**Figure 2: Trial Logic model**

 PROBLEM & DETERMINANTS INTERVENTION COMPONENTS ACTIVITIES & MECHANISMS OUTCOMES

Intervention mode of delivery

(how we will achieve behaviour change)

**Education and Training**

* Face to face staff training from research team (credible source)1,2,5,6
* Provision of EC fact sheets for staff & clients1,2,3,9,10,13
* Online (top-up) training video\*\*1,2,5,6

**Enablement**

* Provision of free EC starter kit & e-liquid3,6,7,8,10,11
* Face to face appointments to educate/ troubleshoot1,2,4,5,6,7,9,10,13

**Supportive context / engagement**

* Introduce ourselves & the study to staff & clients at centres to build rapport\*,4,5,6,7
* Fostering a culture supportive of vaping4,5,6,7,9,10,12,13

**Incentivisation**

* Provision of free EC, e-liquid (as above) 3,6,7,8,10,11
* Vouchers for attending follow-up appointments9,11

**Encouragement**

* From support staff & peers at centres3,4,6,7,9,10,12,13
* CO monitoring9,10,11,12,13

Hypothesised mediators\*\* # (linked to superscript numbers above)

**Capability**

1. Enhanced understanding / knowledge of EC as a harm reduction tool
2. Increased knowledge of how to use EC effectively to support quitting
3. Enhanced capacity to resist urges to smoke

 **Opportunity**

1. Improved social support
2. Enhanced staff responsibility to aid service users
3. Improved environment to aid abstinence
4. Social dynamics - creating a ‘vaping community’
5. Reduced engagement in risky smoking practices

**Motivation**

1. Increased motivation & self-efficacy to quit smoking
2. Increased belief in EC as a quit aid
3. Improved health & cost savings
4. Stronger sense of identity as an ex-smoker
5. Improved perceived capability & confidence

Intervention functions

(what we need to do)

**Education and training**

* Improve education around EC as a harm reduction tool
* Problem solving
* Credible source
* Action planning

**Enablement**

* Overcome cost barrier to purchase EC
* Improve understanding of EC use
* Behaviour substitution
* Reduce craving
* Reduce negative emotions
* Reduce exposure to cues
* Identity associated with changed behaviour

**Supportive context / engagement**

* Build rapport\*
* Restructure the social environment
* Homeless centre support/acceptance
* Improve social/peer support

**Incentivisation**

* Scheduled rewards

**Encouragement**

* Focus on past & current success
* Biofeedback (CO monitoring)

Continued smoking in people experiencing homelessness

Primary outcome:

Smoking abstinence (24 week)

Secondary outcomes:

Smoking reduction (>50%)

Reduction in risky smoking practices

7-day pp abstinence at 4 & 12 weeks

Cost-effectiveness

Impact:

Engagement with key decision makers to co-produce a pathway to implementation

UTCOMES PONE UNDER

Capability barriers

* Education: EC knowledge1
* Low confidence in ability to remain abstinent1
* High nicotine dependence1,2
* Mental health/limitations2
* Low levels of literacy\*\*

Opportunity barriers

* Social context: social group where majority are smokers1
* Lower levels of peer/social support1
* Lack of access to, and uptake of, SSS1,3
* Lack of vaping culture in centres
* Risky smoking practices3
* Lack of funds to purchase EC1
* Reduced access to charging facilities\*\*

Motivation barriers

* Lower motivation to consider personal health\*
* Prioritising immediate needs around shelter/food/other drug use2
* Suspicion around EC and EC risks\*
* Higher depression/anxiety/stress/ boredom/ guilt/ feelings of failure2
* Negative past experiences of smoking cessation\*,2
* Stigma around vaping\*

References/Evidence:

1. Dawkins, L., Ford, A., Bauld, L., Balaban, S., Tyler, A. & Cox, S. (2019). A cross sectional survey of smoking characteristics and quitting behaviour from a sample of homeless adults in Great Britain. *Addictive Behaviors, 95:* 35-40.
2. Soar, K., Dawkins, L., Robson, D. and Cox, S., (2020). Smoking amongst adults experiencing homelessness: a systematic review of prevalence rates, interventions and the barriers and facilitators to quitting and staying quit. Journal of Smoking Cessation, 15 (2): 94-108. <https://doi.org/10.1017/jsc.2020.11>
3. Dawkins, L., Bauld, L., Ford, A., Robson, D., Hajek, P., Parrott, S., Best, C., Li, J., Tyler, A., Uny, I. & Cox, C. (2020). A cluster feasibility trial to explore the uptake and use of e-cigarettes versus usual care offered to smokers attending homeless centres in Great Britain. PLoS ONE 15(10): e0240968. <https://doi.org/10.1371/journal.pone.0240968>

\* PPI feedback; \*\* From NIHR-funded feasibility study; # to be further explored through our process evaluation

Longer-term outcomes:

Triangulate with our (MRC & CRUK funded) program of work reviewing homeless charity smoking & vaping policies and development of a Tobacco Harm Reduction Toolkit

Adoption across homeless centres in GB

Improvement in smoking cessation support offered in homeless centres

Reduction in tobacco related health inequality gap

**Reduction of smoking related disease**