

Pharmaceutical Benefits Scheme

Post-market Review

Post-market Review of medicines for smoking cessation

Report to the PBAC

Background

Contents

Abbreviations.....	3
Acknowledgements.....	4
Structure and approach to the report	5
Background	6
1.1 Post-market monitoring.....	6
1.2 Context of the Review.....	6
1.3 Review process	7
Purpose of the Review	7
Review reference group.....	7
Review terms of reference	7
Public submissions	8
Stakeholder forum	8
1.4 Medicines for smoking cessation.....	9
Description of the condition	9
Description of the intervention	10
Cost of smoking cessation therapy	11
PBS listing history.....	17
PBS prescribing restrictions	22
References	25
Appendix A – Reference group members.....	26

Abbreviations

Abbreviation	Full Name / Wording
CTG	Closing the Gap
NRT	Nicotine replacement therapy
OTC	Over-the-counter
PBAC	Pharmaceutical Benefits Advisory Committee
PBS	Pharmaceutical Benefits Scheme
PMR	Post-market Review
RPBS	Repatriation Pharmaceutical Benefits Scheme
TGA	Therapeutic Goods Administration
ToR	Term of reference

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Structure and approach to the report

This report is presented in several parts, as briefly outlined below. The report has been structured in this way to address the terms of reference (ToRs) of the Post-market Review (PMR) of medicines for smoking cessation (“the Review”).

Background: Provides the context for the Review, a brief description of nicotine dependence and the listing history for Pharmaceutical Benefits Scheme (PBS)-listed medicines for smoking cessation.

Report summary: Provides a summary of the key findings from the Review and the ‘options’ for the Pharmaceutical Benefits Advisory Committee (PBAC) raised by the reference group

Section 1 – ToR 1: Collates the current clinical guidelines for medicines for smoking cessation and compares these to the Therapeutic Goods Administration (TGA) and PBS restrictions for these medicines.

Section 2 – ToR 2: Reviews the utilisation of PBS-listed medicines for smoking cessation including but not limited to patient demographics, time on treatment, and the proportion using PBS-subsidised combination treatment.

Section 3 – ToR 3: Reviews the efficacy and safety of nicotine replacement therapy (NRT), varenicline and bupropion for smoking cessation including combination therapies not currently PBS-subsidised.

Section 4 – ToR 4: Provides a cost-effectiveness review of specified combinations of smoking cessation medicines and estimates for the PBS.

Background

1.1 Post-market monitoring

The PMR program is a systematic approach to monitoring medicines subsidised through the PBS. PMRs were initiated under the 2011-12 Budget measure 'Improving sustainability of the PBS through enhanced post-market surveillance.'

PMRs are established under the quality use of medicines objective of the National Medicines Policy framework; promoting the safe and effective use of medicines, with the aim to improve health outcomes for all Australians.

The PMR program contributes to the following:

- Improved patient safety through better understanding of adverse events and medicine-related harms, including hospitalisations.
- A more sustainable PBS through better targeting of medicines, and avoidance of preventable wastage, or inappropriate prescribing.
- A better knowledge base to understand medicines utilisation, to validate the intended clinical benefit which will inform medicines evaluation processes.
- A strengthened approach to medicine pricing management, including through better management of clinical and economic uncertainty.

PMRs can be initiated when concerns related to the quality use of a medicine, cost-effectiveness, clinical effectiveness, higher than predicted utilisation and/or international differences are raised. A full PMR will only proceed following PBAC agreement and Ministerial approval.

1.2 Context of the Review

There are currently three pharmacological interventions for smoking cessation available on the PBS: NRT (in patch, gum, and lozenge form), varenicline and bupropion.

In the financial year 2019/2020:

- 1.2% of the Australian population (265,544 people) were supplied 542,492 prescriptions for PBS-subsidised smoking cessation therapies.
- Three people per 1,000 in the Australian population (65,543 people) made their first ever attempt at quitting with PBS-subsidised smoking cessation therapy.
- \$36 million in R/PBS benefits was paid for smoking cessation therapies.

In July 2017, the PBAC deferred a major submission for the listing of NRT in the form of gum and lozenges (2mg and 4mg strengths) on the PBS. The PBAC noted that the efficacy of nicotine lozenges and gum significantly improved when used in combination with nicotine patches, but that no evidence was provided in the submission about the cost-effectiveness of combination NRT.

In March 2018, the PBAC recommended the listing of nicotine gum and lozenges as monotherapies on the PBS for treating nicotine dependence. The PBAC considered that a broader review of PBS-listed nicotine dependence treatments, in the context of the current

clinical guidelines, would help inform whether the current subsidy arrangements should be altered to better support smoking cessation.

The PMR of medicines for smoking cessation was approved by the Minister for Health on 18 September 2019.

1.3 Review process

Purpose of the Review

The Review has the overall aim of continuing safe and cost-effective access to medicines for smoking cessation.

Review reference group

A reference group was formed to assist in the review of the evidence and information for each of the Review's ToRs, and to ensure that the perspectives of stakeholders are considered in its preparation of the report to the PBAC. The reference group provided the PBAC with options to address key findings.

Members of the reference group were appointed as either individuals or organisational representatives. Representation includes clinical experts, health economists and representatives of relevant health professional and consumer organisations. The reference group for the Review was appointed on 22 April 2020. A full list of reference group members is provided on the PBS website and at Appendix A – Reference group members.

Review terms of reference

The Review's draft ToRs were open to public consultation from 21 October 2019 to 25 November 2019. Nine submissions were received from peak bodies. Except when requested otherwise, public comments were published on the Review's webpage.

The PBAC considered the draft ToRs and comments from stakeholders in December 2019. In February 2020, the Minister for Health approved the final ToRs. Research questions relating to the ToRs were developed to guide the technical review and were discussed and further refined by the reference group at their first two meetings on 2 June 2020 and 29 September 2020. The final ToRs are listed below.

E-cigarette devices and nicotine liquids are outside the scope of the PMR, and this has been explicitly stated in the review ToRs. In addition, e-cigarettes are not currently listed on the PBS.

When the ToRs were approved by the minister in September 2019 no e-cigarette products had been TGA-approved for marketing as a therapeutic good for smoking cessation in Australia. In order for a medicine to be considered for listing on the PBS to treat a given condition, that medicine has to be registered in Australia by the TGA for the treatment of that condition.

Term of reference 1

ToR 1: Collate the current clinical guidelines for medicines for smoking cessation and compare these to the TGA and PBS restrictions for these medicines.

Term of reference 2

ToR 2: Review the utilisation of PBS-listed medicines for smoking cessation including but not limited to patient demographics, time on treatment, and the proportion using PBS-subsidised combination treatment.

Term of reference 3

ToR 3: Review the efficacy and safety of NRT, varenicline and bupropion for smoking cessation including combination therapies not currently PBS-subsidised.

Term of reference 4

ToR 4: Subject to the findings of ToRs 1, 2 and 3, review the cost-effectiveness of medicines for smoking cessation.

Public submissions

Public submissions addressing the ToRs for this Review were open from 16 March 2020 to 1 May 2020. This process provided stakeholders with an opportunity to identify relevant issues, evidence or data that may inform the Review. Submissions were received from 11 peak bodies and two pharmaceutical companies. Except where requested otherwise, public submissions were published on the Review's website.

The content of the public submissions was considered in the development of the report and incorporated into the Review where appropriate. Overall, the clinical evidence provided in the public submissions was similar to those identified in the reviews of the literature addressing each ToR.

Stakeholder forum

A stakeholder forum for the Review was held by the Department of Health via webinar, on 3 December 2020. The discussion from the stakeholder forum is summarised in the ToRs key findings. A full version of the stakeholder forum summary is available on the [Review's webpage](#).

Key points from the forum

Of the 33 external participants attending the forum, approximately one third worked for a sponsor medicine company or an organisation representing the pharmaceutical industry. No participants identified as consumers or Aboriginal and Torres Strait Islander health workers.

Forum participants considered that the PBS restrictions for accessing smoking cessation medicines could be improved by allowing:

- combination therapy;
- longer durations of NRT;
- multiple courses of treatment per year; and
- higher doses (increased quantities) of NRT.

Participants also considered it preferable to tailor treatment to the individual.

Common causes of unsuccessful quit attempts were identified as:

- under dosing (dose and/or duration) of NRT;
- insufficient management, follow-up, and support;
- access issues, especially for people in rural and remote areas; and
- the high cost of smoking cessation therapy.

1.4 Medicines for smoking cessation

Description of the condition

Nicotine dependence

Most tobacco smokers are addicted to nicotine. This addiction is a chronic disease state that is prone to relapses and remissions (1). The majority of people who smoke begin smoking in their youth, and initiation during this period can be particularly detrimental as children and young people who are exposed to nicotine can become addicted at lower and more intermittent levels of tobacco consumption in comparison to adults (2). Nicotine exposure during adolescence may also have damaging and long-term impacts on brain development and can lead to addiction that causes young people to continue smoking for longer and at higher intensities. These factors are strongly associated with tobacco-related disease and premature death (3).

According to the 2019 National Drug Strategy Household Survey (NDSHS) conducted by the Australian Institute of Health and Welfare (AIHW), 11.0% of Australians aged 14 years and over smoked daily, a significant decrease from 24.3% in 1991. Despite the long-term progress Australia has made in reducing smoking prevalence, tobacco remains the leading cause of death and disability in Australia. In 2015, cigarette smoking was responsible for 9.3% of the total burden of disease and injury, and more than 1 in every 10 (21,000) deaths (4).

Tobacco use compounds health and social inequalities and is a major contributor to poorer health status in socioeconomically disadvantaged populations. The most recent available estimates of the overall social (including health) costs of tobacco use in Australia were \$137 billion in 2015-16, including \$19.2 billion in tangible costs and \$117.7 billion in intangible costs (5).

Description of the intervention

This PMR will focus on medicines for smoking cessation that are listed on the PBS. The medicines for smoking cessation listed on the PBS are presented in Table 1 along with their PBS item numbers and form of administration.

Table 1: Medicines for smoking cessation listed on the R/PBS

Brand name, strength [pack size]	Sponsor	PBS Item number	DPMQ
NRT – Patch			
Nicorette 16hr Invisipatch®, 25mg/16 hours [28]	Johnson & Johnson Pacific Pty Limited	10076H	\$49.96
Nicotinell Step 2®, 14mg/24 hours [28]	Orion Laboratories Pty Ltd	5572G	\$49.96
Nicotinell Step 1®, 21mg/24 hours [28]	Orion Laboratories Pty Ltd	3414Q 5571F	\$49.96
Nicabate P®, 21mg/24 hours [28]	GlaxoSmithKline Australia Pty Ltd	5465P	\$49.96
Nicotinell Step 3®, 7mg/24 hours [28]	Orion Laboratories Pty Ltd	5573H	\$49.96
QuitX® 21mg/24 hours [7] ^a	Alphapharm Pty Ltd	4573Q	\$58.68
QuitX® 14mg/24 hours [7] ^a	Alphapharm Pty Ltd	4572P	\$55.72
QuitX® 7mg/24 hours [7] ^a	Alphapharm Pty Ltd	4571N	\$52.56
NRT – Lozenge			
Nicotinell®, 2mg [216]	Orion Laboratories Pty Ltd	11617K	\$49.96
Nicotinell®, 4mg [216]	Orion Laboratories Pty Ltd	11619M	\$49.96
NRT – Chewing gum			
Nicotinell®, 2mg [216]	Orion Laboratories Pty Ltd	11618L	\$68.90
Nicotinell®, 4mg [216]	Orion Laboratories Pty Ltd	11612E	\$49.96
Varenicline – Tablet			
Champix®, 500microgram tablet [11] (& varenicline 1mg tablet [42]) ^b	Pfizer Australia Pty Ltd	9128K	\$87.24
Champix®, varenicline 1mg [56] ^c	Pfizer Australia Pty Ltd	5469W	\$100.69
		9129L	\$193.16
Bupropion – Modified release tablet			
Zyban®, 150mg [30]	Aspen Pharmacare Australia Pty Limited	8465M	\$63.52
Zyban®, 150mg [90]	Aspen Pharmacare Australia Pty Limited	8710K	\$169.11

As of 13 May 2022. DPMQ = Dispensed Price for Maximum Quantity ^a Repatriation Care items ^b Initiation Pack ^c Continuation Pack

Nicotine replacement therapy (NRT)

Nicotine acts primarily on cholinergic receptors of the nicotine type in the peripheral and central nervous system. Nicotine, the chief alkaloid in tobacco products, binds stereoselectively to acetylcholine receptors at the autonomic ganglia, in the adrenal medulla, at neuromuscular junctions and in the brain. Two types of central nervous system effects are believed to be the basis of nicotine's positively reinforcing properties. A stimulating effect, exerted mainly in the cortex via the locus coeruleus, produces increased alertness and cognitive performance. A "reward" effect via the "pleasure system" in the brain is exerted in the limbic system. At low doses the stimulant effects predominate while, at high doses, the reward effects predominate (6).

NRT patch has been designed to slowly allow nicotine to be absorbed by the body to offset the physical withdrawal symptoms of smoking cessation. It is easier to withdraw off NRT than cigarettes due to the lower levels of nicotine present. Short-acting forms of NRT (gum, inhalation cartridge, lozenge, oral spray, and sublingual tablet) give a rapid increase in blood nicotine concentration, similar to that associated with smoking, and may be helpful for the more nicotine dependent smokers. Nicotine patches do not produce this rapid increase, which people trying to quit may crave (7).

Varenicline

Varenicline is a partial agonist at $\alpha 4\beta 2$ neuronal nicotinic acetylcholine receptors where it binds with high affinity and selectivity to produce an effect sufficient to alleviate symptoms of craving and withdrawal (agonist activity), while simultaneously resulting in blockade of the rewarding and reinforcing effects of smoking by preventing nicotine binding to $\alpha 4\beta 2$ receptors (antagonist activity) (8).

Bupropion

Bupropion is a selective inhibitor of the neuronal re-uptake of catecholamines (noradrenaline and dopamine) with minimal effect on the re-uptake of indolamines (serotonin) and no inhibitory effect on monoamine oxidase. The mechanism by which bupropion enhances the ability of patients to abstain from smoking is unknown. However, it is presumed that this action is mediated by noradrenergic and/or dopaminergic mechanisms (9).

Cost of smoking cessation therapy

Medicines for smoking cessation are subsidised on the PBS to provide financial support to help people quit smoking. These products include NRT (in patch, gum, and lozenge form), varenicline and bupropion. The medicines listed on the PBS are described above under 'Description of the intervention.' The PBS restrictions for these medicines are outlined below under 'PBS prescribing restrictions.'

Consumers can also access NRT over-the-counter (OTC) in pharmacies and supermarkets. The relative costs of accessing smoking cessation medicines on the PBS and OTC are described in Table 2.

Table 2: Cost of smoking cessation medicines

Medicine	Brand (pack size/quantity)	Price/PBS DPMQ	Source	PBS DPMQ for 1 course of treatment ^{2,3}	Patient contribution (cost to consumer) for 1 course of treatment ^{2,3}	Cost to PBS/RPBS for 1 course of treatment per patient ^{2,3}
Nicotine 21mg/24hr patch	Nicotinell Step 1 (28)	\$49.90	PBS DPMQ	\$149.70	\$123.90 (general pt) \$19.80 (concession pt)	\$25.80 (general pt) \$129.90 (concession pt)
		\$60.49	Chemist Warehouse – private rx	Non-PBS	\$181.47	Non-PBS
	Nicabate P (28)	\$49.90	PBS DPMQ	\$149.70	\$123.90 (general pt) \$19.80 (concession pt)	\$25.80 (general pt) \$129.90 (concession pt)
		\$50.49	Chemist Warehouse – private rx	Non-PBS	\$151.47	Non-PBS
		\$29.99	Chemist Warehouse – OTC	Non-PBS	\$359.88	Non-PBS
		\$36.49	Amcal – OTC	Non-PBS	\$437.88	Non-PBS
	Quit X (7)	\$58.62	PBS DPMQ ⁴ (RPBS only)	\$175.86	\$19.80 (concessional rate via DVA card)	\$156.06 (DVA pt)
		\$24.29	Amcal – OTC	Non-PBS	\$291.48	Non-PBS
	Nicabate Clear Patch Quit Smoking Step 1 21mg Patches (7)	\$35	Coles	Non-PBS	\$420	Non-PBS
Nicotine 14mg/24hr patch	Nicotinell Step 2 (28)	\$49.90	PBS DPMQ	\$149.70	\$123.90 (general pt) \$19.80 (concession pt)	\$25.80 (general pt) \$129.90 (concession pt)
		\$58.15	Amcal – OTC	Non-PBS	\$174.45	Non-PBS
		\$29.99	Chemist Warehouse – OTC	Non-PBS	\$359.88	Non-PBS
	Quit X (7)	\$55.66	PBS DPMQ ⁴ (RPBS only)	\$166.98	\$19.80 (concessional rate via DVA card)	\$147.18 (DVA pt)
		\$26.69	Amcal – OTC	Non-PBS	\$320.28	Non-PBS
	Nicabate Clear Patch Quit Smoking Step 2 Patches 14mg (7)	\$35	Coles	Non-PBS	\$420	Non-PBS
Nicotine 7mg/24hr patch ⁵	Nicotinell Step 3 (28)	\$49.90	PBS DPMQ	\$149.70	\$123.90 (general pt) \$19.80 (concession pt)	\$25.80 (general pt) \$129.90 (concession pt)
		\$60.49	Chemist Warehouse – private rx	Non-PBS	\$181.47	Non-PBS
		\$58.14	Amcal – OTC	Non-PBS	\$174.42	Non-PBS

Medicine	Brand (pack size/quantity)	Price/PBS DPMQ	Source	PBS DPMQ for 1 course of treatment ^{2,3}	Patient contribution (cost to consumer) for 1 course of treatment ^{2,3}	Cost to PBS/RPBS for 1 course of treatment per patient ^{2,3}
	Quit X (7)	\$52.50	PBS DPMQ ⁴ (RPBS only)	\$157.50	\$19.80 (concessional rate via DVA card)	\$137.70 (DVA pt)
		\$24.09	Amcal – OTC	Non-PBS	\$289.08	Non-PBS
Nicotine 25mg/16hr patch ⁵	Nicorette 16hr Invisipatch (28)	\$49.90	PBS DPMQ	\$149.70	\$123.90 (general pt) \$19.80 (concession pt)	\$25.80 (general pt) \$129.90 (concession pt)
		\$39.99	Chemist Warehouse – OTC	Non-PBS	\$119.97	Non-PBS
	Nicorette Invisipatch Step 1 25mg (7)	\$30	Coles	Non-PBS	\$360	Non-PBS
Nicotine Gum 2mg	Nicotinell (216)	\$68.84	PBS DPMQ ⁶ (1 supply + 1 repeat permitted under the PBS. Each supply is for 2 packs of 216 pieces i.e. 432 pieces per supply.)	\$137.68	\$82.60 (general pt) \$13.20 (concession pt)	\$55.08 (general pt) \$124.48 (concession pt)
		\$44.99	Chemist Discount Centre – OTC	Non-PBS	\$179.96	Non-PBS
	Nicotinell (384)	\$32.99	Chemist Warehouse – OTC	Non-PBS	\$98.97	Non-PBS
	Nicotinell (96)	\$30.69	Amcal – OTC	Non-PBS	\$276.21	Non-PBS
	Nicabate Extra Fresh Mint Nicotine Chewing Gum 2mg (200)	\$40	Coles	Non-PBS	\$200	Non-PBS
	Nicabate Extra Fresh 2mg Gum (100)	\$28	Coles	Non-PBS	\$252	Non-PBS
	Nicorette Classic/Spearmint Gum 2mg (150)	\$48	Coles	Non-PBS	\$288	Non-PBS
	Nicorette Classic Gum (75)	\$29	Coles	Non-PBS	\$348	Non-PBS
	Nicabate Quit Smoking Extra Fresh Mint Gum 2 Mg (30)	\$13	Woolworths	Non-PBS	\$364	Non-PBS
Nicotine Gum 4mg	Nicotinell (216)	\$49.90	PBS DPMQ	\$149.70	\$123.90 (general pt) \$19.80 (concession pt)	\$25.80 (general pt) \$129.90 (concession pt)

Medicine	Brand (pack size/quantity)	Price/PBS DPMQ	Source	PBS DPMQ for 1 course of treatment ^{2,3}	Patient contribution (cost to consumer) for 1 course of treatment ^{2,3}	Cost to PBS/RPBS for 1 course of treatment per patient ^{2,3}
		\$44.99	Chemist Discount Centre – OTC	Non-PBS	\$134.97	Non-PBS
	Nicotinell (96)	\$32.79	Amcal – OTC	Non-PBS	\$196.74	Non-PBS
	Nicorette Icy Mint Gum (75)	\$29	Coles	Non-PBS	\$232	Non-PBS
	Nicabate Extra Fresh Mint Nicotine Chewing Gum 4mg (200)	\$40	Coles	Non-PBS	\$120	Non-PBS
	Nicabate Extra Fresh Mint Gum Quit Smoking 4mg (100)	\$28	Coles Woolworths	Non-PBS	\$168	Non-PBS
	Nicabate Chewing Gum 4mg 3x10 (30)	\$13	Coles	Non-PBS	\$247	Non-PBS
	Nicabate Quit Smoking Extra Fresh Mint Gum 4 Mg (30)	\$13	Woolworths	Non-PBS	\$247	Non-PBS
	Nicorette Classic/Spearmint Gum 4mg (150)	\$48	Coles	Non-PBS	\$192	Non-PBS
	Nicorette Classic Gum (75)	\$29	Coles	Non-PBS	\$232	Non-PBS
Nicotine Lozenge 2mg	Nicotinell (216)	\$49.90	PBS DPMQ	\$149.70	\$123.90 (general pt) \$19.80 (concession pt)	\$25.80 (general pt) \$129.90 (concession pt)
	Herron Nicaway Nicotine Lozenge 2mg (72)	\$20	Coles Woolworths	Non-PBS	\$180	Non-PBS
	Nicorette Cooldrops Freshfruit 2mg (80)	\$36	Coles	Non-PBS	\$288	Non-PBS
Nicotine Lozenge 4mg	Nicotinell (216)	\$49.90	PBS DPMQ	\$149.70	\$123.90 (general pt) \$19.80 (concession pt)	\$25.80 (general pt) \$129.90 (concession pt)
	Herron Nicaway Nicotine Lozenge 4mg (72)	\$20	Coles Woolworths	Non-PBS	\$180	Non-PBS

Medicine	Brand (pack size/quantity)	Price/PBS DPMQ	Source	PBS DPMQ for 1 course of treatment ^{2,3}	Patient contribution (cost to consumer) for 1 course of treatment ^{2,3}	Cost to PBS/RPBS for 1 course of treatment per patient ^{2,3}
	Nicabate Minis Quit Smoking Lozenge 4mg (60)	\$28	Coles	Non-PBS	\$280	Non-PBS
	Nicabate Quit Smoking Minis Lozenge 4 Mg (60)	\$33.20	Woolworths	Non-PBS	\$332	Non-PBS
	Nicabate Minis Quit Smoking Lozenge 4mg (20)	\$12.80	Coles Woolworths	Non-PBS	\$384	Non-PBS
	Nicorette Cooldrops Freshfruit 4mg (80)	\$36	Coles	Non-PBS	\$288	Non-PBS
Varenicline 1 mg tablet	Champix	(112, 1mg tablets=\$193.10; 11+42, 500mcg+1mg tablets=\$87.18)	PBS DPMQ	\$280.28 for first 12 weeks ⁷	\$82.60 (general pt) \$13.20 (concession pt) - for first 12 weeks ⁷	\$197.68 (general pt) \$267.08 (concession pt) - for first 12 weeks ⁷
Varenicline 500 microgram tablet & varenicline 1 mg tablet		(56, 1mg tablets=\$100.63)	PBS DPMQ	\$301.89 for second 12 weeks ⁷	\$123.90 (general pt) \$19.80 (concession pt) - for second 12 weeks ⁷	\$177.99 (general pt) \$282.09 (concession pt) - for second 12 weeks ⁷
		(56, 1mg tablets=\$96.39; 11+42, 500mcg+1mg tablets=\$81.69)	Chemist Warehouse – private rx	Non-PBS	\$274.47 for first 12 weeks ⁷	Non-PBS
		(56, 1mg tablets=\$96.39)	Chemist Warehouse – private rx (56, 1mg tablets=\$96.39)	Non-PBS	\$289.17 for second 12 weeks ⁷	Non-PBS
Bupropion hydrochloride 150 mg modified release tablet	Zyban	(30 tablets=\$63.46; 90 tablets=\$169.05)	PBS DPMQ	\$232.51	\$82.60 (general pt) \$13.20 (concession pt) – for bupropion one course = 9 weeks approx. ³	\$149.91 (general pt) \$219.31 (concession pt) – for bupropion one course = 9 weeks approx. ³
		(30 tablets=\$60.69; 90 tablets=\$172.99)	Chemist Warehouse – private rx	Non-PBS	\$233.68 – for bupropion one course = 9 weeks approx. ³	Non-PBS

Medicine	Brand (pack size/quantity)	Price/PBS DPMQ	Source	PBS DPMQ for 1 course of treatment ^{2,3}	Patient contribution (cost to consumer) for 1 course of treatment ^{2,3}	Cost to PBS/RPBS for 1 course of treatment per patient ^{2,3}

DPMQ = Dispensed price for maximum quantity; DVA = Department of Veterans' Affairs; hr = hour; mcg = microgram; OTC = over-the-counter; rx = prescription; pt = patient; RPBS = Repatriation Pharmaceutical Benefits Scheme; Shaded = Repatriation Pharmaceutical Benefits Scheme Listing

¹ Extracted from pbs.gov.au, Chemist Warehouse, Amcal, Chemist Discount Centre websites on 28 January 2021; extracted from Coles, Woolworths website on 12 February 2021.

² Quantity per course of treatment for NRT is based on dosing recommendations from the Australian Medicines Handbook (AMH) and provided below

³ One course of NRT and varenicline = 12 weeks; one course of bupropion is 61.5 days/8.79 weeks

⁴ Four packs dispensed/supplied at one time under the PBS

⁵ 7mg/24 hour patches and 25mg/16 hour patches were not included in the AMH recommendations for NRT. For the purposes of this table, it is assumed that 7mg/24 hour and 25mg/16 hour patches are dosed at one patch per day for 12 weeks.

⁶ Two packs dispensed/supplied at one time under the PBS

⁷ Two subsequent 12-week courses of varenicline are permitted for subsidy under the PBS

Aboriginal Health Services that are participating in the Remote Area Aboriginal Health Services (RAAHS) program are eligible to access nicotine products on the general PBS schedule and the PBS listing for Aboriginal and Torres Strait Islander patients and to supply these to clients without a PBS prescription and free of charge.

Consumers in non-remote areas who are participating in the Closing the Gap (CTG) Co-Payment Measure Program can also access all items on the PBS General Schedule, however under the CTG Co-Payment Measure Program, eligible patients who would normally pay the full PBS co-payment (\$41.30 per item in 2021) pay the concessional rate (\$6.60 per item in 2021). Those who would normally pay the concessional price receive their PBS medicines without being required to pay a PBS co-payment.

Consumers who meet the eligibility criteria can be registered for the CTG Co-Payment Measure Program by Indigenous Health Services located in urban and regional areas, or general practices participating in the Practice Incentives Program Indigenous Health Incentive (PIP IHI).

Consumers in Queensland may also access 12 weeks of NRT through the Intensive Quit Support program run by Quitline, as long as they meet eligibility criteria.

PBS listing history

The first listing of a medicine for smoking cessation was NRT patches on the RPBS in August 1994.

In September 2000, the PBAC recommended bupropion for listing with an authority required restriction "for use within a comprehensive treatment program with the goal of maintaining abstinence." The cost-effectiveness at the price proposed was considered acceptable. [REDACTED]

[REDACTED] Bupropion was subsequently listed in February 2001.

In July 2007, the PBAC recommended listing on the PBS of varenicline as a short-term treatment to aid smoking cessation on the basis of acceptable cost-effectiveness compared with bupropion. Varenicline was subsequently listed in January 2008.

In March 2008, the PBAC recommended nicotine transdermal patches as an authority required listing as the sole PBS-subsidised therapy for nicotine dependence in an Aboriginal or Torres Strait Islander person. The PBAC recommended only two courses of PBS-subsidised nicotine replacement therapy be authorised per year, noting that this population eschews oral aids for smoking cessation. Nicotine patches were subsequently listed for the Aboriginal or Torres Strait Islander population in December 2008.

In March 2010, the PBAC recommended the listing of nicotine transdermal patches on the PBS as an authority required listing as an aid to cessation of smoking in patients who have entered or are entering a comprehensive support and counselling program in the context of a public health priority area. The PBAC noted that reduction of chronic disease caused by smoking is one of the key focuses of the national health taskforce on prevention. The PBAC recommended the listing of nicotine transdermal patches at the price requested in the submission on the basis of (a) non-inferior efficacy, superior safety and lower cost compared to bupropion, and (b) uncertain and possibly inferior efficacy, superior safety and lower cost

compared to varenicline. Nicotine patches were subsequently listed for the general population in February 2011.

In March 2018, the PBAC recommended the listing of nicotine gum and lozenge, as monotherapies on the PBS as a restricted benefit for treating nicotine dependence in cigarette smokers who wish to quit and enter into a behavioural support program. In July 2017, the PBAC had accepted the submission's overall claim of non-inferiority in terms of comparative efficacy and safety for nicotine gum and lozenges compared with nicotine patches. The PBAC had deferred its decision at that time due to uncertainty in the estimation of equi-effective doses against the comparator, nicotine patches. Nicotine gum and lozenge were subsequently listed in February 2019.

Figure 1 presents a timeline for listings of medicines for smoking cessation on the PBS. Table 3 presents a summary of the dates of recommendation and the basis of recommendation for medicines for smoking cessation.

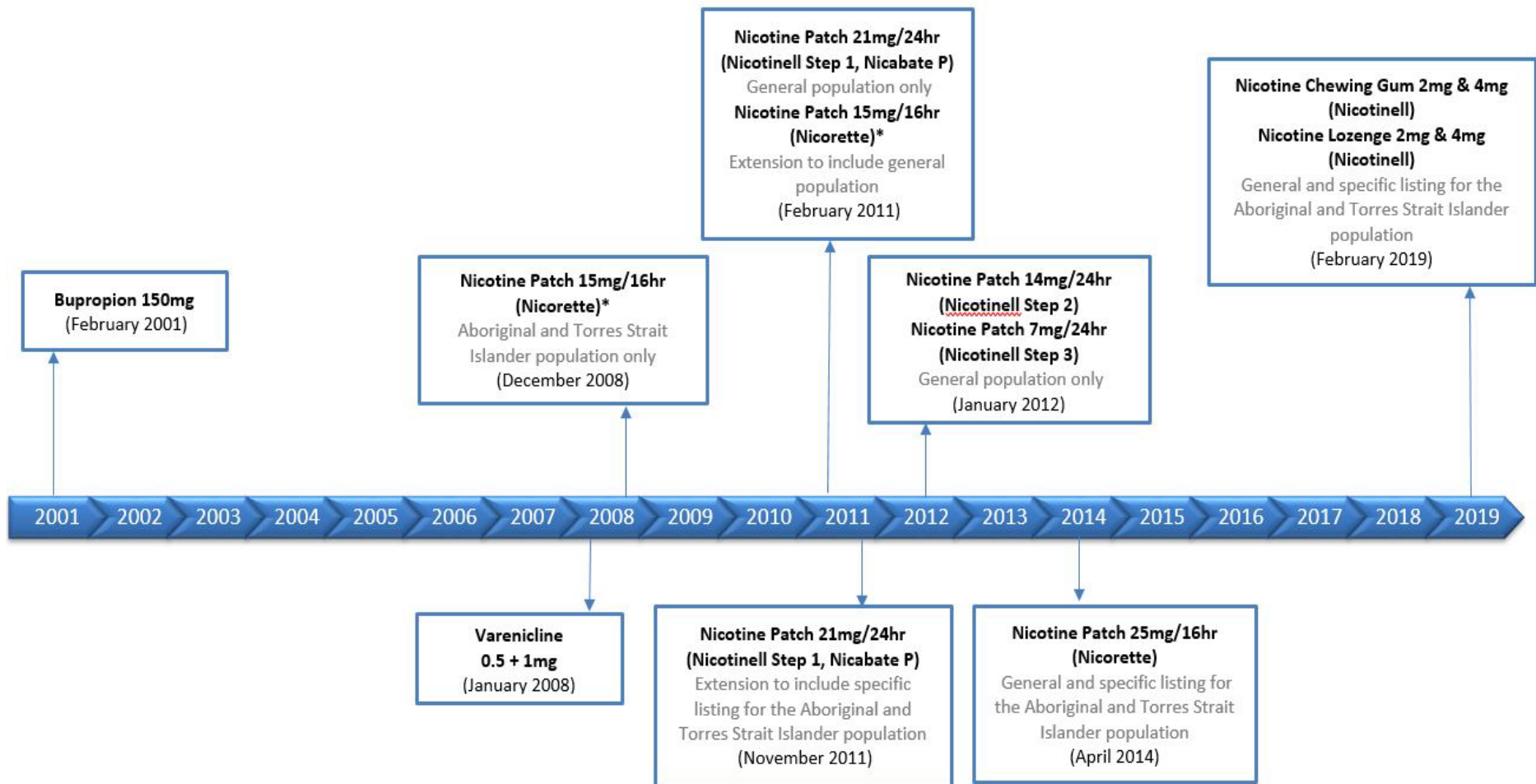


Figure 1: Timeline for listings of medicines for smoking cessation on the PBS

* Delisted in July 2014

Table 3: PBAC positive recommendation date and basis of key recommendations for PBS-listed medicines for smoking cessation

Medication	Presentation	Date recommended	Date of original PBS listing	Date/s of alterations to PBS restriction level (new restriction level)
Bupropion	<ul style="list-style-type: none"> bupropion hydrochloride 150 mg modified release tablet, 90 bupropion hydrochloride 150 mg modified release tablet, 30 	<p><u>September 2000</u> Recommended for listing with an authority required restriction "For use within a comprehensive treatment program with the goal of maintaining abstinence". The cost-effectiveness [REDACTED] at the price proposed was considered acceptable.</p>	1 February 2001	<ul style="list-style-type: none"> 1 February 2001 (Authority Required) 1 October 2015 (Authority Required – <u>Streamlined</u>)
Varenicline	<ul style="list-style-type: none"> varenicline 500 microgram tablet [11] (& varenicline 1 mg tablet [42], 53 varenicline 1 mg tablet, 56 	<p><u>July 2007</u> The PBAC recommended listing on the PBS of varenicline as a short-term treatment to aid smoking cessation on the basis of an acceptable cost-effectiveness compared with bupropion.</p>	1 January 2008	<ul style="list-style-type: none"> 1 January 2008 (Authority Required) 1 May 2017 (Authority Required – <u>Streamlined</u>)
Nicotine Replacement Therapy (NRT)	<p><i>Patches</i></p> <ul style="list-style-type: none"> nicotine 7 mg/24 hours patch, 7 (RPBS only)¹ nicotine 21 mg/24 hours patch, 28 nicotine 14 mg/24 hours patch, 28 	<p><u>March 2008</u> The PBAC recommended an Authority required listing as the sole PBS-subsidised therapy for nicotine dependence in an Aboriginal or Torres Strait Islander person. The PBAC recommended only 2 courses of PBS-subsidised nicotine replacement therapy be authorised per year, noting that this population eschews oral aids for smoking cessation.</p> <p><u>March 2010</u> The PBAC recommended listing in the context of a public health priority area, noting that reduction of chronic disease caused by smoking is one of the key focuses of the national</p>	<ul style="list-style-type: none"> 1 December 2008² 1 February 2011³ 	<ul style="list-style-type: none"> 1 December 2008 for Aboriginal and Torres Strait Islander population only (Authority Required) 1 February 2011 for general population (Authority Required)

¹ NRT patches have been available on the RPBS since 1 May 2000. Three strengths of the seven pack are currently listed on the RPBS (only) as an Authority Required benefit.

² For the Aboriginal and Torres Strait Islander population only.

³ PBS access expanded to general population.

	<ul style="list-style-type: none"> • nicotine 14 mg/24 hours patch, 7 (RPBS only) • nicotine 7 mg/24 hours patch, 28 • nicotine 21 mg/24 hours patch, 7 (RPBS only) • nicotine 25 mg/16 hours patch, 28 	<p>health taskforce on prevention. The PBAC recommended the listing of nicotine transdermal patches at the price requested in the submission on the basis of (a) non-inferior efficacy, superior safety and lower cost compared to bupropion, and (b) uncertain and possibly inferior efficacy, superior safety and lower cost compared to varenicline. The PBAC recommended that the listing of nicotine patches be limited a maximum of 12 weeks treatment in a 12-month period.</p>		<ul style="list-style-type: none"> • 1 December 2013 (Authority Required - Streamlined) • 1 September 2015 (Restricted Benefit)
NRT	<p><i>Gum & Lozenges</i></p> <ul style="list-style-type: none"> • nicotine 2 mg chewing gum, 216 • nicotine 2 mg lozenge, 216 • nicotine 4 mg lozenge, 216 • nicotine 4 mg chewing gum, 216 	<p><u>March 2018</u> The PBAC recommended the listing of nicotine gum and lozenge on a cost-minimisation basis compared to transdermal patches, as monotherapies on the PBS as a restricted benefit for treating nicotine dependence in cigarette smokers who wish to quit and enter into a behavioural support program.</p>	<ul style="list-style-type: none"> • 1 February 2019 	<ul style="list-style-type: none"> • 1 February 2019 (Restricted Benefit)

PBS prescribing restrictions

Current restrictions

Table 4: Summary of prescribing restrictions for PBS-listed medicines for smoking cessation

PBS item	Restrictions
<p>BUPROPION</p> <ul style="list-style-type: none"> •bupropion hydrochloride 150 mg modified release tablet, 90 •bupropion hydrochloride 150 mg modified release tablet, 30 	<p>Authority Required (STREAMLINED) Nicotine dependence</p> <p>Clinical criteria:</p> <ul style="list-style-type: none"> •The treatment must be as an aid to achieving abstinence from smoking, AND •The treatment must be the sole PBS-subsidised therapy for this condition, AND •Patient must have indicated they are ready to cease smoking, AND •Patient must not receive more than 9 weeks of PBS-subsidised treatment with this drug per 12-month period. AND •Patient must have previously received PBS-subsidised treatment with this drug during this current course of treatment (90 pack).* <p>Treatment criteria:</p> <ul style="list-style-type: none"> •Patient must be undergoing concurrent counselling for smoking cessation through a comprehensive support and counselling program or is about to enter such a program at the time PBS-subsidised treatment is initiated. Details of the support and counselling program must be documented in the patient's medical records at the time treatment is initiated. <p>Notes:</p> <ul style="list-style-type: none"> •Clinical review is recommended within 2 to 3 weeks of the original prescription being requested. •The period between commencing a course of bupropion hydrochloride and varenicline tartrate must be at least 6 months. •A patient may only qualify for PBS-subsidised treatment under this treatment phase (30 pack) restriction once during a short-term course of treatment. * •No increase in the maximum quantity or number of units may be authorised. •No increase in the maximum number of repeats may be authorised. <p>*Differences between pack sizes in bold above</p>
<p>VARENICLINE</p> <ul style="list-style-type: none"> •varenicline 1 mg tablet, 56 (continuation pack) •varenicline 500 microgram tablet [11] (& varenicline 1 mg tablet [42], 53 (initiation pack) 	<p>Authority Required (STREAMLINED) Nicotine dependence</p> <p>Clinical criteria:</p> <ul style="list-style-type: none"> •The treatment must be as an aid to achieving abstinence from smoking, AND •The treatment must be the sole PBS-subsidised therapy for this condition, AND •Patient must have previously received PBS-subsidised treatment with this drug during this current course of treatment, AND •Patient must have ceased smoking in the process of completing an initial 12-weeks or ceased smoking following an initial 12-weeks of PBS-subsidised treatment with this drug in the current course of treatment. * AND •Patient must have indicated they are ready to cease smoking (initiation pack). AND •Patient must not receive more than 24 weeks of PBS-subsidised treatment with this drug per 12-month period (initiation pack). <p>Treatment criteria:</p> <ul style="list-style-type: none"> •Patient must be undergoing concurrent counselling for smoking cessation through a comprehensive support and counselling program. Details of the support and counselling program must be documented in the patient's medical records at the time treatment is initiated. •Clinical review is recommended within 2 to 3 weeks of the initial prescription being requested. <p>Notes:</p>

	<ul style="list-style-type: none"> •A course of treatment with this drug is 12 weeks or up to 24 weeks, if initial treatment of 12 weeks has been successful. •A patient may only qualify for PBS-subsidised treatment under this treatment phase restriction once during a short-term course of treatment (continuation pack). •No increase in the maximum quantity or number of units may be authorised. •No increase in the maximum number of repeats may be authorised. •The period between commencing varenicline and bupropion or a new course of varenicline must be at least 6 months (for initiation pack). <p>*Not required under one authority code</p>
<p>NICOTINE LOZENGE/PATCH/GUM</p> <ul style="list-style-type: none"> •nicotine 4 mg lozenge, 216 •nicotine 21 mg/24 hours' patch, 7* •nicotine 4 mg chewing gum, 216 •nicotine 7 mg/24 hours' patch, 28 •nicotine 25 mg/16 hours patch, 28 •nicotine 2 mg lozenge, 216 •nicotine 21 mg/24 hours' patch, 28 •nicotine 2 mg chewing gum, 216 •nicotine 14 mg/24 hours patch, 7* •nicotine 7 mg/24 hours patch, 7* •nicotine 14 mg/24 hours patch, 28 	<p>Restricted Benefit Nicotine dependence</p> <p>LOZENGE/GUM General Population Clinical criteria:</p> <ul style="list-style-type: none"> •The treatment must be as an aid to achieving abstinence from smoking, AND •The treatment must be the sole PBS-subsidised therapy for this condition, AND •Patient must have indicated they are ready to cease smoking, AND •Patient must not receive more than 12 weeks of PBS-subsidised nicotine replacement therapy per 12-month period. <p>Treatment criteria:</p> <ul style="list-style-type: none"> •Patient must be undergoing concurrent counselling for smoking cessation through a comprehensive support and counselling program or is about to enter such a program at the time PBS-subsidised treatment is initiated. Details of the support and counselling program must be documented in the patient's medical records at the time treatment is initiated. <p>Aboriginal or a Torres Strait Islander person Population criteria:</p> <ul style="list-style-type: none"> •Patient must be an Aboriginal or a Torres Strait Islander person. <p>Clinical criteria:</p> <ul style="list-style-type: none"> •The treatment must be the sole PBS-subsidised therapy for this condition. <p>Notes:</p> <ul style="list-style-type: none"> •Only 2 courses of PBS-subsidised nicotine replacement therapy may be prescribed per 12-month period. •Benefit is improved if used in conjunction with a comprehensive support and counselling program. <p>Notes for all population subgroups:</p> <ul style="list-style-type: none"> •No increase in the maximum quantity or number of units may be authorised. •No increase in the maximum number of repeats may be authorised.
<p>*Repatriation Care Item</p>	<p>Restricted Benefit Nicotine dependence</p> <p>PATCH General Population Clinical criteria:</p> <ul style="list-style-type: none"> •The treatment must be as an aid to achieving abstinence from smoking, AND •The treatment must be the sole PBS-subsidised therapy for this condition, AND •Patient must have indicated they are ready to cease smoking, AND •Patient must not receive more than 12 weeks of PBS-subsidised nicotine replacement therapy per 12-month period. <p>Treatment criteria:</p>

	<ul style="list-style-type: none"> •Patient must be undergoing concurrent counselling for smoking cessation through a comprehensive support and counselling program or is about to enter such a program at the time PBS-subsidised treatment is initiated. Details of the support and counselling program must be documented in the patient's medical records at the time treatment is initiated. <p>Aboriginal or a Torres Strait Islander person</p> <p>Population criteria:</p> <ul style="list-style-type: none"> •Patient must be an Aboriginal or a Torres Strait Islander person. <p>Clinical criteria:</p> <ul style="list-style-type: none"> •The treatment must be the sole PBS-subsidised therapy for this condition. <p>Notes:</p> <ul style="list-style-type: none"> •Only 2 courses of PBS-subsidised nicotine replacement therapy may be prescribed per 12-month period. •Benefit is improved if used in conjunction with a comprehensive support and counselling program. <p>Notes for General Population & Aboriginal or Torres Strait Islander person:</p> <ul style="list-style-type: none"> •No increase in the maximum quantity or number of units may be authorised. •No increase in the maximum number of repeats may be authorised.
<p>NICOTINE LOZENGE/PATCH/GUM</p>	<p>Authority Required Nicotine dependence</p> <p>Repatriation Listings – PATCH (7 pack)</p> <p>Clinical criteria:</p> <ul style="list-style-type: none"> •Patient must have indicated they are ready to cease smoking, AND •Patient must have entered a comprehensive support and counselling program. <p>Note: Studies have shown that successful therapy with this drug is enhanced by patient participation in a support and counselling program.</p>

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Appendix A – Reference group members

Name	Nominated By	Capacity of Appointment
Professor Sanchia Aranda	Department of Health	Chair
Associate Professor Nicole Pratt	DUSC	Technical Expert
Professor Gillian Gould	Department of Health	Technical Expert
Professor Rashmi Sharma	Royal Australian College of General Practitioners	Technical Expert
Associate Professor Billingsley Kaambwa	Australian Health Economics Society	Technical Expert
Dr Angela Gowland	Therapeutic Goods Administration	Organisational Nominee
Associate Professor Richard Brightwell	Consumers Health Forum of Australia	Consumer Advocate
Yelitte Ho and Anonnya Chowdhury	Medicines Australia	Organisational Nominee