

# NEAT

NicotinE As Treatment

## Project NEAT: RCT comparing Quitline support plus vaporized nicotine products or cNRT following discharge from residential withdrawal services

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What we  
know:  
Tobacco &  
AOD clients

- People seeking treatment for alcohol and other drug (AOD) use:
  - Higher smoking rates than general population (e.g. up to 95% vs 11%)
  - Experience a greater tobacco-related burden of illness
  - Are interested in quitting
  - Can quit successfully and safely (short-term)
  - Tobacco cessation can improve treatment success for other drug use



Challenge:  
sustaining  
abstinence  
from smoking  
in longer term  
(at least 6  
months)

- Trials providing AOD treatment service consumers w/ behavioural support + NRT report short-term abstinence (8-12 weeks) rates between 9 – 33% while in treatment

.....but most relapsed to smoking following discharge.



# Addressing relapse to tobacco smoking

- Relapse rates are high among people experiencing AOD use
- Mitigating factors may include:
  - Factors related to AOD dependence (e.g. smoking-related cue and triggers)
  - Lack of cessation support
  - High levels of smoking in social networks
  - Heavy nicotine dependence levels
  - Underutilisation of cessation aids (e.g. NRT)



Supporting  
cessation /  
preventing  
relapse



Best evidence recommends:

Pharmacological support (e.g.  
combination NRT, varenicline)

+

Behavioural support (e.g. Quitline).

# Pilot work: **QuitNic**

- Feasibility & acceptability of 12-week NVP + Quitline vs NRT + Quitline intervention.
- N = 100; recruited via one residential withdrawal unit (7-10d treatment).
- Discharged with intervention pack + proactive Quitline referral, surveyed at 6 + 12wks

*Nicotine & Tobacco Research*, 2021, 462–470

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Original Investigation

Received December 9, 2019; Editorial Decision July 28, 2020; Accepted July 30, 2020



Original Investigation

## **QuitNic: A Pilot Randomized Controlled Trial Comparing Nicotine Vaping Products With Nicotine Replacement Therapy for Smoking Cessation Following Residential Detoxification**

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### **Feasible + acceptable**

Retention: 63% at 6wks, 50% at 12wks

Product use at 12-wks: 68% cNRT, 96% NVP

Potential effectiveness: 7-day PPA at 12-weeks (14% NVP group, 18% NRT group)

# NEAT

## NicotinE As Treatment

**Aim:** Examine the effectiveness of interventions consisting of Nicotine Vaping Product (NVPs) + Quitline or combination Nicotine Replacement Therapy (cNRT) + Quitline counselling on self-reported 7-months continuous abstinence at 9-month follow-up (6-months post end of treatment) for people leaving smoke-free residential withdrawal treatment.

### Nicotine e-cigarettes for smoking cessation following discharge from smoke-free inpatient alcohol and other drug withdrawal services: a pragmatic two-arm, single-blinded, parallel-group, randomised controlled trial



Billie Bonevski, Jane Rich, Dan I Lubman, Catherine Segan, Amanda Baker, Ron Borland, Chris Oldmeadow, Coral Gartner, Natalie Walker, Adrian Dunlop, Mark Daglish, Christopher Bullen, Linda Bauld, David Jacka, Joshua B B Garfield, Rose McCrohan, Ashleigh Guillaumier, Victoria Manning



#### Summary

**Background** Nicotine-containing electronic cigarettes (e-cigarettes) have been shown to be effective for smoking cessation among general populations, but there is little evidence in people with substance use disorders (SUDs). We aimed to assess the effectiveness of e-cigarettes for smoking abstinence in people with SUD following discharge from smoke-free inpatient withdrawal services.

Lancet Public Health 2025; 10: e568-77

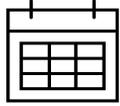
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**Methods** We conducted a pragmatic, two-arm, single-blinded, parallel-group randomised controlled trial. The majority of this study took place in the community after the participants were discharged from inpatient stay. Adults who were tobacco smokers (motivated to quit; not using e-cigarettes) from five smoke-free inpatient withdrawal services in Australia were recruited and randomly assigned by computer using stratified block (1:1) to receive a 12-week supply of

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(Prof B Bonevski PhD, A Guillaumier PhD); School of Medicine and Public Health,

Bonevski B, et al. Nicotine e-cigarettes for smoking cessation following discharge from smoke-free inpatient alcohol and other drug withdrawal services: a pragmatic two-arm, single-blinded, parallel-group, randomised controlled trial. *Lancet Public Health*. 2025 Jul;10(7):e568-e577. doi: 10.1016/S2468-2667(25)00101-X. PMID: 40602856.

# METHODS



**September 2020 – April 2023**



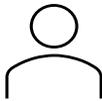
## Design

RCT



## Setting

Recruitment from five inpatient AOD withdrawal units across four cities in three states (NSW, QLD, Vic)



## Sample

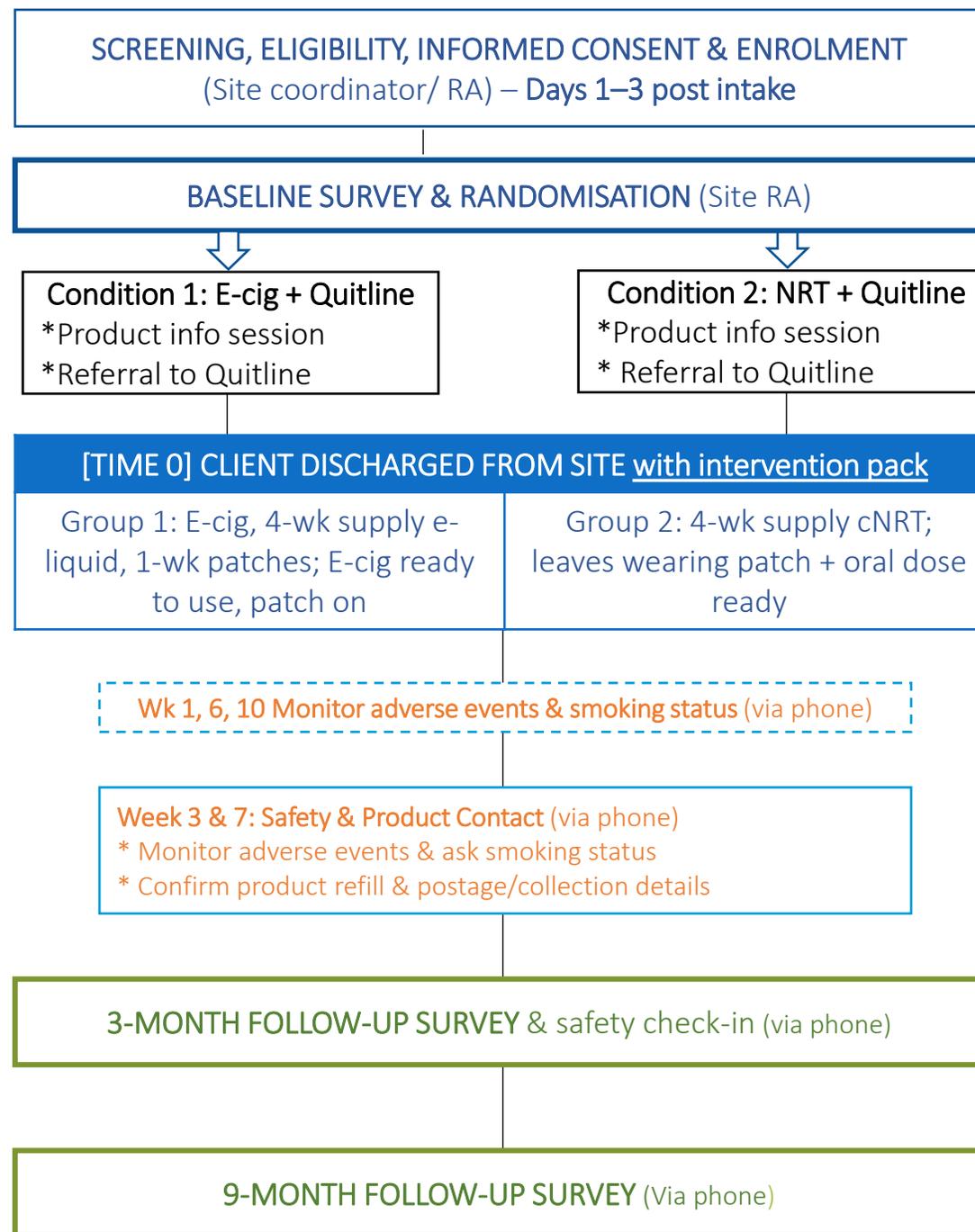
Participants:  $\geq 18$  yrs, smoke  $\geq 10$  tobacco cigarettes/day on entering withdrawal unit, received NRT during treatment at recruiting AOD site, want to quit in next 30 days, capacity to consent, sufficient English



**Primary outcome:** Self-reported 7-month continuous abstinence at 9 months post randomisation

**Secondary outcomes:** 30d PPA, abstinence from all nicotine (among non-smokers), cig/day, frequency of cravings, strength of urges, withdrawal, time to relapse

# Procedure: Trial schematic



Client Recruitment on-going for 24-months

Client at [Service Name]: 7 – 10 days (avg. 8d)

Intervention Period: 12 weeks

Follow-Up Period: 6 months

# Intervention: Nicotine VAPING Products + Quitline

1 x E-cig starter kit



12-week supply nicotine liquid



1<sup>st</sup> supply: 8 x 10ml bottles (12mg)

2<sup>nd</sup> supply: 8 x 10ml bottles (12mg)

3<sup>rd</sup> supply: 8 x 10ml bottles (12mg)

1 x 7-day pack  
NRT patches



Info pack



Quitline referral



# Interventions: cNRT + Quitline

12-week supply NRT patches



Quitline referral



12-week supply ORAL dose NRT

Info pack

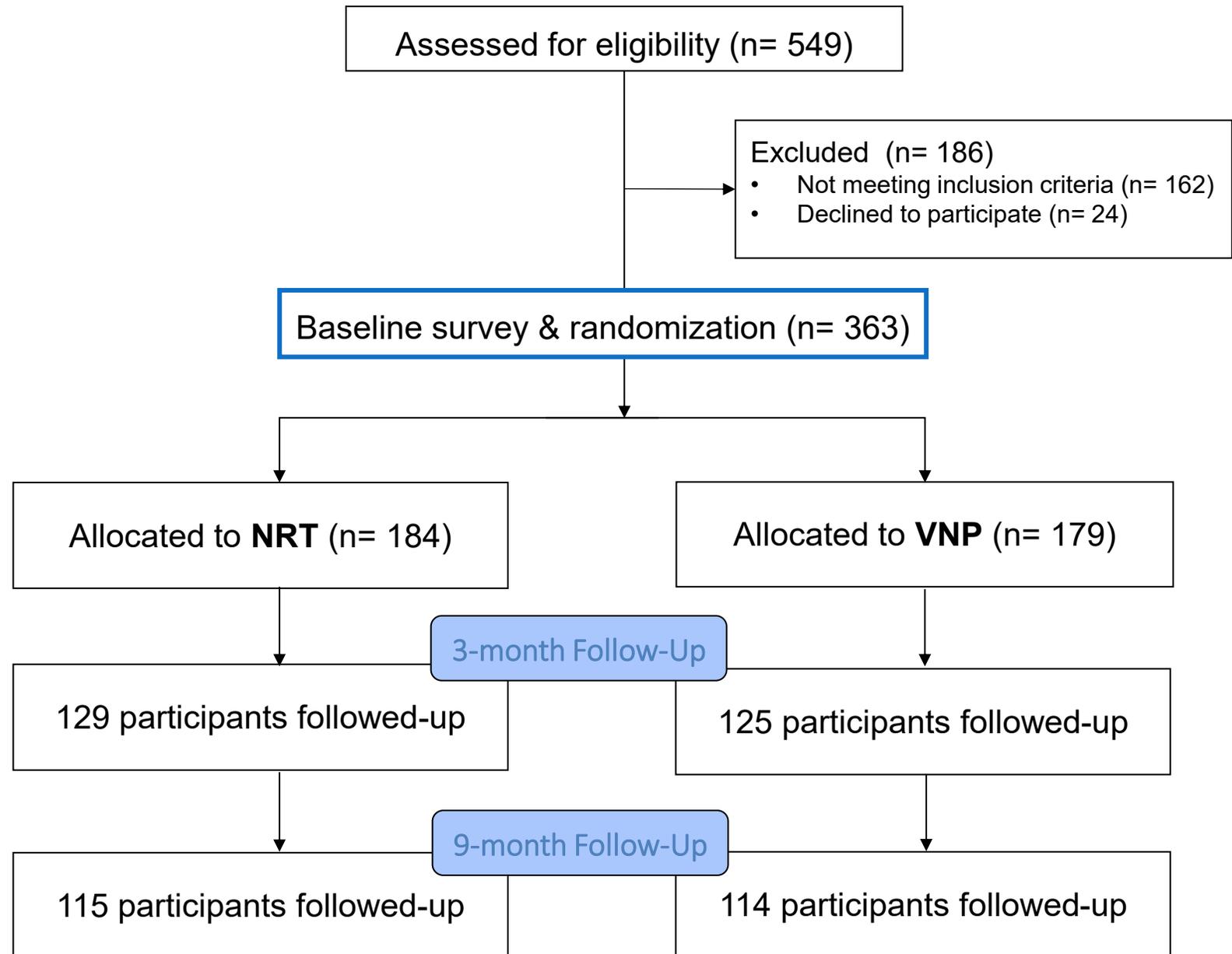


1 <sup>st</sup> supply	2 <sup>nd</sup> supply	3 <sup>rd</sup> supply
<ul style="list-style-type: none"> <li>2-wks inhalator</li> <li>2-wks quick mist</li> </ul>	<ul style="list-style-type: none"> <li>2-wks inhalator</li> <li>1-week gum</li> <li>1-week lozenge</li> </ul>	<ul style="list-style-type: none"> <li>2-wks inhalator</li> <li>2-wks lozenge</li> </ul>



Results

# Participant flow



# Table 1. Baseline demographics by treatment allocation (n = 363)

Variable	Category	cNRT + Quitline N = 184 n (%)	NVP + Quitline N = 179 n (%)
Age	Median (IQR)	44 (38 – 52)	43 (35 – 50)
Gender	Male	<b>110 (60)</b>	<b>97 (54)</b>
	Female	71 (39)	80 (45)
	Other	2 (1.1)	1 (0.6)
Indigenous	Aboriginal and/or TSI	22 (12)	13 (7)
Income	≤\$500/week	<b>106 (58)</b>	<b>104 (58)</b>
	>\$500/week	77 (42)	74 (42)
Primary drug of concern	<b>Alcohol</b>	<b>145 (79)</b>	<b>137 (77)</b>
	Cannabis	13 (7.1)	12 (6.7)
	Methamphetamine (ice, base, speed etc)	14 (7.7)	11 (6.2)
	Heroin	6 (3.3)	7 (3.9)
	Other opioids (suboxone, methadone, codeine, oxycontin, fentanyl patch)	3 (1.6)	5 (2.8)
	Tranquilizers (oxazepam, diazepam, nitrazepam)	1 (0.5)	4 (2.2)
	Other amphetamines	0 (0)	1 (0.6)
	Cocaine	0 (0)	1 (0.6)
	Other (GHB, 2CB, NBOMe, alpha-PVP, mephedrone)	1 (0.5)	0 (0)

# Primary outcome

Table 2. Self-reported 7-month continuous abstinence regression results.

Model type	E-cig n (%)	cNRT n (%)	Relative Risk (95%CrI)	Risk Difference (95%CrI)	Probability of direction P(e- cig>cNRT)	Bayes factor (Ha vs Ho)
ITT (N=363)	19/179 (10.61%)	18/184 (9.78%)	1.09 (0.52, 1.89)	0.85% (-5.50%, 7.27%)	60.43%	0.04
Complete case (N=229)	19/114 (16.67%)	18/115 (15.65%)	1.06 (0.53, 1.83)	0.95% (-8.50%, 10.77%)	57.94%	0.04
Power prior <sup>1</sup>	19/179 (10.61%)	18/184 (9.78%)	1.06 (0.54, 1.79)	0.67% (-5.68%, 7.07%)	58.61%	0.13
Multiple imputation	..	..	1.25 (0.69, 1.98)	4.39% (-5.75%, 14.61%)	80.59%	0.10

<sup>1</sup> Power prior based on previous study with Russell standard ITT imputation e-cig 9/50 18%, NRT 10/50 20% and a power factor of 0.25.

# Secondary outcome: 30-day PPA

Table 3. Self-reported 30-day PPA at 9 months regression results.

Model type	E-cig n (%)	cNRT n (%)	Relative Risk (95%CrI)	Risk Difference (95%CrI)	Probability of direction P(e- cig<cNRT)	Bayes factor (Ha vs Ho)
ITT (N=363)	30/179 (16.76%)	34/184 (18.48%)	0.90 (0.52, 1.34)	-1.72% (-9.33%, 6.37%)	67.36%	0.03
Complete case (N=227)	30/112 (26.79%)	34/115 (29.57%)	0.91 (0.56, 1.33)	-2.43% (-13.89%, 8.87%)	66.62%	0.03
Multiple imputation	..	..	0.93 (0.61, 1.31)	-2.32% (-14.48%, 9.52%)	64.81%	0.02

# Secondary outcome: Cigarettes per day (CPD)

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- Low probability of difference between groups in number of CPD at 9-months
- Similar reductions in CPD from baseline to 9m
  - cNRT: 23.4 to 10.8, a reduction of 59% (IRR 0.41: 95%CrI 0.35 to 0.48)
  - E-cig: 22.2 to 11.5, a reduction of 52% (IRR 0.48: 95%CrI 0.41 to 0.56)

# Secondary outcomes

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- No evidence of true differences between groups in:
  - **Abstinence from all products containing nicotine** (incl tobacco cigarettes, NRT and nicotine liquid) among those no longer smoking at 9-month follow-up
  - **Craving** scores at 3- and 9-months follow-up
  - **Withdrawal** scores at 3- and 9-months follow-up
  - **Time to relapse** (measured at 3-months follow-up)

# Serious Adverse Events

Table 3. Serious Adverse Events (SAE).

SAE description	cNRT	E-cigarette
Number of participants (%) with a SAE	11 (6%)	11 (6%)
Total SAE per participant	13/184 (0.07)	15/179 (0.08)
Number of SAEs by category		
Death	0 (0%)	1 (6.7%)
Life threatening	1 (7.7%)	0 (0%)
Hospitalization	11 (84.6%)	13 (87%)
Persistent/significant disability/incapacity	0 (0%)	0 (0%)
Other medically important condition	1 (7.7%)	1 (6.7%)

Data are n (%)

# Process Measures



## Nicotine product use

- Product refills:

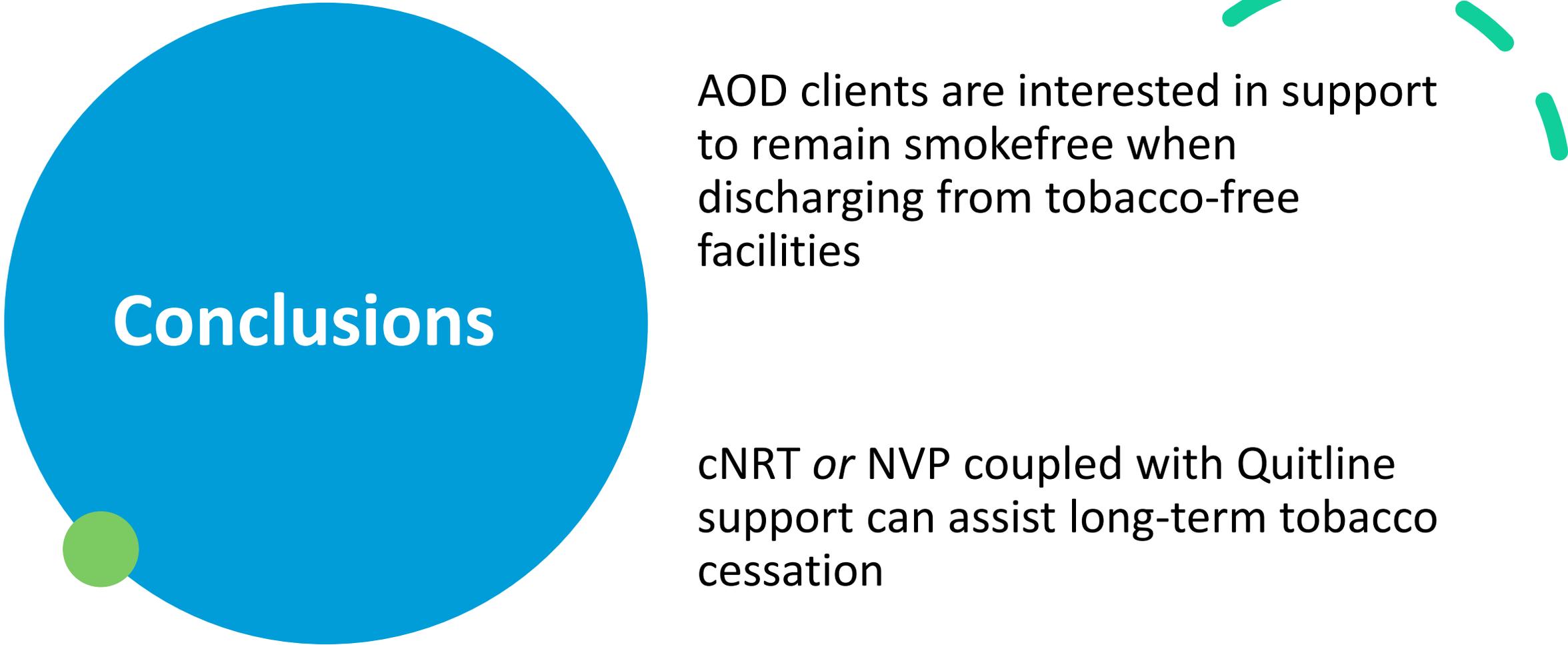
Refill	cNRT (n=184)	E-cig (n=179)
3 weeks	<b>88%</b> (119/136)	<b>83%</b> (111/134)
7 weeks	<b>84%</b> (108/129)	<b>72%</b> (92/127)

- Continued use of allocated product was high at 3-mth follow-up:
  - cNRT: 44% still using patches; 52% still using oral form
  - E-cig: 64% still using nicotine e-cig



## Quitline calls

- 81% of participants completed  $\geq 1$  calls with Quitline
  - 78% cNRT
  - 84% e-cig
- Mean # calls completed over 12-week intervention phase:
  - cNRT: 2.57 (med 2; IQR 1, 4)
  - E-cig: 2.93 (med 2; IQR 1, 4)



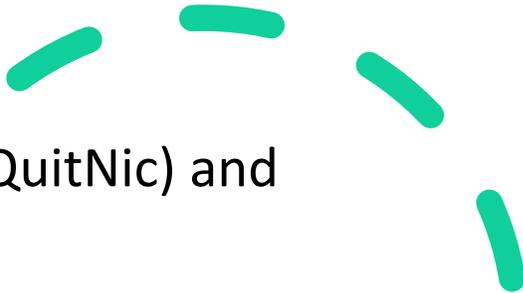
# Conclusions

AOD clients are interested in support to remain smokefree when discharging from tobacco-free facilities

cNRT *or* NVP coupled with Quitline support can assist long-term tobacco cessation



Implications:  
provide  
support!



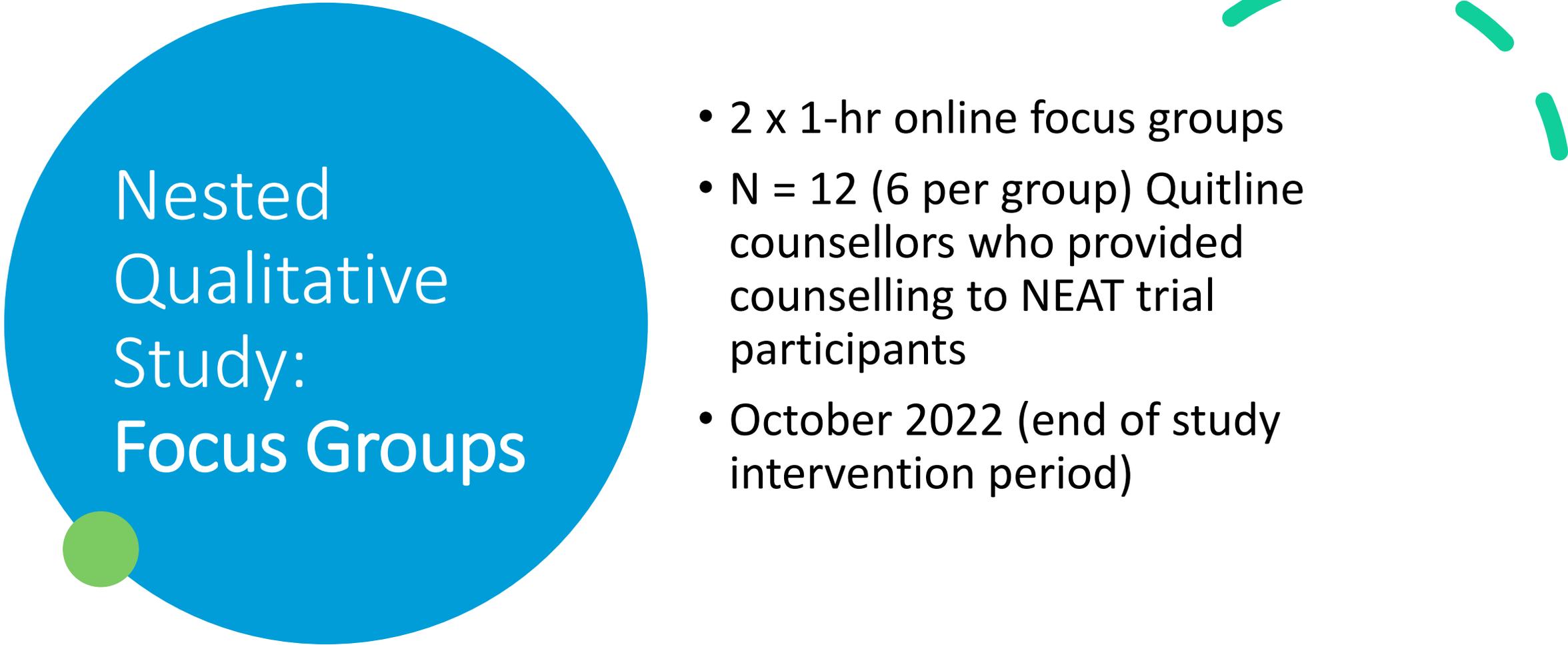
Consistent findings across pilot (QuitNic) and efficacy (Project NEAT) trials:

**12-week intervention of cNRT+Quitline or NVP+Quitline produce similar tobacco smoking cessation effect.**

**Replacement or alternative nicotine *plus* behavioural support can assist in maintaining abstinence.**

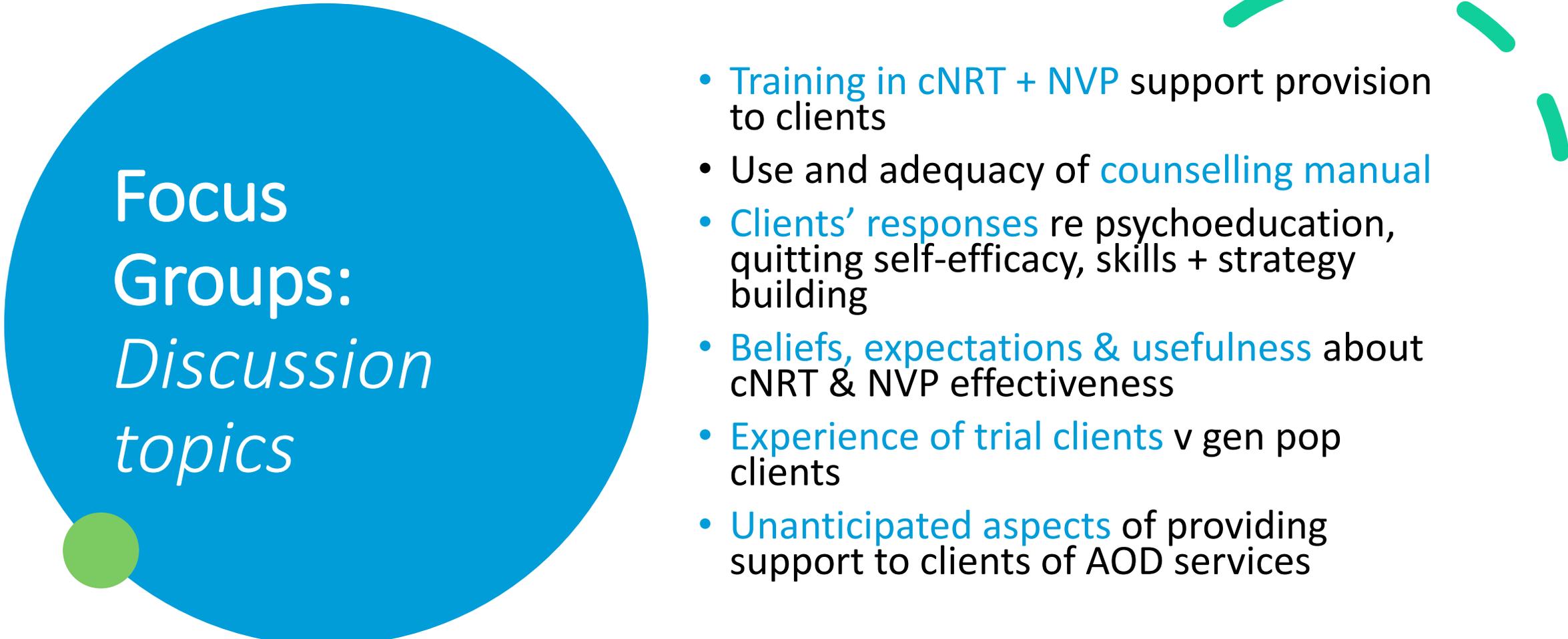


# Quitline Counsellors' Experience



## Nested Qualitative Study: Focus Groups

- 2 x 1-hr online focus groups
- N = 12 (6 per group) Quitline counsellors who provided counselling to NEAT trial participants
- October 2022 (end of study intervention period)



## Focus Groups: *Discussion topics*

- Training in cNRT + NVP support provision to clients
- Use and adequacy of counselling manual
- Clients' responses re psychoeducation, quitting self-efficacy, skills + strategy building
- Beliefs, expectations & usefulness about cNRT & NVP effectiveness
- Experience of trial clients v gen pop clients
- Unanticipated aspects of providing support to clients of AOD services

# Main Themes

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**Attitudes to  
NVP use**  
Cautiousness

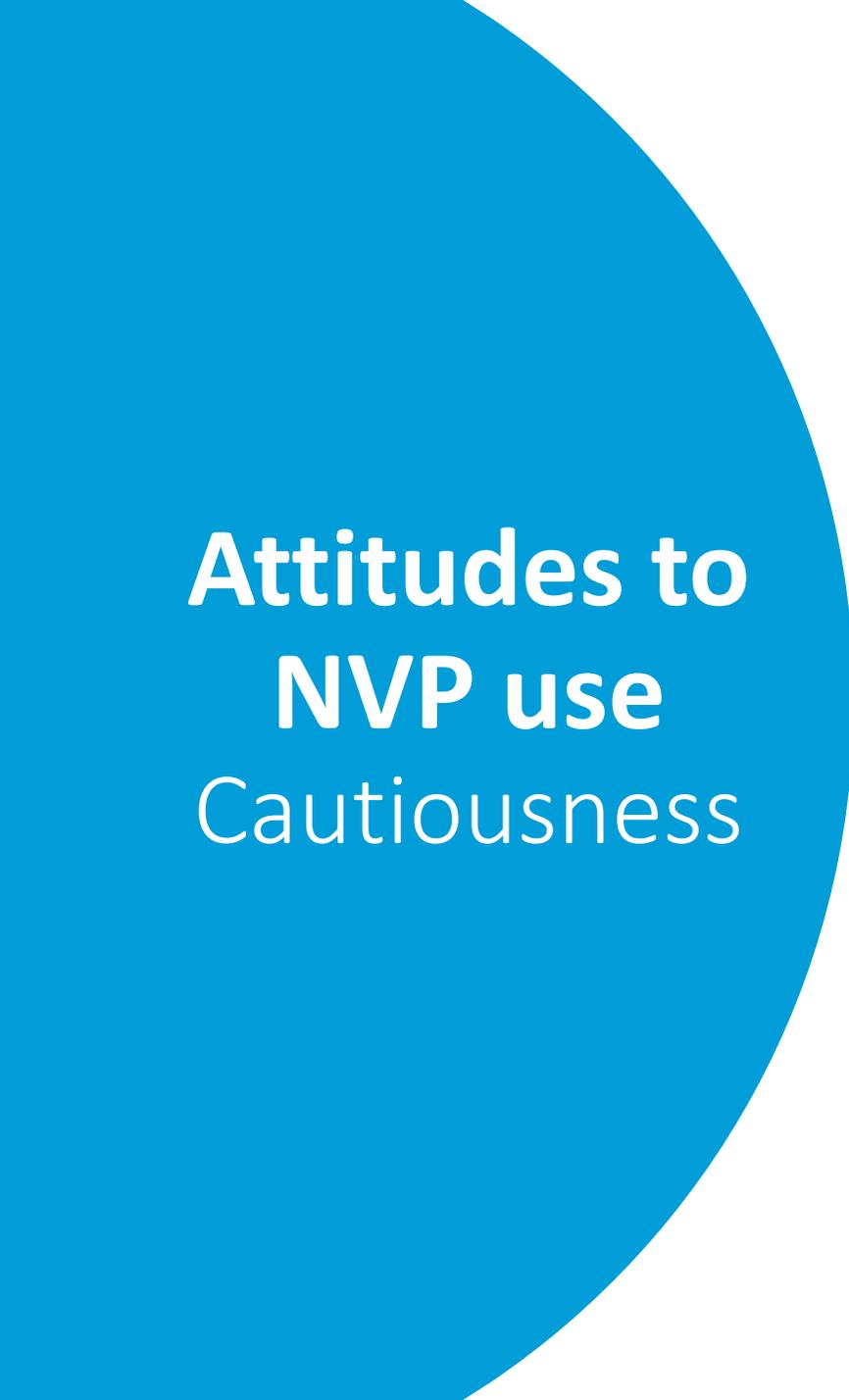
**Behavioural  
Strategies**  
Additional  
barriers

**Type of  
Nicotine  
Product**  
Client  
preference for  
NVP

**Communica  
tion**  
Inpatient  
contact critical

**Supported  
by trial**  
Resources &  
training

**Role of  
Quitline**  
Appropriate &  
adaptable



## Attitudes to NVP use Cautiousness

*“Cautiousness... Around, you know, vaping and I suppose, maybe with the wider Quitline call(er) population even more caution. But, perhaps I’m a bit more enthusiastic about the vape and the success that we’re having with these new clients here”*

*Participant 4.*



# Behavioural Strategies

Additional  
barriers

*“I would have had a bit more input about behavioural stuff, but my sense was for quite a lot of clients, they couldn’t go there yet. They, you know, there [were] a lot of [cognitive] barriers for them in terms of being able to have that insight” - Participant 10.*

*“Perhaps there was more ... willingness to focus on those other areas of developing skills around the behavioural side of quitting with the cNRT group... perhaps a more balanced way because there wasn’t such a belief that the vapes are magic” - Participant 5.*

# Type of Nicotine Product

Client  
preference for  
NVP

*“Often with the cNRT people don’t like the taste of the oral [formulations] and they just don’t use it. Well, you can’t help them if they’re not using it enough at least with a vape, they used it even if they may have overused it!” - Participant 12.*





# Communication

Inpatient contact  
critical

*“If we could make that contact before they left because it’s set up a relationship and then I felt they were, you know, more likely to continue that relationship with Quitline afterwards” – Participant 7.*



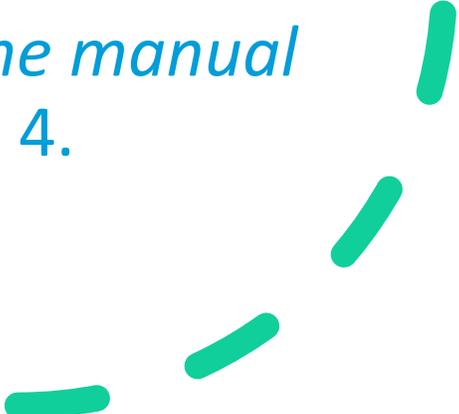


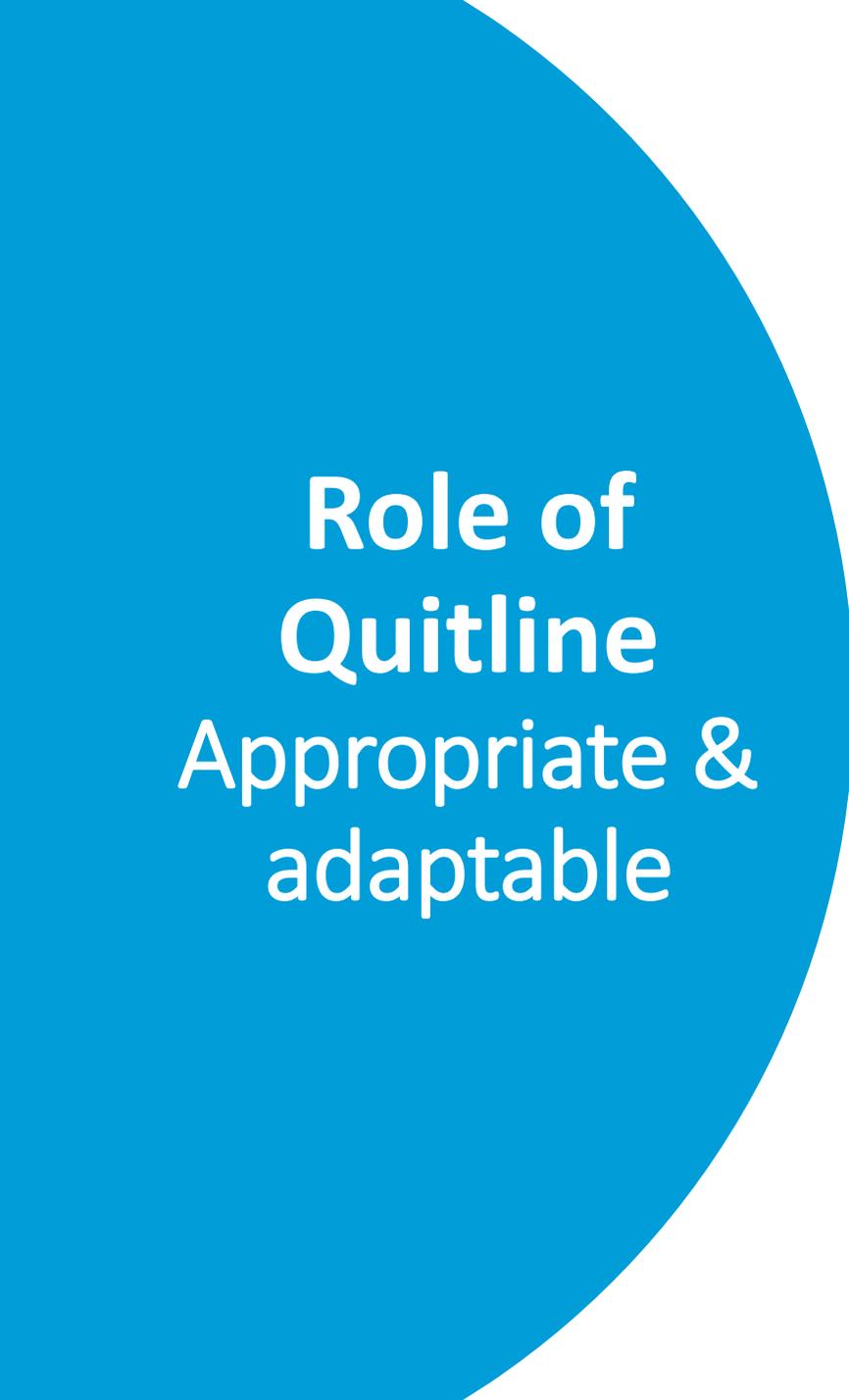
**Supported  
by the trial  
Resources &  
training**

*“[The training] de-escalated any anxiety we might have had; the training was excellent.”*

– Participant 8.

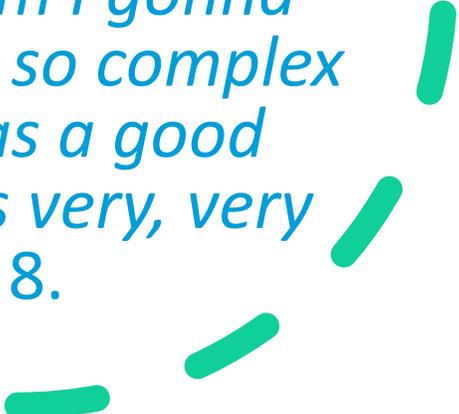
*“I constantly refer to the manual because we don’t deal with [NEAT] clients all the time, so you do forget very quickly, you’re back on mainstream clients and then you have a [NEAT] client, so I always have the manual next to me”* – Participant 4.





**Role of  
Quitline  
Appropriate &  
adaptable**

*“I’ve only ever had negative experiences in my life of people with substance abuse issues, so personally, I was [a] sceptic. I wasn’t that looking forward to taking part in the study to be honest with you and I wasn’t sure if this group of people specifically would like it [Quitline]...but in doing this study because of the level of engagement of [NEAT] client[s], I ended up feeling that Quitline did suit this group and a big percentage of them found our support helpful, so that was good for me personally because I felt “How am I gonna help this group? These people are so complex and I’m getting triggered” it was a good experience and I felt Quitline was very, very successful” – Participant 8.*



THANK YOU

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