Helping smokers with depression to quit smoking: collaborative care with Quitline

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ABSTRACT

Objectives: To report smokers' evaluations and uptake of Quitline–doctor comanagement of smoking cessation and depression, a key component of the Victorian Quitline's tailored call-back service for smokers with a history of depression and to explore its relationship to quitting success.

Design, participants and setting: Prospective study followed Quitline clients disclosing doctor-diagnosed depression ($n = 227$). Measures were taken at baseline (following initial Quitline call), posttreatment (2 months) and 6 months from recruitment (77% and 70% response rates, respectively).

Main outcome measures: Uptake of comanagement (initiated by fax-referral to Quitline), making a quit attempt (quit for 24 hours), sustained cessation (> 4 months at 6-month follow-up).

Results: At 2-month follow-up, 83% thought it was a good idea to involve their doctor in their quit attempt, 74% had discussed quitting with their doctor, and 43% had received comanagement. In all, 72% made a quit attempt, 37% and 33% were abstinent posttreatment and at 6 months, respectively, and 20% achieved sustained cessation. Among participants who discussed quitting with their doctor, those receiving comanagement were more likely to make a quit attempt than those who did not receive comanagement (78% v 63%). Participants with comanagement also received more Quitline calls (mean 4.6 v 3.1) — a predictor of sustained cessation. Exacerbation of depression between baseline and 6 months was reported by 18% of participants but was not related to cessation outcome.

Conclusion: Quitline–doctor comanagement of smoking cessation and depression is workable, is valued by smokers, and increases the probability of quit attempts. Smoking cessation did not increase the risk of exacerbation of depression.

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Quitlines are well placed to deliver smoking cessation treatment, given their mass reach, convenience of access, and capacity to tailor to the individual and to offer multiple contacts. A Cochrane review,[1] including a randomised controlled trial of the Quitline call-back service[2] run by Quit Victoria, demonstrated that call-back cessation services (where the service initiates the subsequent calls to smokers) are effective for the general population. Quitline uses cognitive-behavioural and motivational interviewing principles. It offers up to three pre-quitting and up to five post-quitting calls over a period of about 2 months.

The high incidence of lifetime depression among smokers[3] suggests the need to provide collaborative care between call-back services and doctors. While Quitline staff are experts in the cognitive-behavioural treatment of smoking, a number of issues require medical management, including: (i) current depression makes quitting smoking more difficult;[4] (ii) smoking cessation may increase the risk of relapse of major depressive disorder which therefore requires monitoring;[5] (iii) smoking cessation may require changes in medications affected by nicotine;[6] and (iv) this allows for prescription of medications that dually act to aid smoking cessation and alleviate depression.[4] Victoria's Quitline is the first in Australia to have developed and instituted a tailored Quitline–doctor comanagement of smoking cessation call-back and depression. The service draws on existing evidence-based recommendations for comanagement[7] and evidence that integrated cognitive-behavioural treatments may help smokers develop better management skills for both smoking cessation and depression.[8]

Quitline–doctor comanagement has been facilitated by the fact that fax-referral to Quitline is now an integral part of the Australian guidelines for smoking cessation in general practice.[9] Indeed, referral to Quitline was reported as one of the most useful aspects.[10] A cluster randomised trial of in-practice management of smoking cessation versus doctor fax-referral to Victoria's Quitline (of any patients) demonstrated an almost threefold increase in sustained smoking cessation rates at 12 months for the referral group, largely because referral increased the amount of cessation assistance received by patients (both groups received equivalent in-practice assistance).[11]

The comanagement model

Quitline–doctor comanagement of smoking cessation is activated by the doctor faxing a signed referral form to Quitline, which includes a section committing the doctor to managing comorbid health issues (eg, depression) and to reviewing and monitoring medications. Quitline then sends automated feedback letters to doctors on their patient's progress with quitting, designed to mimic feedback from a specialist referral. The letters invite doctors to contact Quitline if they have any queries or comments, and this occurs occasionally, with feedback entered into the client's record. Quitline advisers ask smokers about their doctor's advice, which informs the quitting plan. At follow-up, advisers ask about subsequent doctor visits.

In 2008, a third of clients using Quitline's call-back service were receiving comanagement. A distinguishing feature of Quitline–doctor comanagement is that it can be initiated either by the doctor referring a patient or by Quitline, whereby a smoker contacting the service is sent a fax-referral form to take to their doctor. The Victorian Quitline's mental health policy recommends comanagement for all smokers with a mental health condition (defined as use of prescription medications for mental health and/or experience of mental ill-health in the previous 6 months). This is because Quitline staff are working within the limitations of a phone service and are not medically trained; thus they are not in a position to competently manage issues such as interactions between chemicals in cigarettes and psychotropic medications, and their potential effects in exacerbating or precipitating men-

tal health symptoms. Smokers seeking assistance from Quitline are encouraged to disclose health problems, including mental health problems; about a quarter disclose a mental health problem, most commonly depression and often at a subclinical level. The comanagement model for smokers with depression is shown in Box 1 and includes sending treatment guidelines for smoking cessation and depression to doctors, and tailoring the Quitline call-back counselling for depression.[12]

The objectives of our study were: (i) to report smokers' uptake and evaluations of Quitline–doctor comanagement of smoking cessation and depression; (ii) to explore the relationship between comanagement and quitting success; and (iii) to investigate whether quitting was associated with exacerbation of depression.

METHODS

Design, participants and procedure

This was an uncontrolled before-and-after study set in Victoria's Quitline service, based within The Cancer Council Victoria. Participants were eligible if they were adult smokers who disclosed doctor-diagnosed depression to Quitline and for whom comanagement was recommended under Quitline's mental health policy. Participants who self-reported other comorbid psychiatric diagnoses (eg, anxiety) were included, except for those reporting a psychotic disorder.

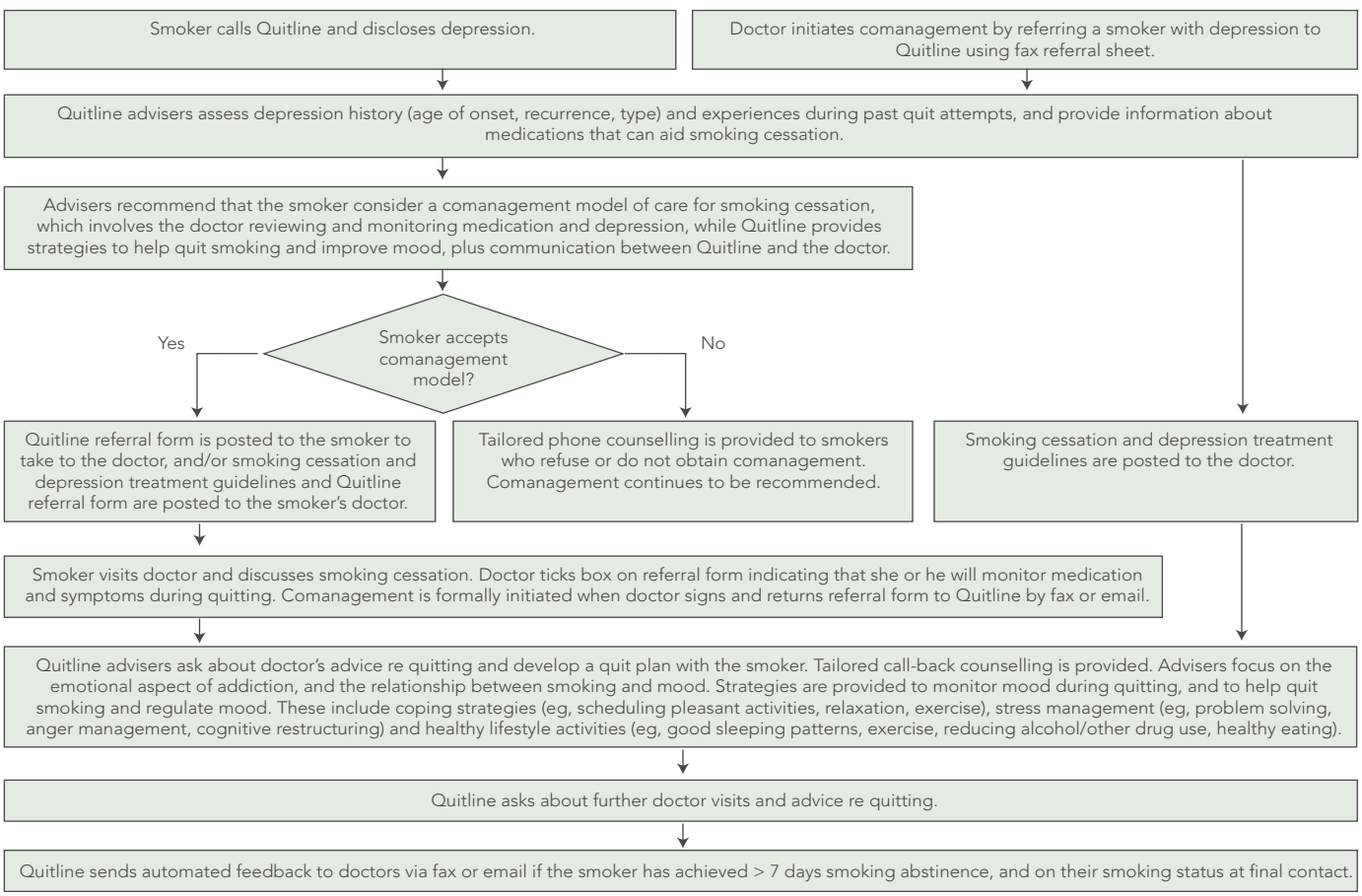
Between May 2007 and July 2008, Quitline advisers recruited 227 eligible participants after the call-back service had been offered and towards the end of the initial counselling call. Of these, most (199) had current depression. The remaining 28 participants had past depression (no antidepressant medication or depressive episode within the previous 6 months) but comanagement was recommended under the mental health policy due to Quitline adviser concerns about the client's mood state or history of exacerbation of depression after quitting. A further 65 participants with past depression but no adviser concerns were recruited but are not reported on here as comanagement was not considered necessary. Most participants (87%) had self-initiated contact with Quitline. Advisers recommended comanagement by explaining the complementary roles of their doctor (to review and monitor medication and mood) and Quitline (strategies to address quitting and mood simultaneously), and the benefits of communication between the two. These participants were posted a fax-referral form to take to their doctor.

Research interviewers contacted participants at baseline (following the initial Quitline call) and at 2 months (end of treatment) and 6 months after the initial Quitline call. Response rates for the 2- and 6-month follow-ups were 77% and 70%, respectively. Ethics approval for the study was obtained from the human research ethics committees of The Cancer Council Victoria and the University of Melbourne.

Measures

Key baseline measures are listed in Box 2. Baseline depressive symptoms were assessed using the Patient Health Questionnaire

1 Flowchart of the Quitline–doctor comanagement model for smokers with depression



(PHQ-9),[13] a nine-item scale (each rated 0 for "not at all" to 3 for "nearly every day") with a summed score range of 0–27. To relieve response burden, if participants scored zero for the first two items — "little interest or pleasure in doing things" and "feeling down, depressed and hopeless" — their PHQ-9 score was set at zero. Opinions and reports of doctor, Quitline and pharmacological cessation assistance were asked of participants at the 2-month follow-up interview (Box 2). The primary smoking cessation outcomes were: making a quit attempt (quit for at least 24 hours) between the baseline and 2-month follow-up, and period prevalence (quit for 4 months) at 6-month follow-up. Exacerbation of depression between baseline and 6 months was defined as a within-subject increase of more than 5 points on the PHQ-9, which put (or kept) the participant's score in the major/severe depression categories.

Analysis

Bivariate statistics were used to investigate relationships between variables of interest. Given the relatively small sample size, *P* values in the range of 0.06–0.08 are cautiously interpreted as trends.

RESULTS

Participant characteristics

Baseline patient characteristics are shown in Box 2. About two-thirds were women, almost all were planning to quit, and the mean level of baseline depression was 10.9 (SD, 7.5), which is in the moderate range. There were no significant differences in sociodemographic variables, cigarette consumption or quitting history between those with current and past depression, nor did they differ on the main outcomes of uptake of comanagement and quit rates. Participants with current depression were more likely than those with past depression to report major/severe levels of depressive symptoms (38% v 18%; $\chi^2_{2,220} = 6.33$; $P = 0.04$), current psychotropic medication usage (77% v 14%; $\chi^2_{1,221} = 41.83$; $P < 0.001$) and concurrent anxiety disorder(s) (34% v 14%; $\chi^2_{1,223} = 4.93$; $P = 0.03$).

2 Participant baseline characteristics

Characteristic	Mean (SD)
Age (*n* = 223)	45.2 (13.6)
Cigarettes per day (*n* = 223)	23.0 (11.3)
Minutes to first cigarette (*n* = 178)	24.5 (45.4)
	No.
Sex (*n* = 227)	
Male	79 (34.8%)
Female	148 (65.2%)
Employed (*n* = 223)	
Yes	85 (38.1%)
No	138 (61.9%)
Highest education level (*n* = 217)	
Up to Year 10	106 (48.8%)
Years 11 or 12 or equivalent	54 (24.9%)
Tertiary	57 (26.3%)
PHQ-9 (*n* = 220)	
None	53 (24.1%)
Mild/moderate	89 (40.5%)
Major/severe	78 (35.5%)
Concurrent anxiety disorder (*n* = 223)	
Yes	70 (31.4%)
No	153 (68.6%)
Taking prescription medication for mental wellbeing (*n* = 221)	
Yes	152 (68.8%)
No	69 (31.2%)
Ever hospitalised for depression (*n* = 212)	
Yes	68 (32.1%)
No	144 (67.9%)
Stage of change (*n* = 227)	
Planning	223 (98.2%)
Ambivalent	4 (1.8%)
Ever made past quit attempt (*n* = 227)	
Yes	201 (88.5%)
Never	26 (11.5%)
Quit attempt in last year (*n* = 147)	
Yes	64 (43.5%)
No	83 (56.5%)
Experienced depression after quitting (*n* = 157)	
Yes	22 (14.0%)
No	135 (86.0%)
Contact with Quitline (*n* = 227)	
Self-initiated	198 (87.2%)
Initiated after doctor referral	29 (12.8%)

PHQ-9 = Patient Health Questionnaire.

Opinions about involving the doctor

Strong participant support and corresponding action to involve the doctor with their quitting are shown in Box 3. Participants' main reasons for not discussing quitting with their doctor were: "didn't think the doctor would be able to assist" (33%), "needed to discuss other issues" (29%) and "didn't think the doctor's help was necessary" (16%). Participants who did not discuss quitting with their doctor (compared with those who did) were less likely to be taking prescribed psychotropic medication (50% v 71%; $\chi^2_{1,172} = 6.78$; $P = 0.009$), to have experienced depression following a previous quit attempt (3% v 17%; $\chi^2_{1,122} = 4.81$; $P = 0.03$) and were less addicted (smoking mean 20 v 24 cigarettes per day; $t = 1.90$, df = 169; $P = 0.06$) and smoking their first cigarette of the day later after waking (mean 43 v 18 minutes; $t = -2.60$; df = 41.4; $P < 0.05$).

Doctors' quit-smoking advice to patients

Doctors were supportive of quitting and only 9% of participants were advised that it was "not a good time to quit". Receiving this advice was unrelated to baseline depression levels and other mental health measures. Most participants (81%) said that their doctor and Quitline gave consistent advice about quitting, with most of the rest saying that the doctor gave no quitting advice.

Receipt of Quitline–doctor comanagement

Comanagement (ie, doctor completion of the Quitline fax-referral prompting Quitline feedback on the participant's progress) was arranged for 43% of participants (58% of those discussing quitting with their doctor). Comanagement was more likely when Quitline was able to send the information pack about quitting and depression with fax-referral sheet directly to participants' doctors (51% v 28% not sent pack; $\chi^2_{1,172} = 6.78$; $P = 0.009$). It was also more likely when the doctor was supportive of quitting with 58% of participants advised to "go straight ahead" receiving comanagement compared with 43% of those advised to "proceed with caution" and 27% of those advised

that it was "not a good time to quit" ($\chi^2_{1,117} = 4.58$; $P = 0.03$).

Participants who received comanagement (compared with those who did not) were more likely to be older (mean age 49 v 42 years; $t = 3.78$; df = 221; $P < 0.001$), unemployed (73% v 55%; $\chi^2_{1,223} = 7.53$; $P = 0.006$) and to be taking prescription psychotropic medication at baseline (80% v 61%; $\chi^2_{1,221} = 9.22$; $P = 0.002$). They were more heavily addicted (smoking mean 25 v 22 cigarettes per day; $t = 2.29$; df = 221; $P = 0.02$) and had their first cigarette of the day sooner after waking (mean 14 v 31 minutes; $t = -2.90$; df = 168.1; $P = 0.004$).

Participants who received comanagement (compared with those who did not) were also more likely to use cessation pharmacotherapy (78% v 55%; $\chi^2_{1,163} = 9.62$; $P < 0.001$) and to receive the call-back service (ie, more than just the initial Quitline call, 96% v 73%). Among participants receiving the call-back service, those with comanagement received more calls (mean 4.6 v 3.1; $t = 4.14$; df = 141; $P < 0.001$).

Quitting outcomes

There were high levels of quitting activity (Box 4). Overall, 20% (14% if missing cases are imputed as failures) managed to maintain cessation for at least 4 months.

Among participants who spoke with their doctor about quitting, those receiving comanagement were more likely to make a quit attempt compared with participants who did not receive comanagement (78% v 63%; $\chi^2_{1,128} = 3.78$; $P = 0.05$). Talking with the doctor about quitting did not increase the likelihood of making a quit attempt, perhaps because those who spoke with the doctor were more likely to have characteristics that make it harder to quit. Also, participants whose doctor discouraged quitting were less likely to make a quit attempt — 55% of those told that it was "not a good time to quit" made a quit attempt compared with 63% of those told to "proceed with caution" and 77% of those told to "go straight ahead" ($\chi^2_{1,117} = 3.53$; $P = 0.06$).

Participants making quit attempts reported fewer baseline depressive symptoms (mean PHQ-9 score 9.76 v 12.40 among non-attempters; $t = 2.06$; df = 167; $P = 0.04$), and were more likely to use cessation pharmacotherapy (79% v 60% non-users; $\chi^2_{1,163} = 6.38$; $P = 0.01$), be employed (80% v 67% unemployed; $\chi^2_{1,173} = 3.61$; $P = 0.06$) and be men (81% v 68% women; $\chi^2_{1,174} = 3.39$; $P = 0.07$).

Among participants making a quit attempt, those who achieved sustained cessation were more likely to be men (29% v 15% women; $\chi^2_{1,144} = 4.33$; $P = 0.04$), received more Quitline calls (mean 4.2 v 3.2; $t = -1.93$; df = 141; $P = 0.06$) and were more likely to use cessation pharmacotherapy (25% v 13% non-users; $\chi^2_{1,136} = 3.16$; $P = 0.08$).

3 Participant opinions and use of doctor, Quitline and pharmacological cessation assistance

Measure	No.
Good idea to involve doctor with quitting ($n = 169$)	
Agree	141 (83.4%)
Disagree	28 (16.6%)
Spoke with doctor about quitting ($n = 173$)	
Yes	128 (74.0%)
No	45 (26.0%)
Received comanagement* ($n = 174$)	
Yes	74 (42.5%)
No	100 (57.5%)
Of those discussing quitting with doctor:	
Mean no. of appointments about quitting ($n = 120$)	2.6 (SD, 2.6)
Who raised issue of quitting ($n = 123$)	
Patient	82 (66.7%)
Doctor	41 (33.3%)
Doctor advice re quitting ($n = 117$)	
Go straight ahead	57 (48.7%)
Proceed with caution	49 (41.9%)
Not a good time to quit	11 (9.4%)
Doctor recommended new medication or changes to medication ($n = 120$)	
Yes	58 (48.3%)
No	62 (51.7%)
Involving doctor increased confidence to manage mood ($n = 118$)	
Yes, a lot	46 (39.0%)
Yes, somewhat	30 (25.4%)
No	42 (35.6%)
Helpful to have both doctor and Quitline ($n = 112$)	
Yes	93 (83.0%)
Prefer just doctor	8 (7.2%)
Prefer just Quitline	11 (9.8%)
Cessation management:	
Quitline calls received ($n = 173$)	
Initial call only (did not receive call-back service)	30 (17.3%)
2–3 calls	81 (46.8%)
⩾ 4 calls	62 (35.9%)
Quitline call-back service helpful ($n = 174$)	
Very	127 (73.0%)
Somewhat	32 (18.4%)
Not at all	15 (8.6%)
Used cessation medication ($n = 163$)	
Yes	105 (64.4%)
No	58 (35.6%)
Type of cessation medication used ($n = 174$)	
Varenicline	56 (32.2%)
Nicotine replacement	54 (31.0%)
Bupropion	21 (12.1%)

* Doctor completes the Quitline fax-referral, which activates Quitline feedback on participant's progress with quitting. ◆

Exacerbation of depression

Between baseline and 6 months, 18% of participants reported exacerbation of depression. None of the cessation outcome measures were associated with exacerbation of depression. Overall, 18% of those not making a quit attempt reported exacerbation of depression, as did 20% with a failed quit attempt and 15% of those who quit at 6 months ($\chi^2_{2,137} = 3.61$; $P = 0.78$).

DISCUSSION

This project found that a well structured Quitline–doctor comanagement of smoking cessation for people with a depression history is workable, beneficial and acceptable to participants. These participants are likely to be highly motivated, as evidenced by their calling Quitline, but the high level of cessation activity (even by general population standards) among smokers reporting doctor-diagnosed depression is very encouraging. It was also reassuring that attempts at or success with smoking cessation did not increase the risk of exacerbation of depression. Further data analysis is underway to explore reductions in depressive symptoms following quitting.

The study's main limitation is the use of an uncontrolled design. While a randomised controlled trial would have been ideal, Quitline's mental health policy recommends comanagement for all smokers with current depression and this precluded random allocation of smokers. If the comanagement option had been taken away and problems arose, there would have been issues of liability.

As the participants were Quitline clients disclosing doctor-diagnosed depression, this sample included participants with subclinical levels of depression and as well as those independently assessed as having major depressive disorder. This is in line with the practical realities of the service, where it is not possible to routinely implement a formalised assessment and such an assessment could prove counterproductive if it excluded those who were below caseness threshold.

The key benefits of formalised doctor referral of participants to Quitline (comanagement) were increased likelihood of quit attempts and of receiving more Quitline calls, a predictor of sustained cessation. The finding that comanagement was more likely when Quitline sent the fax form directly to the participant's doctor (as well as to the patient) supports the ongoing implementation of this strategy by Quitline. Around a quarter of participants did not speak with their doctor about quitting. This highlights the need for doctors to continue to be proactive in encouraging patients to quit and in offering assistance to do so. A Cochrane review shows that even brief simple advice increases patient success with quitting.[14] Further, comanagement with Quitline is not only effective,[11] but takes pressure off doctors who may be underresourced or not confident in managing smoking cessation.

Consistent with other research, higher levels of baseline depression inhibited cessation attempts. Treatment guidelines recommend that depression be treated first in preparation for smoking cessation.[4] This finding reinforces the need for comanagement and justifies Quitline's focus on strategies that target both smoking cessation and mood.

Forging routine links with Quitline provides an easy and efficient means to deliver smoking cessation treatment. The Victorian Quitline's tailored counselling protocol for smokers with a history of depression is being shared with Quitline services nationally to help ensure that effective smoking cessation treatment which competently manages comorbid issues is available to the many smokers in the community with a history of depression. Further, this tailored treatment model has the potential to be adapted for smokers with other comorbid issues.

4 Quit rates

Measure	No. of respondents	All cases
2-month follow-up	174	227
Made quit attempt		
Yes	126 (72.4%)	126 (55.5%)
No	48 (27.6%)	101 (44.5%)
Point-prevalence abstinence		
Yes	65 (37.4%)	65 (28.6%)
No	109 (62.6%)	162 (71.4%)
6-month follow-up	159	227
Point-prevalence abstinence		
Yes	52 (32.7%)	52 (22.9%)
No	107 (67.3%)	175 (77.1%)
Quit for ≥ 4 months (sustained abstinence)		
Yes	32 (20.1%)	32 (14.1%)
No	127 (79.9%)	195 (85.9%)

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COMPETING INTERESTS

Ainslie Hannan and Ian Ferretter are employed by Quit Victoria. Together with Catherine Segan, Kay Wilhelm and Sunil Bhar, they developed and implemented Quit Victoria's tailored service for depression-history smokers evaluated in this study. Ron Borland is employed by The Cancer Council Victoria, which houses Victoria's Quitline. He has conducted research on the Quitline and has an ongoing interest in helping them improve the quality of their services.

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