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An online randomised optimisation experiment to identify effective intervention components to support smokers to use an e-cigarette in a quit attempt

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Disclosures

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In the last 5 years, Lynne Dawkins has provided consultancy to the pharmaceutical industry relating to the development of smoking cessation products.

Background

- EC – a popular method for quitting smoking but smoking cessation rates remain modest (Kock et al., 2021, STS; Hajek et al. 2019 *NEJM 380*)
- Possible reasons: lack of satisfaction (ASH, 2020), difficulties getting the right combination of equipment (McQueen et al. 2011, *NTR 13;* Ward et al. 2019*, IJERPH 9*), scare stories, sub-optimal use
- Overall research question: If we provide additional support to smokers purchasing EC online, compared with those making their own choice with no support, can we increase quit rates?
- **But what types of support/intervention components are likely to be the most effective?**

Using the Multiphase Optimisation Strategy (MOST) to identify promising intervention components

- MOST – 3 phases: preparation, **optimisation** and evaluation
- Optimisation stage allows for the assessment of individual performance of each component and their interactions tested using a multi-factorial design
- Weak or non-performing components are not included in the final (optimised) intervention
- **Aim:** to determine which of 5 (or combinations thereof) e-cig orientated intervention components works best to support smoking cessation

Components

1. Tailored advice on EC device
2. Tailored advice on nicotine strength
3. Tailored advice on flavour
4. EC brief information
5. Text message support available here: https://www.qeios.com/read/W0GEL2

Primary outcome: self-reported abstinence from smoking (not a single puff) over the previous 4-weeks at 12-weeks post-randomisation.

Design

2x2x2x2x2 factorial design = 32 experimental conditions. Each components provided or not (on or off) to each participant

Condition	Device	Nicotine Strength	Flavour	Written Info	Text
1	On	On	On	On	On
2	On	On	On	On	Off
3	On	On	On	Off	On
4	On	On	On	Off	Off
5	On	On	Off	On	On
6	On	On	Off	On	Off
7	On	On	Off	Off	On
8	On	On	Off	Off	Off
9	On	Off	On	On	On
10	On	Off	On	On	Off
11	On	Off	On	Off	On
12	On	Off	On	Off	Off
13	On	Off	Off	On	On
14	On	Off	Off	On	Off
15	On	Off	Off	Off	On
16	On	Off	Off	Off	Off
17	Off	On	On	On	On
18	Off	On	On	On	Off
19	Off	On	On	Off	On
20	Off	On	On	Off	Off
21	Off	On	Off	On	On
22	Off	On	Off	On	Off
23	Off	On	Off	Off	On

Etc...

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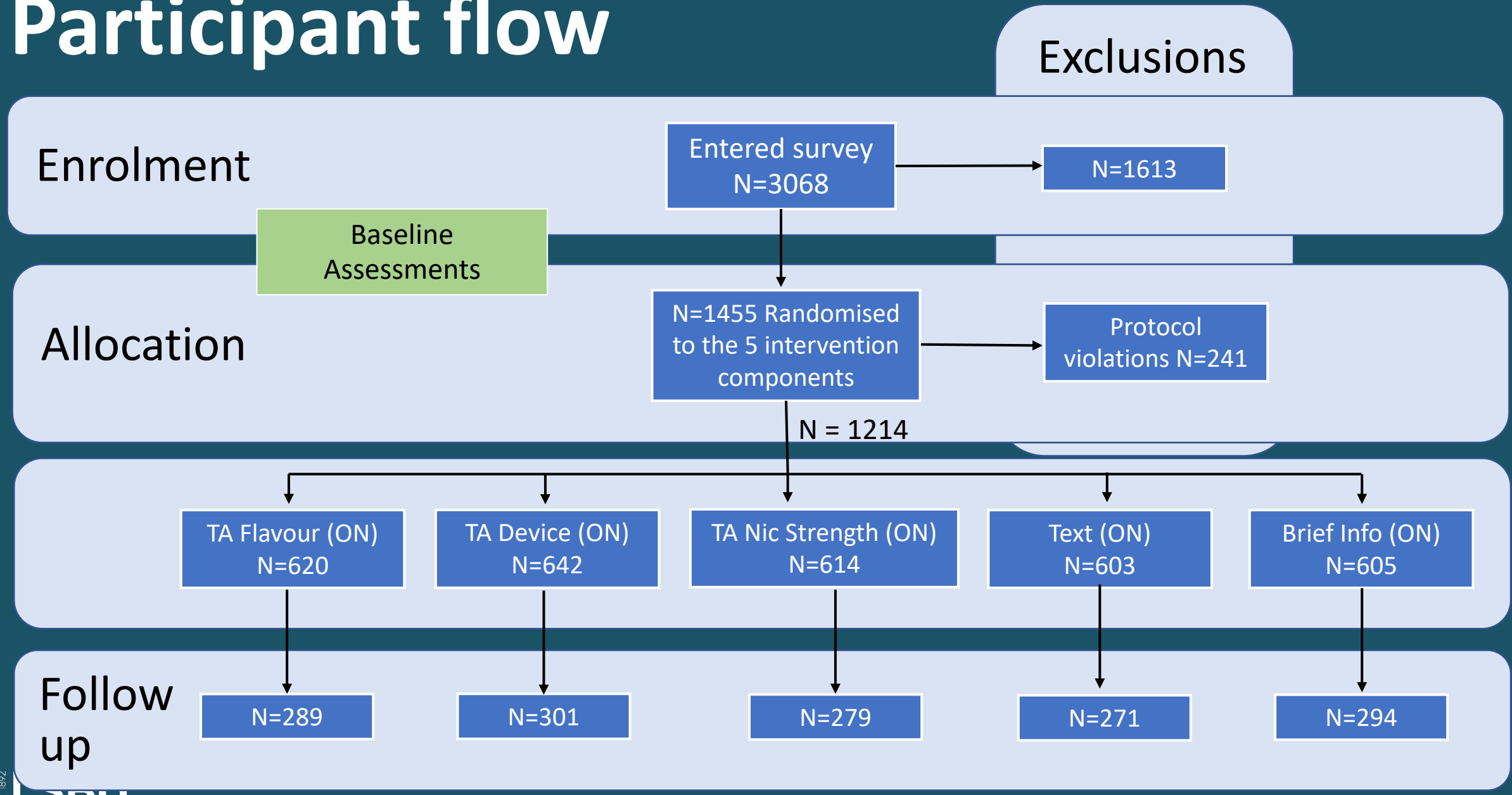
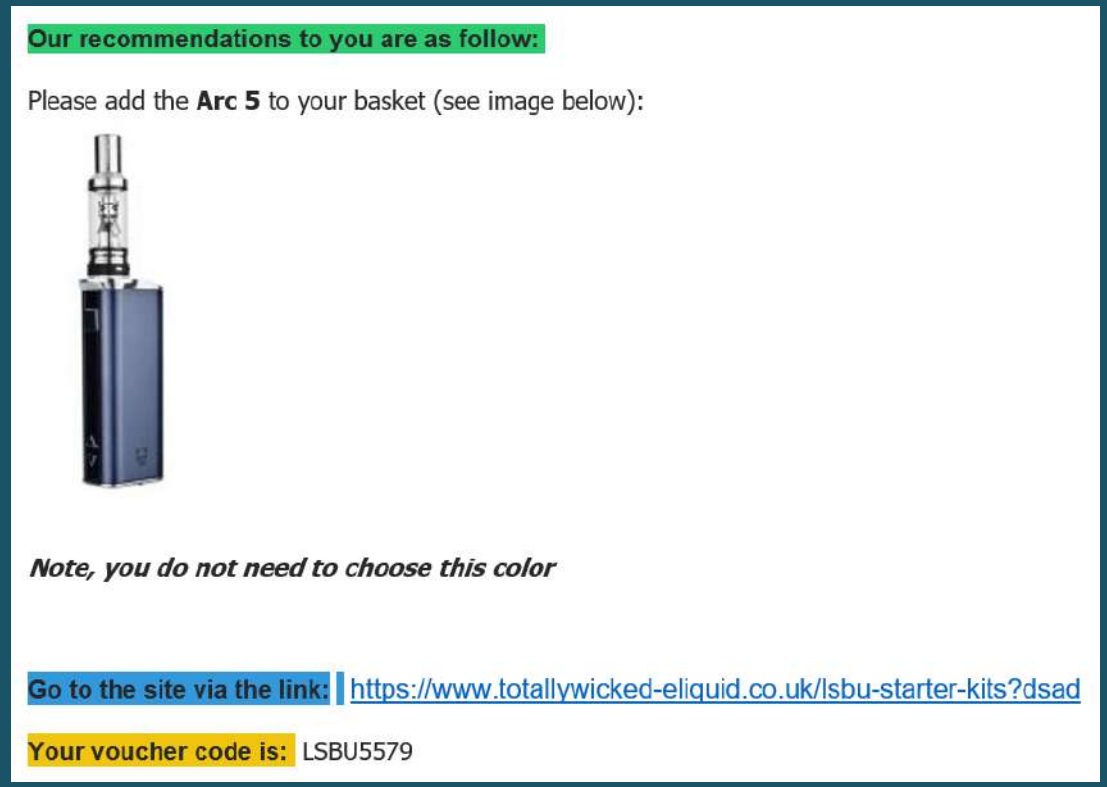
Participant flow



TA = Tailored Advice

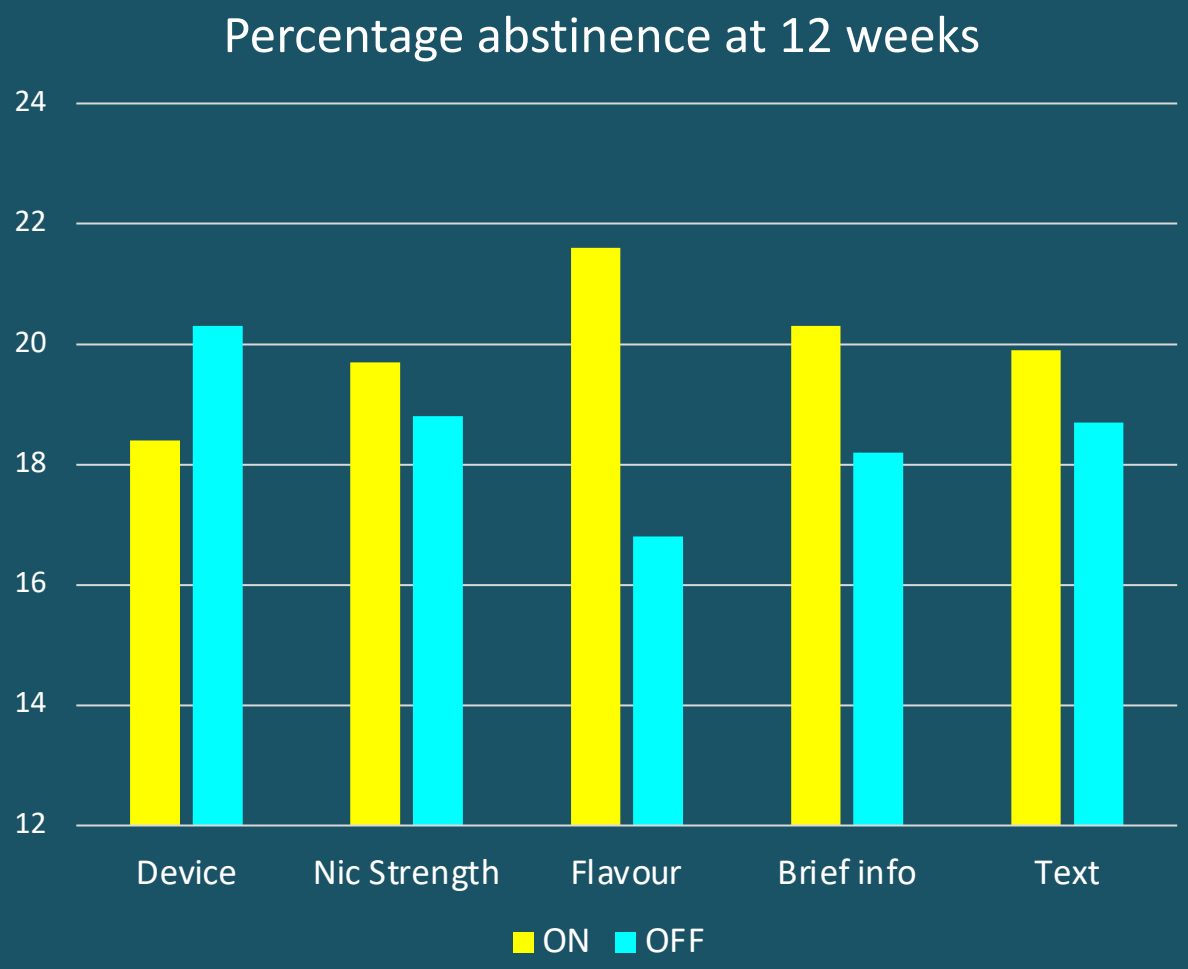
Procedure and recommendations

- Following completion of baseline survey:
  - Recommendations (re device, nic strength & flavour) were presented on screen (depending on allocated condition)
  - And emailed along with:
    - a direct link to the E-cigarette online store
    - a unique voucher code to make an online purchase
    - the CRUK infographic (if brief info ON)
  - If allocated to text message ON – program of text messages triggered
  - After 12 weeks: Emails/texts sent with a link to complete the follow up survey



Results

- 61% female; 97% white
- Mean (SD) age: 39 (13)
- 46% no previous EC use
- 49% smoked within 5 mins of waking
- Mean (SD) MTSS: 5.29 (1.34)
- Overall quit rate at 12 weeks: 19.3%

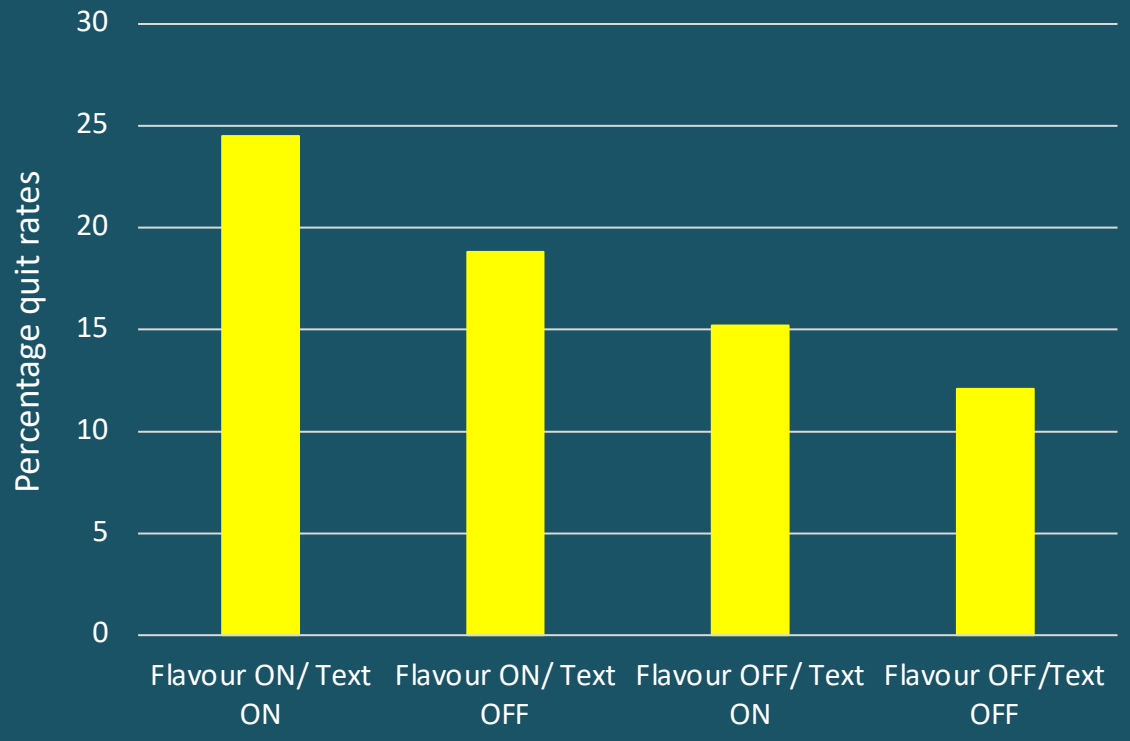


Results (ITT, per protocol, N=1214)

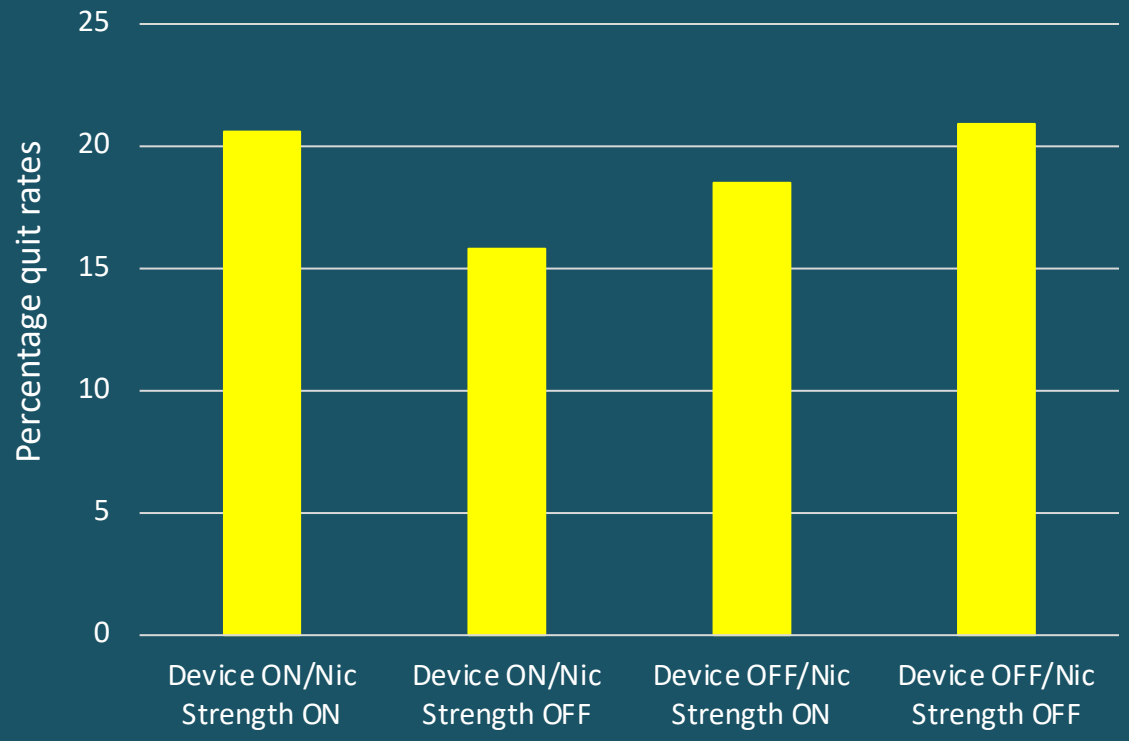
- Logistic regression (excluding protocol violations) adjusting for age, gender, ethnicity, occupation, time to first cigarette and MTSS.
- Model included the five interventions and all ten 2-way interactions.
- Main effects: All non-significant
- Two significant interactions:
  - TA on flavour X text message: OR=2.00 (95% CI: 1.08-3.69), p=.028
  - TA on device X TA on nic strength: OR=1.87 (95% CI: 1.01-3.47), p=.048

Interaction breakdowns:

Percentage quit rate at 12 weeks for Flavour X Text interaction



Percentage quit rate at 12 weeks for Device X Nicotine Strength interaction



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Conclusions

- No single intervention component alone improved quit rates
- Text message support with tailored advice on flavour is a promising combination of components
- But why…?
- Final optimised intervention will be examined in a future RCT

Acknowledgements

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- Protocol available here: https://www.qeios.com/read/9RDLJA.3

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