varenicline was the most effective single therapy, more than two and half times as effective as the control. Varenicline used in combination with NRT was the most effective dual therapy,	

		more than three and a half times as effective as the control. Using NRT products in combination was more effective than a single form of NRT alone. *(HIQA HTA)* • In its HTA, HIQA have demonstrated that maximising the use of Varenicline and Varenicline in combination with NRT in Ireland would increase the number of successful quitters by 77% and 97% respectively (*(HIQA HTA 2018)*. **Persons with Mental Health Problems:** • Mental illness is associated with higher levels of nicotine dependence, intensity of smoking, and smoking severity. • Smoking is believed to account for the majority of excess mortality among individuals with serious mental illness. • Life expectancy among people with severe mental illness is 10 to 25 years less than that among the general population. *(HIQA HTA)* • Persons with mental health problems are equally capable of quitting than those without these problems *(Prochaska 2011).* • Burns et al report that three-quarters of those in an Irish psychiatric hospital wanted to quit smoking, and almost half would like to get that advice during their inpatient stay. Motivation, acceptability of advice and quit rate similar to nearby general inpatient samples (*Burns et al, 2018*) • Smoking cessation is not associated with any exacerbation of symptoms among those with a history of mental health problems. In fact, mental health and quality of life benefits are also associated with smoking cessation compared to continuing smoking. *(Taylor et al, BMJ 2014)* • In terms of psychiatric comorbidities, there is also good evidence that benefits from smoking cessation accrue relatively rapidly; anxiety levels decrease from one week post cessation. • Smoking cessation has the potential to deliver significant health benefits for smokers and their families, including those with mental health	• In Ireland, to date, smoking cessation among those with mental health problems has been limited – they have been left behind to date. • 'Myths' regularly reported about poor ability to quit and difficulties in doing so. • Psychiatric hospitals were exempted from 2004 smoke-free regulations. • A 2006 evaluation at the provider level ranked psychiatric facilities among the lowest in terms of delivering cessation services. *(Currie et al, 2009)* • Benefits to health services – roll-out of TFCs etc.

		problems. For those using secondary care services, there are additional advantages, such as reduced length of stay in hospital, lower drug doses, fewer complications, higher survival rates, better wound healing, decreased infections and fewer re-admissions after surgery. (*HIQA HTA*)	

3.	**Undesirable Effects** How substantial are the undesirable anticipated effects? *(How large are the undesirable effects of the intervention taking into account the importance of the outcomes (how much they are valued), and the size of the effect (the likelihood of experiencing a benefit or how much of an improvement individuals would be likely to experience?)*		
	JUDGEMENT	**RESEARCH EVIDENCE**	**ADDITIONAL CONSIDERATIONS**
	○ Large ○ Moderate ○ Small ● Trivial ○ Varies ○ Don't know	• No substantive adverse effects were identified following review of the efficacy literature associated with behavioural interventions. *(HIQA HTA 2018)* • Pharmacological interventions for smoking cessation are generally safe and well-tolerated in this population. In the absence of contraindications, these agents are undoubtedly safer than the continuation of smoking. *(HIQA HTA 2018)* **Persons with Mental Health Problems:** • Observational and post-marketing surveillance data have shown inconsistent findings relating to neuropsychiatric adverse events for bupropion and varenicline. *(HIQA HTA 2018)* • The EAGLES 2016 (Evaluating Adverse Events in a Global Smoking Cessation Study) trial, however, did not show a significant increase in neuropsychiatric adverse events attributable to varenicline or bupropion relative to nicotine patch or placebo in patients with or without pre-existing psychiatric disorders. *(HIQA HTA 2018)* • Burns et al report that three-quarters of those in an Irish psychiatric hospital wanted to quit smoking, and almost half would like to get that advice during their inpatient stay (*Burns et al, 2018*)	• HIQA - Section 5 details an overview of the current evidence in relation to the safety of pharmacological smoking cessation interventions and e-cigarettes, including those with mental health problems. • HSE Publication: Smoking Cessation and Mental Health A briefing for front-line staff • All pharmacological interventions referenced in guidelines and available in Ireland are licensed and regulated through Healthcare Products Regulatory Authority (HPRA) • Belief – whether correct or not – that significant titration of antipsychotics and other mental health drugs is needed once a smoker quits. • How will MECC sit with smokers? ○ Initial findings on the acceptability of MECC among patients and clients is that MECC is well accepted by clients and patients, and there is an expectation that they will be asked about their lifestyle & behaviour change e.g. smoking cessation.

			• Given the findings regarding effectiveness, and the resultant recommendations, the undesirable effects of e-cigarettes are not considered since they are not a recommended intervention. 4% of people report currently using e-cigarettes; 9% of current smokers and 10% of ex smokers; 17% of those who have tried to quit smoking in the past year, and 30% of those who have successfully quit smoking, are current users of e-cigarettes (*Healthy Ireland Survey 2018*). Recently, studies on the toxicological profile and short-term safety profile of e-cigarettes have emerged (PHE, National Academies). HIQA found that the safety data on e-cigarettes are limited to two small short-term clinical trials. Mild, temporary adverse drug reactions were found, such as throat and respiratory irritation and dry cough. Toxicological studies have demonstrated that while toxic chemicals may be present in e-cigarette vapour, they are at a lower concentration than in cigarette smoke. E-cigarettes have only been in use for a short time, and so data on long-term toxicity are not yet available. While the clinical effect of long-term e-cigarette use is unknown, the risk to bystanders from 'passive vaping' appears to be very low. The safety of e-cigarettes is an evolving area of research; while believed to be safer than smoking, evidence on long-term safety has yet to be established. In

			addition, HIQA has identified that there are concerns about the social normalisation of some cessation aids, such as e-cigarettes, leading to new use by people who have never smoked, later migration to tobacco cigarettes, long-term nicotine dependency, and other potential as yet unknown harms. *(HIQA HTA 2018)*

4.	**Certainty of evidence** What is the overall certainty of the evidence of effects? *(How good an indication does the research provide of the likely effects across all the critical outcomes i.e. the likelihood that the effects will be different enough from what the research found that it might affect a decision about the intervention?*		
	JUDGEMENT	**RESEARCH EVIDENCE**	**ADDITIONAL CONSIDERATIONS**
	○ Very low ○ Low ○ Moderate ● High ○ No included studies	• **Ask and document every person's smoking status, and advise people who smoke to stop** (HIGH – NZ, Canada and USA; HIQA, standard of care) • **Offering behaviour support:** ○ **Brief Intervention** (HIGH – NZ, Canada and USA; HIQA, standard of care / Intensive Advice RR 1.19 (95% CI 1.05 - 1.35; PI 0.84 – 1.67); ○ **Individual or Group Counselling** (4 or more, HIGH – NZ, Canada and USA (USA has specification); HIQA Individual Counselling RR 1.48 (95% CI 1.17 - 1.85; 95% PI 1.11 – 1.96) and Group behaviour Therapy RR 1.80 (95% CI 1.36 - 2.40; 95% PI 0.66 – 4.92); ○ **Phone** (HIGH – NZ, CANADA and USA; HIQA RR 1.34 (95% CI 1.19 - 1.51;95% PI 0.70 - 2.47); ○ **Text** (NZ – Moderate – conflicting); ○ **Internet-based:** (NZ – insufficient evidence; HIQA RR 1.43 (95% CI 1.02, 2.0; 95%PI 0.45, 4.51) "HIQA: The direct evidence suggests a somewhat consistent picture whereby 'do nothing' is less effective than control or active intervention. Intensive advice, telephone support, Internet-based, individual counselling and group behaviour are superior to control and, based on limited evidence, there is no statistically significant evidence of any one offering a treatment benefit over another" • **Offering pharmacological support** ○ USPSTF Blanket Statement – GRADE HIGH "*provide U.S. Food and Drug Administration (FDA)–approved pharmacotherapy for cessation to adults who use tobacco*" ○ **NRT** (HIGH NZ; HIQA RR 1.59 (95% CI 1.50 - 1.69, PI 1.12 - 2.25)); for at least 8 weeks (HIGH NZ). ○ **Bupropion** (HIGH NZ; HIQA RR 1.65 (95% CI 1.51 – 1.79, PI (1.47-1.84));	This is supported by Making Every Contact Count Policy, HSE Relapse prevention is a common question which arises for healthcare professionals. The guidelines already provide some good practice points. There is now systematic review and meta-analysis evidence by Cochrane to develop these points further (see Evidence Review, December 2020). It could be added to good practice points and the appropriate section of the document could discuss the evidence. Chapter 4 HIQA report presents evidence of effectiveness of various interventions using direct and indirect approaches. As per Section 16.6.2 of the Cochrane Handbook of Systematic reviews of Intervention, this guideline has focussed on <u>direct comparisons</u> as it's considered these take preference where available. Behavioural summary at Table 4.12: Treatment effects based on direct evidence; • Note to handling of data on effectiveness of behavioural supports by HIQA – in particular, the comparator/control (brief advice/written materials) (*See AppendixA*)

		○ **Bupropion + NRT** (HIQA RR 1;73 (95% CI 1.39 - 2.15) ○ **Cystine** (HIQA RR 1.87 (95% CI 1.48 - 2.38)) – not licensed ○ **Combo NRT** (HIGH NZ; HIQA RR 1.71 (95% CI 1.30 - 2.25)) ○ **Varenicline** (HIGH NZ; HIQA RR 2.66 (95% CI 2.25 – 3.15; PI 1.52 - 4.66) ○ **Varenicline + NRT** (HIQA RR (vs Varenicline monotherapy, 2 studies) 1.42 (1.13 – 1.79)) ○ **E-Cigarettes:** The USPSTF concludes that the current evidence is insufficient to recommend electronic nicotine delivery systems (ENDS) for tobacco cessation in adults; HIQA RR 2.29 (95% CI 1.05 – 4.96) – "It would be appropriate to await the results of ongoing trials before deciding whether e-cigarettes should be recommended in preference to combination NRT for populations where varenicline is contraindicated, not tolerated or non-preferred." • **Offer Combined behaviour and pharmacological support**: HIGH – Canada, USA; HIQA "The effectiveness of pharmacological interventions is improved by an average of 18% by providing any type of adjunct behavioural therapy".) • **Most effective support - HIQA HTA**: ○ Varenicline was the most effective single therapy on direct analysis of evidence, with a risk ratio of 2.66. Varenicline is the most effective monotherapy, and has a small, but not statistically significant treatment benefit compared to combination NRT ○ NRT and Bupropion are similarly effective, with risk ratios close to 1.60. ○ Advise to Minister: "Smoking cessation services should, in the first instance, seek to increase the uptake of varenicline (alone or in combination with NRT) among smokers wishing to use some type of pharmacological support in their attempt to quit. In the absence of additional evidence confirming the effectiveness of e-cigarettes, HSE smoking cessation services should seek to promote the uptake of combination NRT treatment among those for whom varenicline is not suitable. Providing behavioural support, either alone or in combination with pharmacological interventions, increases the chances of long-term smoking	Text-messaging is used by the HSE QUIT programme. Its effectiveness is supported by a systematic review and meta-analysis by Cochrane (Evidence update, December 2020). The GDG considered adding it to recommendations on behavioural support and to the appropriate section of the document. Pharmacotherapy summary at Table 4.4: Treatment effects based on direct evidence: pharmacological studies available at document end (*See AppendixB*) **Pharmacological Considerations:** • Cystine not licensed in Ireland. • Nortriptyline is now available for use in Ireland. It was omitted from the initial HIQA HTA. Its effectiveness is supported by a systematic review and meta-analysis by Cochrane (See evidence update, December 2020). The GDG added to recommendations on pharmacotherapy and the appropriate sections of the guidance document were updated. **Alternative/other supports or services for smoking cessation:**

		cessation and should continue to be provided to all smokers who would like to avail of this option to help them quit". **Persons with Mental Health Problems:** • **Identify smokers:** ○ Canada: "Health care providers should screen persons with mental illness and/or addictions for tobacco use." [HIGH] • **Offering support:** ○ NZ: Offer effective interventions (such as those identified in the previous sections) to people with mental health disorders who smoke. [Grade ☑] • **Offering behaviour support:** ○ NZ: "Provide brief advice to stop smoking to all users of mental health services who smoke." [HIGH] • **Offering pharmacological support:** ○ HIQA HTA: Bupropion is contraindicated in patients with bipolar affective disorder, as this antidepressant can precipitate a manic, mixed, or hypomanic episode. ○ HIQA HTA: Nicotine replacement therapy (NRT) is generally well-tolerated in psychiatric populations. • **Offer Combined behaviour and pharmacological support:** ○ Canada: "Health care providers should offer counselling and pharmacotherapy treatment to persons who smoke and have a mental illness and/or addiction to other substances." [HIGH] ○ HIQA HTA: "High-intensity interventions combining pharmacotherapy and behavioural support have been shown to improve quit outcomes in people attending secondary mental health services." • **Monitor:** ○ Canada: "While reducing smoking or abstaining (quitting), health care providers should monitor the patients'/clients' psychiatric condition(s) (mental health status and/or other addiction(s)). Medication dosage should be monitored and adjusted as necessary." [HIGH]	Consider quelling myths re alternative/other supports or services for smoking cessation in this guideline? – these are challenges in everyday practice The GDG examined new evidence on Allen Carr along with evidence team comments (Evidence Update, December 2020) and considered if good practice points for healthcare professionals on how to respond to queries on a range of non-recommended interventions (including e-cigarettes, AC method, hypnotherapy and acupuncture) should be considered. The appropriate sections in the guideline document were updated. **Most effective supports – HIQA HTA** HIQA conclusions re ranking based on network estimates, were considered with reference to Cochrane Handbook. Only two therapies had a probability of being most effective: combined varenicline and NRT monotherapy (probability = 0.64) and combined varenicline and bupropion (probability = 0.34). The results of a network meta-analysis suggest that varenicline is the most effective monotherapy, and that dual therapy varenicline plus NRT is the most effective pharmacotherapy. NRT

		NZ: "Carefully monitor people with mental health disorders who stop smoking while still using medication for their mental health disorder, as the dosage of their medication may need to be reduced. [HIGH]	monotherapy and bupropion are similarly effective. The direct and indirect evidence were broadly in agreement. Group behaviour therapy had the highest probability of being most effective (probability = 0.91). Individual counselling and intensive advice were the next highest ranked treatments. Intensive advice, telephone support and mobile phone-based interventions had wide ranges of probable rankings, indicating uncertainty in their effectiveness compared with the other interventions. HIQA HTA: Summary of Findings *(See Appendix D)* **Drug Dosage:** It has been demonstrated that NRT may be required at higher doses than in the general population, and a combination of patch and a faster-acting form (such as gum or inhaler) is preferable. It has also been demonstrated that a longer duration of NRT may be required for prolonged abstinence. (HIQA HTA)
5.	**Values** Is there important uncertainty about or variability in how much people value the main outcomes? *(How much do individuals value each of the main outcomes? Is uncertainty about how much they value each of the outcomes or variability in how much different individuals value the outcomes large enough that it could lead to different decisions?*		
	JUDGEMENT	**RESEARCH EVIDENCE**	**ADDITIONAL CONSIDERATIONS**
	○ Important uncertainty or variability ○ Possibly important uncertainty or variability ○ Probably no important uncertainty or variability	Healthy Ireland survey's from 2015-2018 indicates the majority of smokers want to quit, valuing the outcome of smoking cessation. Results show a high percentage of smokers are trying to, planning to or are considering quitting: - 63% (2015), 59% (2016), 57% (2017 and 2018)	The introduction of **Making Every Contact Count** attempts to instigate a culture whereby patients will expect healthcare professionals to ask about health behaviours

	● **No important uncertainty or variability**	- Therefore in 2018, just 43% of current smokers are <u>Not</u> thinking about quitting smoking. **For those with mental health problems:** • At baseline 75% of smokers wanted to quit and 48% reported they would like cessation advice while in hospital. Few reported receiving cessation advice from any healthcare professional in the past year (13%), while just 6% had smoking cessation care clearly documented in their notes. (*Burns et al 2018*) In depth analysis of the Healthy Ireland survey 2015 identified that over 40% of smokes are more likely to report poorer health (both physical and mental health) compared to people who do not smoke, independent of age, gender and social class. Ex-smokers report better health than current smokers and report similar levels of mental ill-health as never smokers. (The State of Tobacco Control in Ireland 2018) **For those with mental health problems:** A recent study of Older Irish adults reported that those with mental health difficulties were more likely to smoke, and more likely to report smoking-related diseases than those without mental health difficulties (*Burns et al 2017*). The profile of people who smoke with a positive intention to quit does not vary between male and female, however there is a significant difference across age group: positive intention to quit is more common across increasing age groups, peaking in 35-44 year age group. Attempts to quit is similar among males and females; however, across age groups, making a quit attempt was more common among younger people, for example those aged 25-34 years had made an attempt compared to 43% of those aged 55-64 years (The State of Tobacco Control in Ireland 2018).	Ireland has a long tradition in tobacco control. The following table details **Key milestones in Tobacco Control In Ireland, 1998-2018** (source: SOTC) ✓ 2017 – Standardised (Plain) Packaging of Tobacco ✓ 2014 – EU Tobacco Products Directive ✓ 2013 – Launch of Tobacco Free Ireland ✓ 2011 – Graphic warnings on Tobacco ✓ 2010 – HSE Tobacco Control Framework ✓ 2009 – restrictions on sale, removal of point-of-sale tobacco displays ✓ 2005 – WHO Framework Convention on Tobacco Control ratified ✓ 2004 – Workplace Smoking Ban ✓ 2002 – Office of Tobacco Control established. Prohibition on advertising & sponsorship ✓ 2000 – Towards a Tobacco Free Society ✓ 1999 – Joint committee on Health & Children: A National Anti-Smoking Strategy ✓ 1991 – Certain regulations on tobacco advertising ✓ 1988 – Smoking banned in public buildings

6.	**Balance of effects** Does the balance between desirable and undesirable effects favour the intervention or the comparison? *(What is the balance between the desirable and undesirable effects , taking into account how much individuals value the main outcomes, how substantial the desirable and undesirable effects are , the certainty of those estimates, discount rates, risk aversion and risk seeking?*		
	JUDGEMENT	**RESEARCH EVIDENCE**	**ADDITIONAL CONSIDERATIONS**
	○ Favours the comparison ○ Probably favours the comparison ○ Does not favour either the intervention or the comparison ○ Probably favours the intervention ● **Favours the intervention** ○ Varies ○ Don't know	• Two-thirds of those who attempted to quit in the last 12 months did so due to concerns about their health. *(HI Survey 2018)* • Stopping smoking results in immediate health benefits, and stopping smoking before age 40 years avoids more than 90% of the excess mortality caused by continuing smoking, while stopping before 30 years avoids more than 97% of the excess mortality. (*Pirie et al, Lancet, 2013 & Jha et al, N Engl J Med, 2013*) • Mental health and quality of life benefits are also associated with smoking cessation compared to continuing smoking. *(Taylor et al, BMJ 2014)* • Ex-smokers report better health than current smokers and report similar levels of mental ill-health as never smokers. (*The State of Tobacco Control in Ireland 2018)* • Pharmacological interventions for smoking cessation are generally safe and well-tolerated. In the absence of contraindications, these agents are undoubtedly safer than the continuation of smoking. *(HIQA HTA 2018)*	• In Ireland, to date, smoking cessation among those with mental health problems has been limited – they have been left behind to date – this is why they are a particular focus of this guideline.

7.	**Resources required** How large are the resource requirements (costs)? *(How large is the cost of the difference in resource use between the intervention and the comparison?)*		
	JUDGEMENT	**RESEARCH EVIDENCE**	**ADDITIONAL CONSIDERATIONS**
	● **Large costs** ○ Moderate costs ○ Negligible costs and savings ○ Moderate savings ○ Large savings ○ Varies ○ Don't know	**A Budget Impact Analysis (BIA) informs this section of the guideline.** The HIQA HTA provides some information in that it details the costs of smoking cessation interventions, and offers various scenarios and related costs. A budget impact analysis found that maximising the use of combination varenicline and NRT would be associated with an average increase of approximately €7 million in the annual cost of providing pharmacological smoking cessation interventions in Ireland	Chapter 6 of HIQA HTA: Economic Analysis HSE budget allocation for 2019 is €16.05 billion. **Persons with Mental Health Problems:** • No data/costs specific to this population in HIQA HTA – this will be informed by planned Budget Impact Assessment.

8.	**Certainty of evidence of required resources** What is the certainty of the evidence of resource requirements (costs)? *(How certain is the evidence of a difference for each type of resource used (e.g. drugs, hospitalisations) and the cost of the resources?)*		
	JUDGEMENT	**RESEARCH EVIDENCE**	**ADDITIONAL CONSIDERATIONS**
	○ Very low ○ Low ● **Moderate** ○ High ○ No included studies	**A Budget Impact Analysis (BIA informs this section of the guideline.** The HIQA HTA provides some information in that it details the costs of smoking cessation interventions, and offers various scenarios and related costs. A budget impact analysis found that maximising the use of combination varenicline and NRT would be associated with an average increase of approximately €7 million in the annual cost of providing pharmacological smoking cessation interventions in Ireland However, this would correspond with an increase in the uptake rate of varenicline from 3.7% to 12.5%, and whether such a substantial increase can be brought about in practice is questionable	**Persons with Mental Health Problems:** • No data/costs specific to this population in HIQA HTA – this will be informed by planned Budget Impact Assessment.

This section relies hugely on Section 7 - resources

9.	**Cost effectiveness** Does the cost-effectiveness of the intervention favour the intervention or the comparison? *(Is the intervention cost-effective taking into account uncertainty about or variability in the costs, uncertainty about or variability in the net benefit, sensitivity analyses, and the reliability and applicability of the economic evaluation?)*		
	JUDGEMENT	**RESEARCH EVIDENCE**	**ADDITIONAL CONSIDERATIONS**
	○ Favours the comparison ○ Probably favours the comparison ○ Does not favour either the intervention or the comparison ● **Probably favours the intervention (persons with mental health problems)** ● **Favours the intervention (GA)** ○ Varies ○ No included studies	HIQA HTA: The existing literature does indicate that compared with other types of healthcare interventions, smoking cessation interventions are among the most cost-effective use of resources, with ICERs far below conventional willingness-to-pay thresholds in Ireland and elsewhere. Table 6.2 (HIQA HTA – *See Appendix C*) summarises the results of previous economic studies, modelling a cohort of smokers in a real life setting, that reported life years gained (LYG) or QALY outcomes for a range of pharmacological and behavioural interventions.. HIQA HTA concluded that all cessation interventions included in the analysis would be considered cost-effective when compared with unassisted quitting. A comparison of alternatives to the current mix of smoking cessation interventions used in Ireland found that maximising the uptake of combination varenicline and NRT is the most cost-effective strategy. Increasing the smoking cessation budget to promote the use of varenicline-based regimens, and combination NRT therapy for those for whom varenicline is not suitable, would be a cost-effective use of resources.	Healthy Ireland survey data shows far fewer Irish smokers making a supported quit attempt use varenicline compared with NRT (<4% versus 24%). It is unclear what effect any prospective policy change designed to increase varenicline use would have on these figures. Similar uncertainty surrounds the use of e-cigarettes, which are now the second most popular option (after unassisted quitting) in Ireland for those attempting to quit (29%). Difficulties in estimating the combined effect of pharmacological and behavioural support interventions arise from the fact that the majority of the trials in this area have sought to isolate the relative effect of a single intervention (be it a drug or a form of counselling), rather than the combined effect of specified drug and behavioural support interventions when used together. While this makes sense when attempting to establish the efficacy of a particular treatment, it poses problems when modelling routine clinical practice that usually involves some form of input from a healthcare professional in addition to pharmacotherapy. The inconsistency in the evidence for the effect of behavioural therapies adds further complexity. **Persons with Mental Health Problems:** No data specific to this population in HIQA HTA – extrapolating from the general adult population.

10.	**Equity** What would be the impact on health equity? *(Are there plausible reasons for anticipating differences in the relative effectiveness of the intervention for disadvantaged subgroups or different baseline conditions across disadvantaged subgroups that affect the absolute effectiveness of the intervention or the importance of the problem?)*		
	JUDGEMENT	**RESEARCH EVIDENCE**	**ADDITIONAL CONSIDERATIONS**
	○ Reduced ● **Probably reduced** ○ Probably no impact ○ Probably increased ○ Increased ○ Varies ○ Don't know	Potential to reduce – but need to target plan (price and marketing) carefully and track. SOTC: Gap, potentially widening. Poor visibility of equity impact with routine information but some "pro-equity" evidence with face to face services. NPS Research: Results: There was no association between area based deprivation and the likelihood of making a quit attempt. While use of smoking cessation aids was generally low, smokers in more deprived areas had higher odds of using aids in a quit attempt (adjusted OR 1.06, 95% CI 1.02 to 1.11 for every 10% increase in area-based deprivation). The odds of being successful in a quit attempt decreased as deprivation increased (adjusted OR 0.92, 95% CI 0.88 to 0.97 for every increase in deprivation decile), and this was remained significant after controlling for the use of help, age and gender were controlled for. HIQA HTA: "Some tobacco control policies, not limited to cessation interventions, may contribute to increasing cessation inequalities. Socio-economic inequalities in cessation may therefore be due to a range of factors including difficulties accessing services, barriers to completion of treatment, and lower probability of success due to higher nicotine dependency. Some of the inequalities may be addressed by ensuring equitable access to smoking cessation services. One proposed method to combat cessation inequalities is to incorporate an equity element into performance measurement in the quit services."	Bosdriesz JR, Willemsen MC, Stronks K, Kunst AE. Socioeconomic inequalities in smoking cessation in 11 European countries from 1987 to 2012. Journal of epidemiology and community health. 2015;69(9):886-92. Low A, Unsworth L, Low A, Miller I. Avoiding the danger that stop smoking services may exacerbate health inequalities: building equity into performance assessment. BMC Public Health. 2007;7:198. Hill S, Amos A, Clifford D, et al Impact of tobacco control interventions on socioeconomic inequalities in smoking: review of the evidence Tobacco Control 2014;23:e89-e97. **Persons with Mental Health Problems:** HSE not currently meeting Public Sector Equality and Human Rights Duty Legislation. • In Ireland, to date, smoking cessation among those with mental health problems has been limited – they have been left behind to date.

			• McArdle & Zabir. Implementing a tobacco-free hospital campus in Ireland: lessons learned. • 'Myths' regularly reported about poor ability to quit and difficulties in doing so. • Psychiatric hospitals were exempted from 2004 smoke-free regulations. • A 2006 evaluation at the provider level ranked psychiatric facilities among the lowest in terms of delivering cessation services. *(Currie et al, 2009)* • There are positive parity of esteem and equity implications associated with prioritising smoking cessation among people with mental health problem given that people in this group risk being left behind (ASH, *The Stolen Years*).

11	**Acceptability** Is the intervention acceptable to key stakeholders? *(Are key stakeholders likely not to accept the distribution of the benefits, harms and costs; or the costs or the undesirable effects in the short term for desirable effects (benefits) in the future? Are they likely to disagree with the values attached to the desirable or undesirable effects , or not to accept the intervention because of ethical concerns?)*		
	JUDGEMENT	**RESEARCH EVIDENCE**	**ADDITIONAL CONSIDERATIONS**
	○ No ○ Probably no ● **Probably yes** ○ Yes ○ Varies ○ Don't know	• The Healthy Ireland survey 2017 reports: - 35% of smokers who saw their GP - 25% of those who saw a hospital doctor - 22% of those who saw a nurse - 20% of smokers who saw a dentist - 10% of smokers who saw a pharmacist in the past 12 months discussed ways of quitting smoking Those aged 25 to 34 (where smoking rates are higher) were less likely to discuss with their GP ways of quitting, 30% of this age group who saw their GP discussed ways of quitting. (Healthy Ireland 2017) **Persons with mental health problems:** • Burns et al report that three-quarters of those in an Irish psychiatric hospital wanted to quit smoking, and almost half would like to get that advice during their inpatient stay. Motivation, acceptability of advice and quit rate similar to nearby general inpatient samples (*Burns et al, 2018*)	• Cultural issues within some different staff subgroups • Variability in prioritisation • Ability to release staff for training ***Request to Maria O'Brien (MECC) for additional information re acceptability*** • Initial findings on the acceptability of MECC among patients and clients is that MECC is well accepted by clients and patients, and there is an expectation that they will be asked about their lifestyle & behaviour change e.g. smoking cessation.

12	**Feasibility** Is the intervention feasible to implement? *(Is it feasible to sustain use of the intervention and to address potential barriers to using it?)*		
	JUDGEMENT	**RESEARCH EVIDENCE**	**ADDITIONAL CONSIDERATIONS**

	○ No
	○ Probably no
	● **Probably yes**
	○ Yes
	○ Varies
	○ Don't know
		An integral part of this guideline will be an accompanying implementation plan with time-frame of 2-3 years. This plan will include all expected outcomes and details of how these outcomes will be verified.
		
		The implementation plan also details the identified barriers and enablers for the implementation of each recommendation, and actions to address same are also included.
			• MECC Policy
			• New Undergraduate Curriculum for Chronic Disease Prevention and Management
			• Healthcare Utilisation by adults (aged 15+) in Ireland in 2018:
			  ○ 74% of adults in Ireland have visited a GP, with an average of 3.8 visits per person (6.2 visits for those with a full medical card);
			  ○ 12% of adults have been admitted to hospital as an inpatient;
			  ○ 10% have used an ED in a public hospital.
			• Tom Sharpe,1 Ali Alsahlanee,1 Ken D. Ward,2 and Frank Doyle1. Systematic Review of Clinician-Reported Barriers to Provision of Smoking Cessation Interventions in Hospital Inpatient Settings. Journal of Smoking Cessation. 2018. doi:10.1017/jsc.2017.25
			
			• Burns A, Webb M, Stynes G, O'Brien T, Rohde D, Strawbridge J, Clancy L and Doyle F (2018). Implementation of a Quit Smoking Programme in Community Adult Mental Health Services–A Qualitative Study. Front. Psychiatry 9:670. doi: 0.3389/fpsyt.2018.00670
			
			• McArdle D, Kabir Z. Implementing a tobacco-free hospital campus in Ireland: lessons learned. Ir J Med Sci (2018) 187:287–296. DOI 10.1007/s11845-017-1659-z

SUMMARY OF JUDGEMENTS

	JUDGEMENT						
PROBLEM	No	Probably no	Probably yes	**Yes**		Varies	Don't know
DESIRABLE EFFECTS	Trivial	Small	Moderate	**Large**		Varies	Don't know
UNDESIRABLE EFFECTS	Large	Moderate	Small	**Trivial**		Varies	Don't know
CERTAINTY OF EVIDENCE	Very low	Low	Moderate	**High**			No included studies
VALUES	Important uncertainty or variability	Possibly important uncertainty or variability	**Probably no important uncertainty or variability**	No important uncertainty or variability			
BALANCE OF EFFECTS	Favours the comparison	Probably favours the comparison	Does not favour either the intervention or the comparison	Probably favours the intervention	**Favours the intervention**	Varies	Don't know
RESOURCES REQUIRED	**Large costs**	Moderate costs	Negligible costs and savings	Moderate savings	Large savings	Varies	Don't know
CERTAINTY OF EVIDENCE OF REQUIRED RESOURCES	Very low	Low	**Moderate**	High			No included studies
COST EFFECTIVENESS	Favours the comparison	Probably favours the comparison	Does not favour either the intervention or the comparison	**Probably favours the intervention**	**Favours the intervention**	Varies	No included studies
EQUITY	Reduced	**Probably reduced**	Probably no impact	Probably increased	Increased	Varies	Don't know
ACCEPTABILITY	No	Probably no	**Probably yes**	Yes		Varies	Don't know
FEASIBILITY	No	Probably no	**Probably yes**	Yes		Varies	Don't know

TYPE OF RECOMMENDATION

Strong recommendation against the intervention ○	Conditional recommendation against the intervention ○	Conditional recommendation for either the intervention or the comparison ○	Conditional recommendation for the intervention ○	**Strong recommendation for the intervention** ●

CONCLUSIONS

Draft Recommendations (For review by clinical guideline development group)

See Final guideline document.

Justification

See Final guideline document.

Subgroup considerations

See Final guideline document.

Implementation considerations

See Final guideline document.

Monitoring and evaluation

See Final guideline document.

Research priorities

See Final guideline document.

Table 4.12 Treatment effects based on direct evidence: behavioural interventions

Comparison	Studies	Participants (n)	Risk ratio (95% CI)	p-value	95% Prediction interval	I^2 (95% CI)
Individual counselling vs Nothing*[199]	1	155	0.85 (0.27 – 2.63)	0.772		NA
Telephone support vs Nothing*[275]	1	1821	1.11 (0.74 - 1.67)	0.621		NA
Internet-based vs Nothing*[242, 248, 249]	3	3671	1.46 (1.18 – 1.81)	0.001		0.61 (0.00 - 0.89)
Control vs Nothing[173, 215, 223, 240, 353, 462-469]	14	9720	1.67 (1.34 - 2.07)	<0.001	(0.97 - 2.85)	0.31 (0.00 - 0.64)
Intensive advice vs Nothing[187, 215, 224, 225, 229, 231, 233, 234, 240]	9	6707	1.74 (1.36 - 2.24)	<0.001	(0.96 - 3.15)	0.36 (0.00 - 0.71)
Acupuncture vs Nothing*[167, 173]	2	243	2.49 (1.23 – 5.02)	0.011		0.00
Group behaviour therapy vs Nothing[167, 173, 177, 182, 187, 190]	6	846	3.16 (1.26 - 7.90)	0.014	(0.19 - 53.03)	0.69 (0.28 - 0.87)
Acupuncture vs Control[164-166, 168-174]	12	2249	1.03 (0.83 - 1.29)	0.778	(0.76 - 1.40)	0.03 (0.00 - 0.60)
Mobile phone-based vs Control*[251-253]	3	1112	1.18 (0.88 - 1.60)	0.272		0.51 (0.00 - 0.86)
Intensive advice vs Control[210, 212-223, 226-228, 230, 232, 235-241]	25	16196	1.19 (1.05 - 1.35)	0.008	(0.84 - 1.67)	0.28 (0.00 - 0.56)
Telephone support vs Control[218, 235, 254-274, 276-293]	41	44218	1.35 (1.21 - 1.51)	<0.001	(0.78 - 2.35)	0.64 (0.49 - 0.74)
Internet-based vs Control[244-247, 250]	5	5128	1.43 (1.02 - 2.00)	0.041	(0.45 - 4.51)	0.70 (0.23 - 0.88)
Individual counselling vs Control[178, 192, 200-203, 207, 208]	8	3696	1.48 (1.17 - 1.85)	0.001	(1.11 - 1.96)	0.00 (0.00 - 0.57)
Group behaviour therapy vs Control[168, 173, 175, 176, 178, 180, 184-186, 188, 189, 191-197]	18	5072	1.80 (1.36 - 2.40)	<0.001	(0.66 - 4.92)	0.66 (0.45 - 0.79)
Individual counselling vs Telephone support*[204, 206]	2	1226	1.02 (0.74 - 1.42)	0.884		0.22
Intensive advice vs Telephone support*[211, 218, 235]	3	2869	1.11 (0.77 - 1.59)	0.572		0.00 (0.00 - 0.88)
Mobile phone-based vs Internet-based*[243]	1	755	1.43 (0.88 - 2.31)	0.151		NA

Notes: comparisons marked with * are based on fixed effect model, all other treatment effect estimates based on random effects model.

Table 4.12 continued. Treatment effects based on direct evidence: behavioural interventions

Group behaviour therapy vs Individual counselling*[178, 183, 192, 198]	4	2854	1.10	(0.87 - 1.40)	0.426	0.42	(0.00 - 0.81)
Intensive advice vs Individual counselling*[205, 209]	2	1028	1.40	(1.08 – 1.80)	0.010	0.85	
Intensive advice vs Group behaviour therapy*[179, 181, 187]	3	351	1.05	(0.63 - 1.75)	0.853	0.00	(0.00 - 0.33)
Acupuncture vs Group behaviour therapy*[167, 168, 173]	3	396	1.34	(0.80 – 2.24)	0.270	0.64	(0.00 - 0.90)

Notes: comparisons marked with * are based on fixed effect model, all other treatment effect estimates based on random effects model.

Table 4.4 Treatment effects based on direct evidence: pharmacological interventions

Comparison	Studies (n)	Participants (n)	Risk ratio (95% CI)	p-value	95% Prediction interval	I^2 (95% CI)
NRT vs Control[172, 197, 203, 205, 208, 212, 241, 296, 303, 312, 320, 327, 328, 330, 340, 342-349, 351-357, 359-394, 396, 397, 399-440, 442-445]	116	53,066	1.59 (1.50 - 1.69)	<0.001	(1.12 - 2.25)	0.34 (0.16 - 0.47)
Bupropion vs Control[294-301, 303-311, 313, 314, 316-323, 325-327]	30	13,363	1.65 (1.51 - 1.79)	<0.001	(1.47 - 1.84)	0.02 (0.00 - 0.42)
NRT + bupropion vs Control*[311, 312, 320]	3	1,240	1.73 (1.39 – 2.15)	<0.001		0.31 (0.00 - 0.93)
Combination NRT vs Control*[312, 328, 330]	3	904	1.71 (1.30 – 2.25)	<0.001		0.00 (0.00 - 0.64)
E-cigarette vs Control*[340, 341]	2	662	2.29 (1.05 – 4.96)	0.037		0.00
Cytisine vs Control*[41, 337, 338]	3	2,151	1.87 (1.48- 2.38)	<0.001		0.68 (0.00 - 0.91)
Varenicline vs Control[295, 305, 318, 319, 327, 342, 396, 448-452, 454-458]	17	9,275	2.66 (2.25 - 3.15)	<0.001	(1.52 - 4.66)	0.58 (0.27 - 0.75)
Bupropion vs NRT[296, 302, 303, 312, 313, 320, 324, 327]	8	5,485	1.03 (0.88 - 1.21)	0.696	(0.66 - 1.61)	0.56 (0.03 - 0.80)
E-cigarette vs NRT*[340]	1	584	1.26 (0.68 - 2.34)	0.463		NA
Varenicline vs NRT[327, 335, 342, 345, 350, 395, 396, 441]	8	4,277	1.28 (1.12 - 1.47)	<0.001	(0.96 - 1.70)	0.25 (0.00 - 0.66)
NRT + bupropion vs NRT[312, 313, 320, 324, 358, 398]	6	3,277	1.29 (0.94 - 1.76)	0.109	(0.46 - 3.61)	0.81 (0.59 - 0.91)
Combination NRT vs NRT[312, 313, 328-336, 395]	12	7,239	1.31 (1.16 - 1.47)	<0.001	(1.05 - 1.62)	0.13 (0.00 - 0.53)
Cytisine vs NRT*[339]	1	1,310	1.43 (1.13 - 1.80)	0.002		NA

Notes: comparisons marked with * are based on fixed effect model. All other treatment effect estimates are based on random effects model. The fixed effect model was used when there were fewer than five studies.

Table 4.4 continued. Treatment effects based on direct evidence: pharmacological interventions

Comparison	Studies (n)	Participants (n)	Risk ratio (95% CI)	p-value	95% Prediction interval	I^2 (95% CI)
NRT + bupropion vs Bupropion[311-313, 320, 324]	5	2,644	1.15 (0.93 - 1.42)	0.210	(0.56 - 2.34)	0.64 (0.04 - 0.86)
Combination NRT vs Bupropion*[312, 313, 315]	3	1,216	1.27 (1.08 – 1.50)	0.003		0.64 (0.00 - 0.90)
Varenicline vs Bupropion[295, 305, 315, 318, 319, 327]	6	3,994	1.42 (1.29 - 1.57)	<0.001	(1.24 - 1.63)	0.00 (0.00 - 0.62)
Combination NRT vs NRT + bupropion*[312, 313]	2	1,076	1.06 (0.89 - 1.26)	0.512		0.63
Varenicline vs Combination NRT*[315, 335, 395]	3	1,511	1.04 (0.88 - 1.23)	0.628		0.68 (0.00 - 0.91)
Varenicline + bupropion vs Varenicline*[453]	1	506	1.26 (0.95 - 1.68)	0.109		NA
NRT + varenicline vs Varenicline*[446]	2	787	1.42 (1.13 – 1.79)	0.003		0.60

Notes: comparisons marked with * are based on fixed effect model. All other treatment effect estimates are based on random effects model. The fixed effect model was used when there were fewer than five studies.

Table 6.2 Summary of previous cost-effectiveness studies

Study	Comparison	Perspective (Country)	Time horizon (Discount rate)	Results
Fiscella 1996[779]*	Physician counselling plus NRT patch versus physician counselling alone	Payer (USA)	Lifetime (3%)	Cost per QALY ranged from €5,942 to €14,812 in men, and from €6,707 to €9,452 in women
Wasley 1997[780]*	NRT plus brief physician advice versus brief advice alone	Payer (USA)	Lifetime (5%)	Cost per LYG ranged from €2,377 to €3,902 for men and €4,023 to €5,810 for women
Song 2002[781]*	Counselling alone, counselling plus NRT or bupropion, counselling plus NRT and bupropion	Payer (UK)	Lifetime (0%)	Cost per LYG vs counselling alone ranged from €1,701 to €4,079 for NRT, €1,086 to €2,538 for bupropion and from €1,513 to €3,348 for NRT plus bupropion
Antonanzas 2003[782]*	Bupropion or NRT versus nothing	Payer (Spain)	20 years (NA)	Cost per LYG of €2,165 for bupropion and €5,524 for NRT
Gilbert 2004[783]*	Physician counselling plus NRT or bupropion versus physician counselling	Payer (Seychelles)	Lifetime (3%)	Cost per LYG ranged from €1,489 to €5,168
Feenstra 2005[784]*	Minimal GP counselling with or without NRT versus intensive counselling with NRT or bupropion	Societal (Netherlands)	Up to 75 years (4%)	Cost per QALY ranged from €1,206 to €5,371
Bolin 2006[785]*	Bupropion versus NRT	Societal (Sweden)	20 years (3%)	Cost per QALY for bupropion of €740 for men, and €549 for women, versus NRT
Cornuz 2006[786]*	Brief physician advice plus NRT or bupropion versus brief advice alone	Payer (USA & Europe)	Lifetime (3%)	Cost per LYG ranged from €834 to €3,666 for men and from €3,078 to €9,165 in women
Bolin 2008[787]**	Varenicline versus bupropion	Societal (Sweden)	Lifetime (3%)	Varenicline dominated bupropion
Hoogendoorn 2008[788]*	Varenicline versus unassisted quitting or NRT	Payer (Netherlands)	Lifetime (4% on costs, 1.5% on effects)	Cost per QALY €281 versus unaided, €907 vs NRT

Study	Comparison	Perspective (Country)	Time horizon (Discount rate)	Results
Howard 2008[789]*	Varenicline versus bupropion, NRT and unaided quitting	Payer (USA)	Lifetime (3%)	Varenicline dominated all comparators
Thavorn 2008[790]*	Pharmacy-based intervention versus routine care	Payer (Thailand)	Lifetime (3%)	Intervention dominated usual care (cost saving and generated LYG)
Annemans 2009[791]*	Varenicline versus brief counselling, unassisted quitting or bupropion	Payer (Belgium)	Lifetime (3% on costs, 1.5% on effects)	Cost per QALY of €336 versus brief counselling, €2,315 versus unassisted quitting and cost saving versus bupropion
Bae 2009[792]**	Varenicline versus bupropion and NRT	Payer (South Korea)	Lifetime (5%)	ICER of €4,761 compared with bupropion and NRT
Bolin 2009[793]*	Varenicline versus NRT in Belgium, UK, Sweden and France	Payer (Europe)	Lifetime (3.5%)	Varenicline was cost saving in all countries except France, where the cost per QALY was €3,917
Bolin 2009[794]*	Extended varenicline versus placebo	Societal (Sweden)	50 years (3%)	Cost per QALY €7,345 for men and €7,389 for women
Iqarashi 2009[795]*	Physician counselling versus physician counselling plus varenicline	Payer (Japan)	Lifetime (3%)	Addition of varenicline dominated in men, and had a cost per QALY of €2,980 in women
Knight 2010[796]*	Extended varenicline versus varenicline, bupropion, NRT or unassisted quitting	Payer (USA)	Lifetime (3%)	Extended varenicline dominated all comparators except for normal duration varenicline, where the cost per QALY was €971
Linden 2010[797]**	Varenicline versus bupropion and unaided quitting	Payer (Finland)	20 years (5%)	ICER of €9,466/QALY and €8,389/QALY compared with bupropion and unaided cessation, respectively
Athanasakis 2012[761]	Varenicline versus bupropion, NRT and unaided cessation	Payer (Greece)	Lifetime (3%)	Varenicline dominates all comparators
Guerriero 2013[765]	Text message bases smoking cessation support versus usual care	Payer (UK)	Lifetime (3.5%)	Text message support dominated
Leaviss 2014[768]	Cytisine versus varenicline	Payer (UK)	Lifetime (3.5%)	Cytisine dominated varenicline, being more effective and less costly

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Study	Comparison	Perspective (Country)	Time horizon (Discount rate)	Results
VonWartburg 2014[772]	Standard and extended-use varenicline versus bupropion, NRT and unassisted quitting	Payer (Canada)	Lifetime (3%)	Both varenicline regimens dominate comparators. ICER for extended varenicline versus standard course was €3,602/QALY
Cantor 2015[762]	Physician and or pharmacist training versus no training	Payer (USA)	Lifetime (3%)	No training dominated either physician only, or pharmacist only, training. Training for both was associated with an ICER of €2,784/QALY compared with no training.

* Identified in systematic review by Ruger; ** Identified in systematic review by Bolin; ICER – incremental cost-effectiveness ratio; LYG – life year gained; NRT – nicotine replacement therapy; QALY – quality-adjusted life year.

Table 4.21. Summary of findings

Comparator	Study (year)	Studies (n)	Participants (n)	RR	p value, overall effect
Bipolar Disorder					
Varenicline + brief advice versus placebo + brief advice	Chengappa (2014)	1	60	2.81 [0.61, 12.81]	0.18

Table 4.20 Summary of findings for schizophrenia or schizoaffective disorder

Comparator	Study (year)	Included studies (n)	Participants (n) † ‘	RR	P value, overall effect
Bupropion + behavioural intervention versus placebo + behavioural intervention	Evins (2001) Evins (2005) George (2002)	3	108	2.22 [0.52, 9.47]	0.28
Bupropion + behavioural intervention + NRT versus placebo + behavioural intervention +NRT (ᵛboth arms received transdermal patch, ᵠboth received nicotine gum)	Evins (2007)ᵛ,ᵠ George (2008) ᵛ	2	110	3.86 [1.01, 14.80]	0.05
Varenicline + behavioural intervention versus placebo + behavioural intervention	Williams (2012)	1	128	5.06 [0.67, 38.24]	0.12
Group behavioural intervention (generic) + NRT (transdermal patch) versus group behavioural intervention (tailored to schizophrenia) + NRT (transdermal patch)	George (2000)	1	45	0.88 [0.34, 2.23]	0.78
High-intensity individual counselling + NRT (transdermal patch) versus lower intensity individual counselling + NRT (transdermal patch) (both arms tailored to mental health)	Williams (2010)	1	100	0.86 [0.30, 2.51]	0.79
Individual counselling + NRT (transdermal patch) versus routine care (Counselling tailored to mental health)	Baker (2006)	1	298	2.84 [0.74, 10.92]	0.13

Note: Nicotine replacement therapy (NRT) was as an active comparator, that is to say, patients could not use NRT on its own. RR: Risk Ratio.

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