Abreast of Health: Feasibility, Acceptability and Usability of an Opportunistic Digital Alcohol Brief Intervention in Women Attending Symptomatic Breast Clinics

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Background

Cancer prevention... and alcohol?

- Breast cancer: ~55,000 UK cases/year, of which 6% are attributable to alcohol.

- The public is not familiar with dose-dependent health effects of alcohol.

- Social representations on alcohol risks are narrow: social harms, addiction.

    This is a substantial hindrance to the acceptation of the 14 unit guideline (Khadjesari et al. 2018).

    '**Doing it by Numbers**' (Nutt & Rehm 2014; Rehm et al. 2016)

Khadjesari Z, Stevenson F, Toner P, Linke S, Milward J, Murray E. 'I'm not a real boozer': a qualitative study of primary care patients' views on drinking and its consequences. *J Public Health*. 2018;(April):1–7. DOI: 10.1093/pubmed/fdy067/4975821

Nutt, D. J., & Rehm, J. (2014). Doing it by numbers: A simple approach to reducing the harms of alcohol. *J. Psychopharm.*, *28*(1), 3–7. DOI: 10.1177/0269881113512038

Rehm, J., Anderson, P., Manthey, J., ... (2016). Alcohol Use Disorders in Primary Health Care: What Do We Know and Where Do We Go? *Alcohol and Alcoholism*, 51(4), 422–427. DOI: 10.1093/alcalc/agv127

Abreast of Health
# Digital Alcohol Brief Intervention

Web app accessed in symptomatic breast clinic waiting areas

App entirely designed for women's information needs in this context
(the so-called 'teachable moment')

- Emphasis on alcohol as 'the most controllable' risk factor for breast cancer

- Framing alcohol reduction in terms of gains.

- Personalised feedback on alcohol intake & levels of risks

- Tools to increasing confidence and self-efficacy
  - Alcohol numeracy: alcohol units
  - Tips on how to maintain low-risk drinking or reduce alcohol consumption.

Personalised feedback

- AUDIT-C used to screen AUD
- AUDIT-C items are used to compute an estimate of weekly alcohol consumption (EWAC) in units
- Risk stratification
- Personalised advice
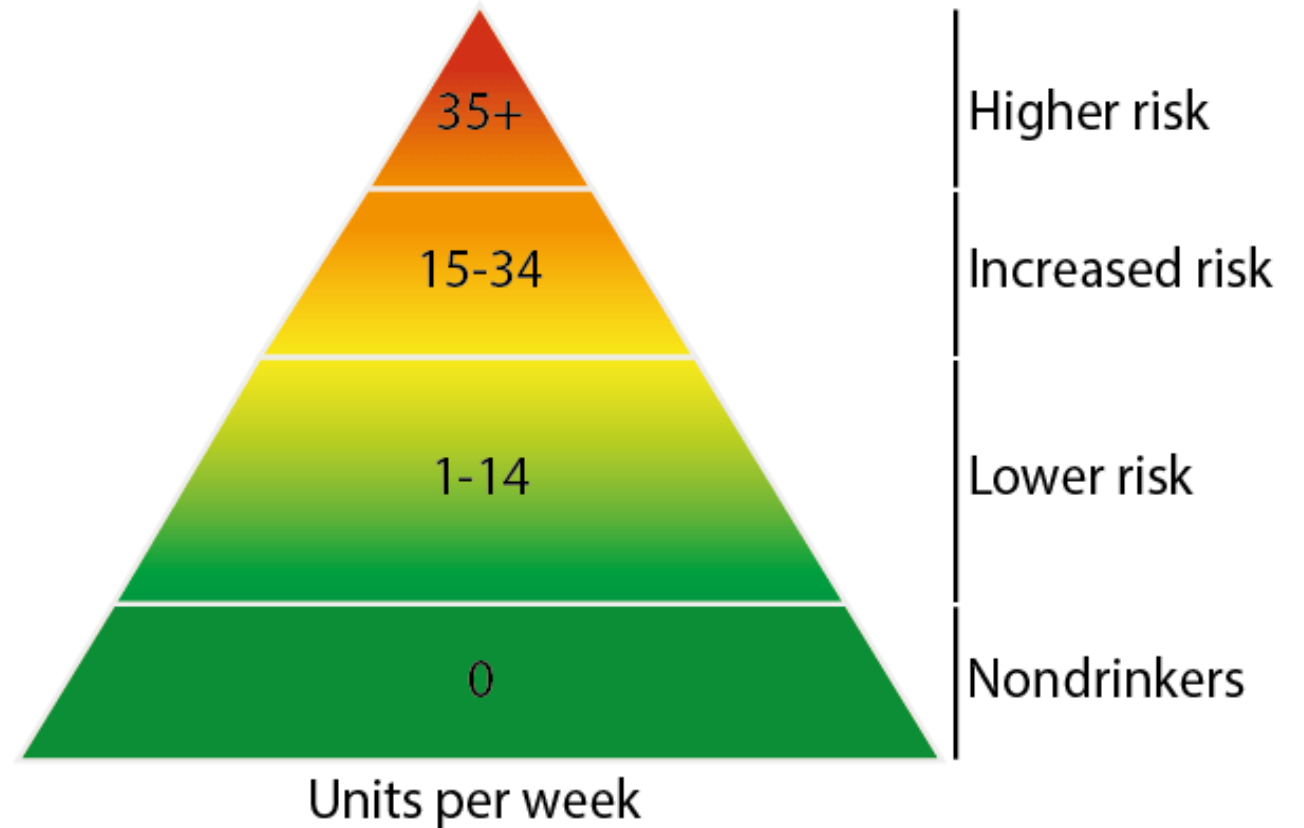
Personalised advice

Units per week

0   14   24   35

AUDIT-C ≥ 5

No   Yes

Lower risk
Drinking little or no alcohol brings many health benefits, including keeping risks of breast cancer low.

Your answers suggest that although you rarely drink alcohol, you drink *more than 5 units (for instance, half a bottle of wine)* when you do.

You could significantly reduce your risk of harm on the days you drink by having no more than 5 units of alcohol.

You may be drinking close to 14 units of alcohol per week.

You could reduce your chances of disease and improve your future health by making a few changes to your drinking.

You could reduce your chances of disease and improve your future health by making a few changes to your drinking.
- Reducing your alcohol intake by as little as 6 units (3 glasses of wine) a week to reduce your risks to lower levels.
- Drinking less alcohol reduces your risk of developing conditions such as cancers, heart or liver disease.

You could reduce your chances of disease and improve your future health by making a few changes to your drinking.
- Reducing your alcohol intake will reduce your chances of having conditions such as cancers, heart or liver disease, or alcohol dependence.
- The lower the amount of alcohol you drink, the lower your chances are to have these conditions.
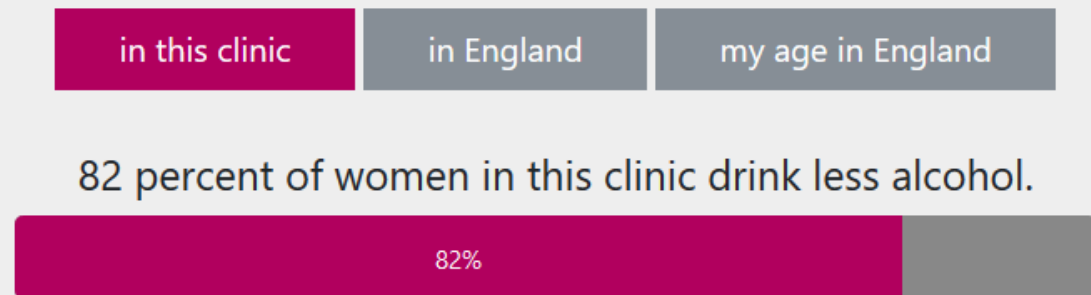
Your Alcohol Intake

According to the data you just provided, you may be drinking 22 units of alcohol per week, on average.

You could reduce your chances of disease and improve your future health by making a few changes to your drinking.
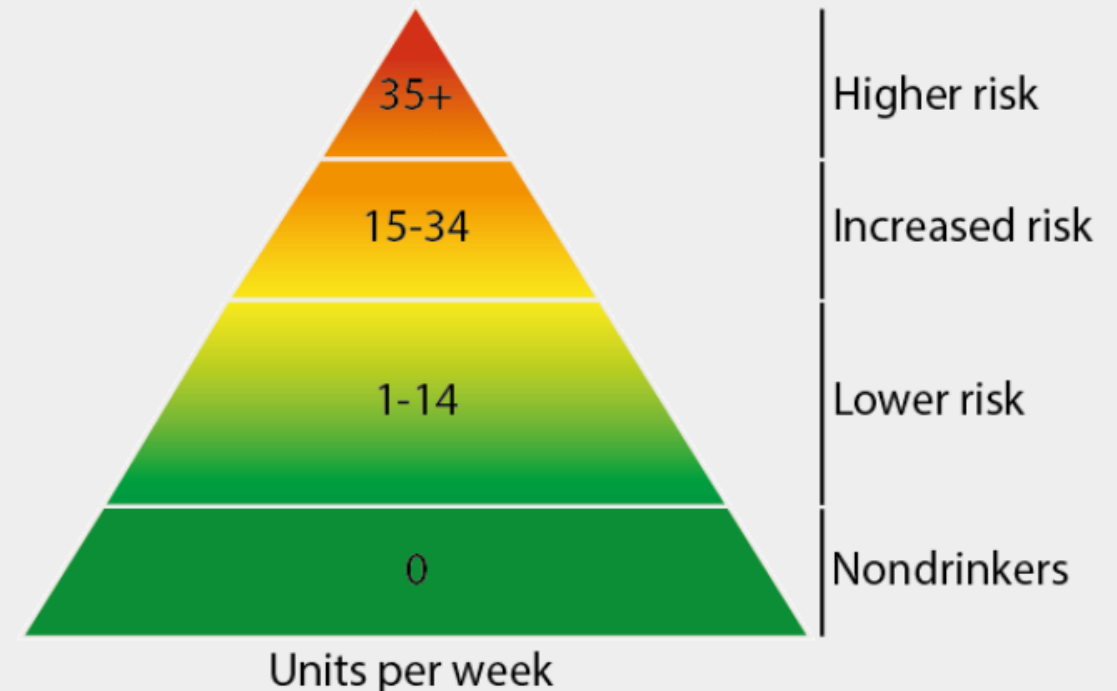
- Reducing your alcohol intake by as little as 8 units per week (3.0 standard 175ml glasses of wine) would reduce your risks to lower levels.
- Drinking less alcohol reduces your risk of developing conditions such as cancers, heart or liver disease.

What do you drink compared to others?

Find out below how this compares to other women:

| in this clinic | in England | my age in England |

82 percent of women in this clinic drink less alcohol.

82%

Risks of alcohol-related harm

35+ — Higher risk

15-34 — Increased risk

1-14 — Lower risk

0 — Nondrinkers

Units per week

Breast cancer and alcohol
Alcohol is responsible for 7–15% of breast cancers.

What's in my drink?
Find out how many units of alcohol, and calories are in common beverages.

Maintaining lower-risk drinking
Practical tips to keep your alcohol intake low.

Breast cancer and weight
Even a 5% reduction in body weight cuts risks of cancer.

Staying active
At the gym, or simply walking or cycling to work: how you benefit from regular exercise.

A healthy diet
What you eat is important for your weight and future health.

Breast cancer myths
There are so many myths about online and in the newspapers. Test your knowledge in a quick quiz.

Improving my health and wellbeing
There is a surprising range of ways your health and wellbeing benefit from reducing alcohol intake.

Smoking
There are many ways to stop, cut down, or switch to patches or electronic cigs.

Methods

Primary aims

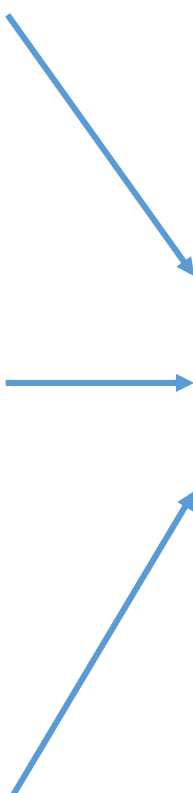## 1. Acceptability + 'doing no harm'

- Testing effect on women, making them feel judged/blamed/scared

- Rejection health promotion altogether (e.g. fear control)

2. Feasibility/Usability

- Understanding and processing health messages

- Personalisation

- What is useful, motivating

- What is off-putting, frustrating or pointless

- Maximising engagement and opportunities for personalisation.

Secondary aim

Causal diagram of the intervention
(confounders/mediators/moderators)

Mixed methods design

Circ. 1,300 women involved in co-producing prototype

1. Pilot survey in clinics (4 months, n=877)
   - Testing procedures in waiting rooms
   - Recruiting participants for focus groups and interviews

2. User testing + interview (think aloud, 'teach me back') (2 months, n=149)

3. Independent testing + electronic tracking (3 months, n=236)

All from Princess Anne Hospital, Southampton University Hospital NHS FT

Inclusion criteria

(1) Female subjects
(2) Aged 18 years and over
(3) Sufficient English to read and give informed consent
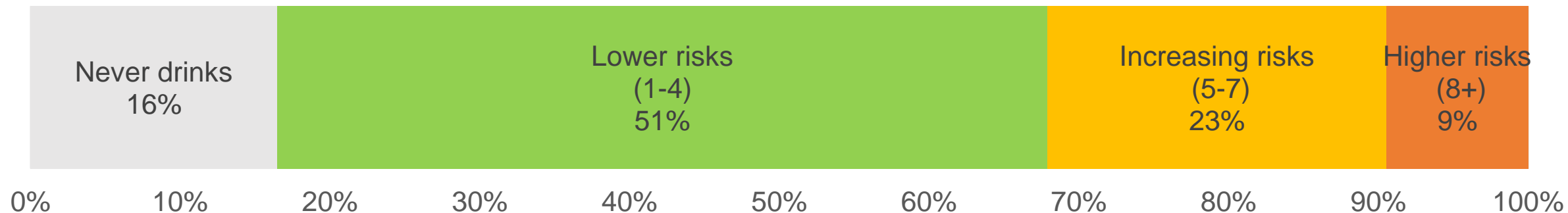(4) Capable of giving informed consent
(5) Able to use a tablet computer.

Results (1)
Cross-section profile

Alcohol attitudes

AUDIT-C risk level

Never drinks 16%	Lower risks (1-4) 51%	Increasing risks (5-7) 23%	Higher risks (8+) 9%

0%   10%   20%   30%   40%   50%   60%   70%   80%   90%   100%

Readiness to change ruler

I never think about drinking less 51%		es I think king less 18%	I have decided to drink less 13%	I am already trying to cut back on my drinking 18%

Not a mediator

0%   10%   20%   30%   40%   50%   60%   70%   80%   90%   100%
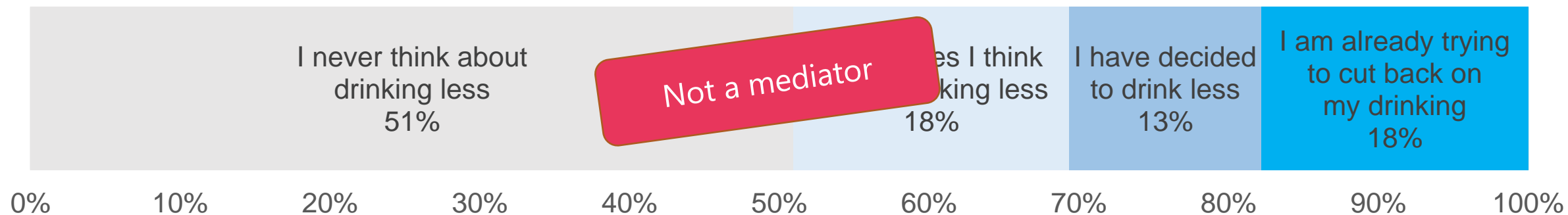
Results (2)
Processing health information

Processing alcohol information (1) Personalised feedback

Your answers suggest you drink X units per week on average

I know this/this looks sensible

Oh gosh, I didn't know!

This is wrong!

Scary, I don't want to know anything about it!

?

Happy with my drinking as is

It does make you think!

I want to drink less
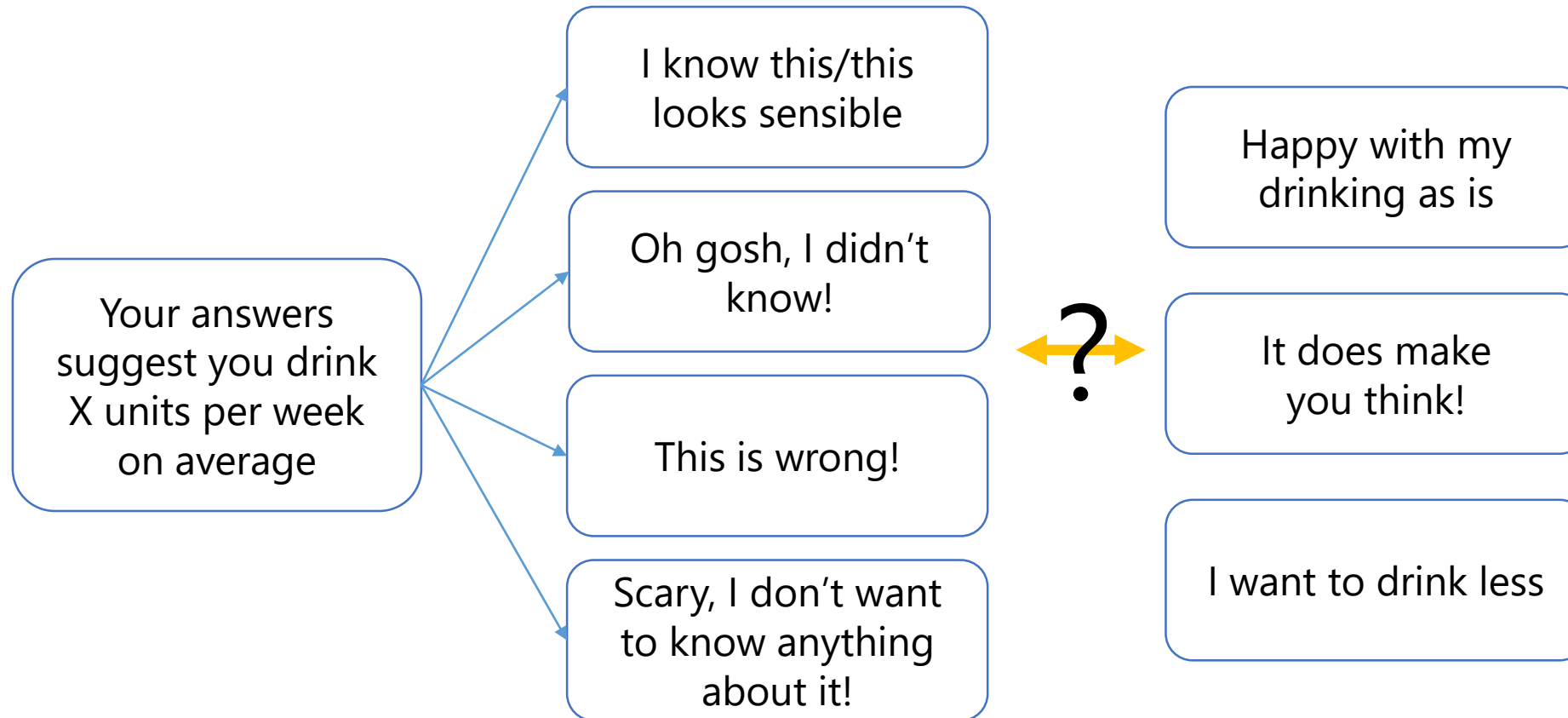
Credibility of alcohol estimate (n=138)

Perception of the EWAC

| Agrees 18% | Unsure 4% | Disagrees 14% | No comment 64% |

0%   10%   20%   30%   40%   50%   60%   70%   80%   90%   100%
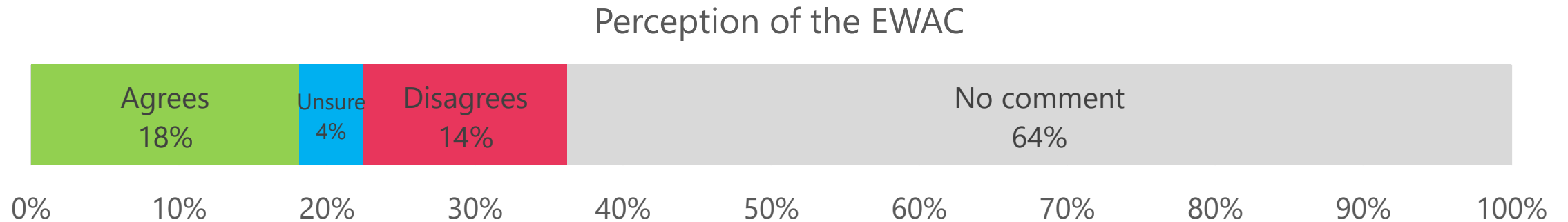
- In total, 14 (10%) were unclear about units or the AUDIT questions.
- Validation data shows EWAC is probably within +/- 2 units for at least half of people
- Some women who find it accurate are unsure where the estimate comes from… Credibility is a matter of transparency.
  "This is a very strange calculation. I am in the lower drinking range."

Reaction to the alcohol estimate (n=138)

- Out of 19 who doubted their estimate, many referred to the pyramid or the calculator to sense-check, or tried again.

- Seven reacted negatively
  - "It told me I'm an alcoholic. This feedback is quite extreme."
  - "I feel really uncomfortable with that feedback."
  - "This doesn't make sense. According to this you're a drunkard."
  - "This cannot be right".

- It was difficult to work out whether the questions, the units, or the calibration was a problem

- Undergoing validation suggest some severe outliers in the borderline 14 units/AUDIT-C ~ 5 region.

Processing alcohol information (2) Association with breast cancer
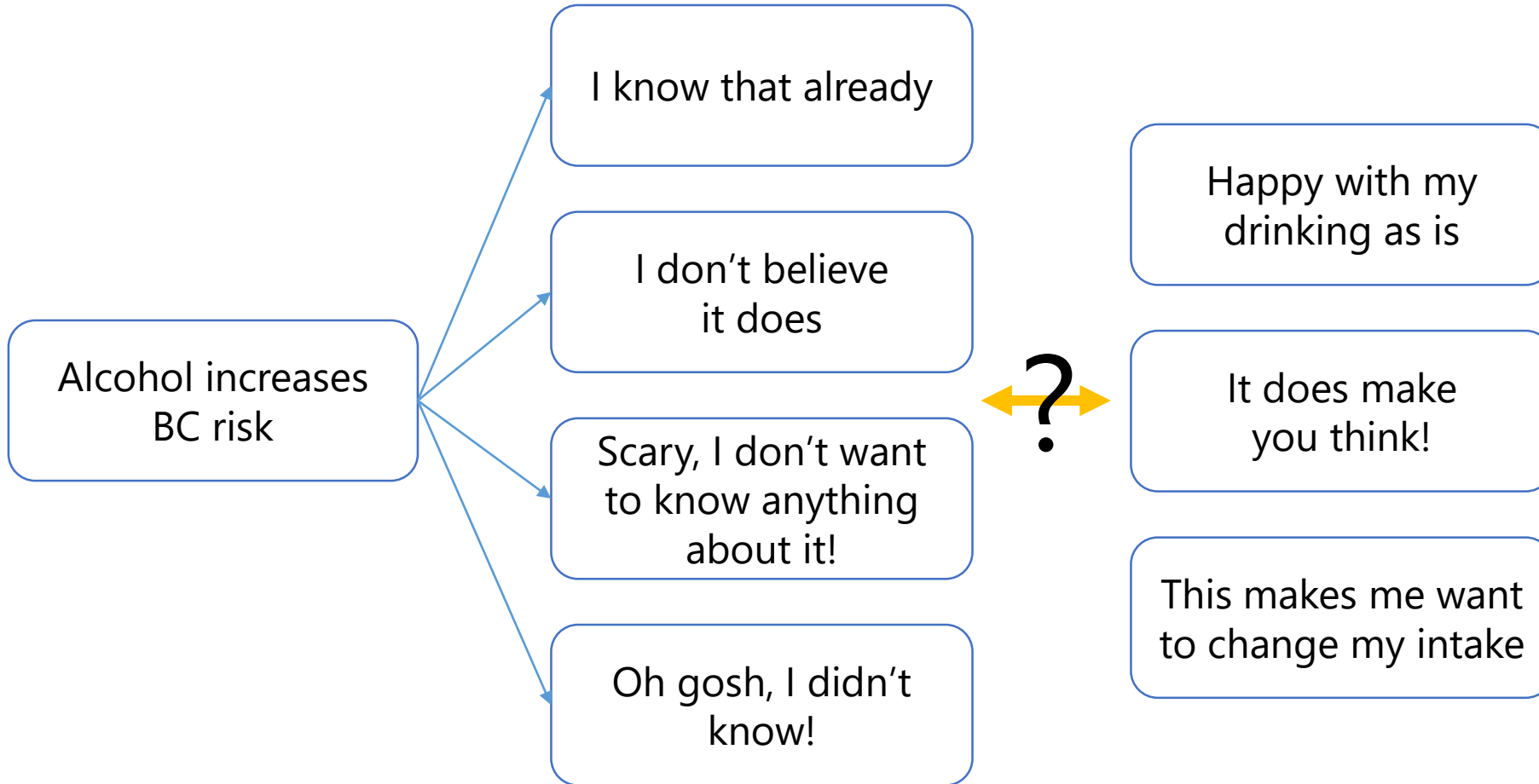
Reactions

"They don't tell you these things, about what you do to your body when you take alcohol. This is very important to me so thank you for sharing."

"This is scaring the crap out of me! I had no idea, I'm never drinking again. That's crazy, I never knew it was linked at all."

"I guess you don't think do you. You think about weight and smoking, but not really alcohol. That's really something, you really don't hear about it. I never would have thought about alcohol."

"Wow that's really quite an effect"

Credibility

- Three women reported the effect was small.

- Five women challenged the link between alcohol and breast cancer.
    - "So why do nuns get cancer then? They don't drink so it can't just be that."
    - "There have been a lot of studies which tell you alcohol is good for you, all the other health benefits which you don't talk about in this."

- Trusted source?

    "Easy to ignore these stats as they aren't reliable, I don't know whether this is really true. I guess you can trust the NHS though, and I know the name [of Breast Cancer Now]."

    "I would definitely trust what I would read in this clinic, it makes sense."

- Explanation of pathogenesis gives face value to some

    "Basic causes are good to include, why it is that way. This is good to explain what happens as it all falls into place when you know this."

Motivating

- "Nothing uncomfortable in this, only the truth. You've got it all covered in this I think, all the things drilled into us. Nothing preachy, just good suggestions. I would probably share this with my friends and family because it tells it in a way that people can understand."

- "I think the feedback and the tiles are very useful, it's worded in a really nice way so it explains it well. It would help [relatives] to be able to see this feedback part."

- "Having that triangle helps, that gradient really makes you think about it. It makes you want to stop drinking altogether, doesn't it?"

Avoidance/Fear control

- "Those pages [breast cancer related] are too scary. Especially when you're waiting here, already overloaded. You've exhausted the internet to death."

- "It just tells you you've got cancer because you drink too much or you're overweight. I already know about my drink and weight so it's not really what I want to look at. I suppose for some people who are in denial it's a bit of an eye opener."

- "I don't like looking at the cancery ones [pages], it scares me"

Results (3)
Actual use

Tracking

Page	Visitors	Visits	Rate	Mean time per visitor (sec)
Feedback	384	579	1.5	84
Myth buster	140	206	1.5	65
Eat well	133	215	1.6	50
BC & alcohol	121	198	1.6	54
Staying active	108	164	1.5	78
Weight	106	169	1.6	60
What's in your drink	102	227	2.2	141
Improve your health	91	142	1.6	207
Cutting down/top tips	87	130	1.5	43
Smoking	57	85	1.5	18
Modifiable risk factors	24	44	1.8	115
Breast aware	14	18	1.3	110
Email me this	3	3	1.0	0

Exposure to alcohol content beyond feedback

Out of 384 women
- Over half (n=216) visited at least one of the four alcohol-specific pages
- 15% visited two of those
- 8% visited three of those
- None visited all four

Mean total time 2.3 min
(excluding outliers)
Median 1.3 min

Total time on alcohol-specific page per visitor

Frequency (y-axis)

Total time per visitor (minutes) (x-axis)
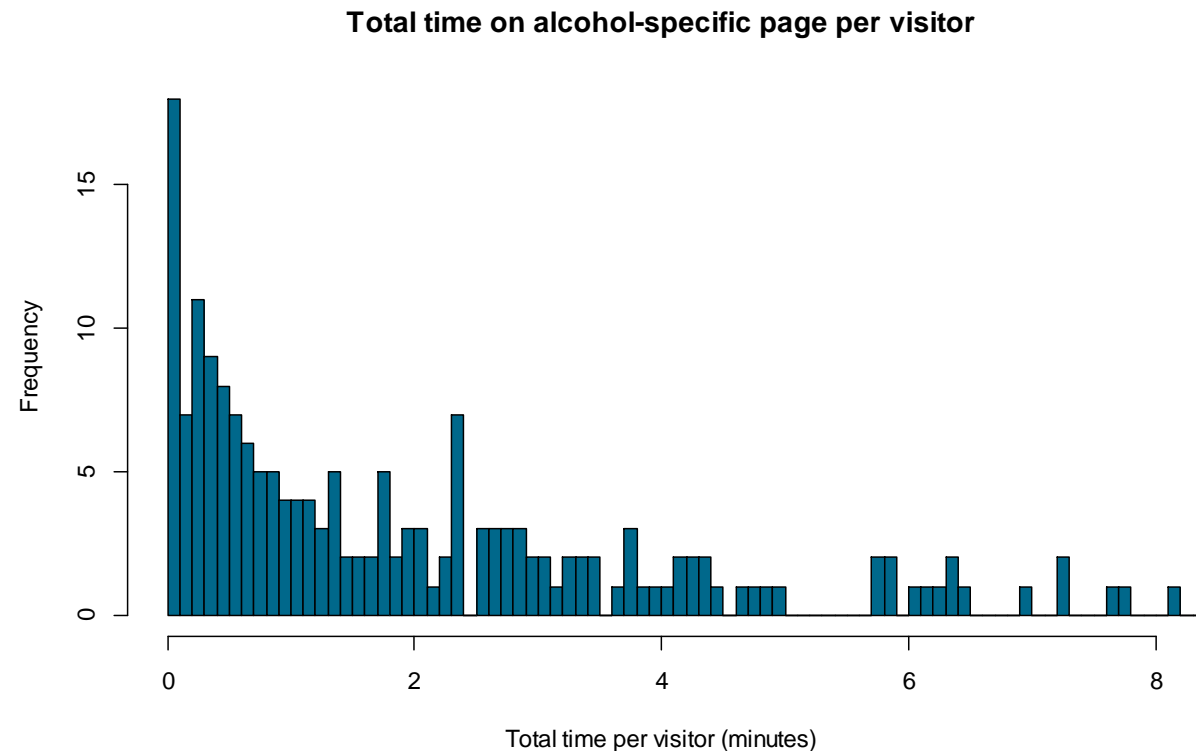
Who browses the alcohol content?

- Inconclusive on AUDIT-C risk levels (on limited data).
- Education level; Urban/Rural: null effect.
- Primary BC survivors: half as likely (p = 0.03)
- Deprivation: strong evidence of an antigradient:
  for each IMD decile OR = 1.2 (p = 0.001)

First signs of confounding, potentially moderation.

Discussion

Causal inference
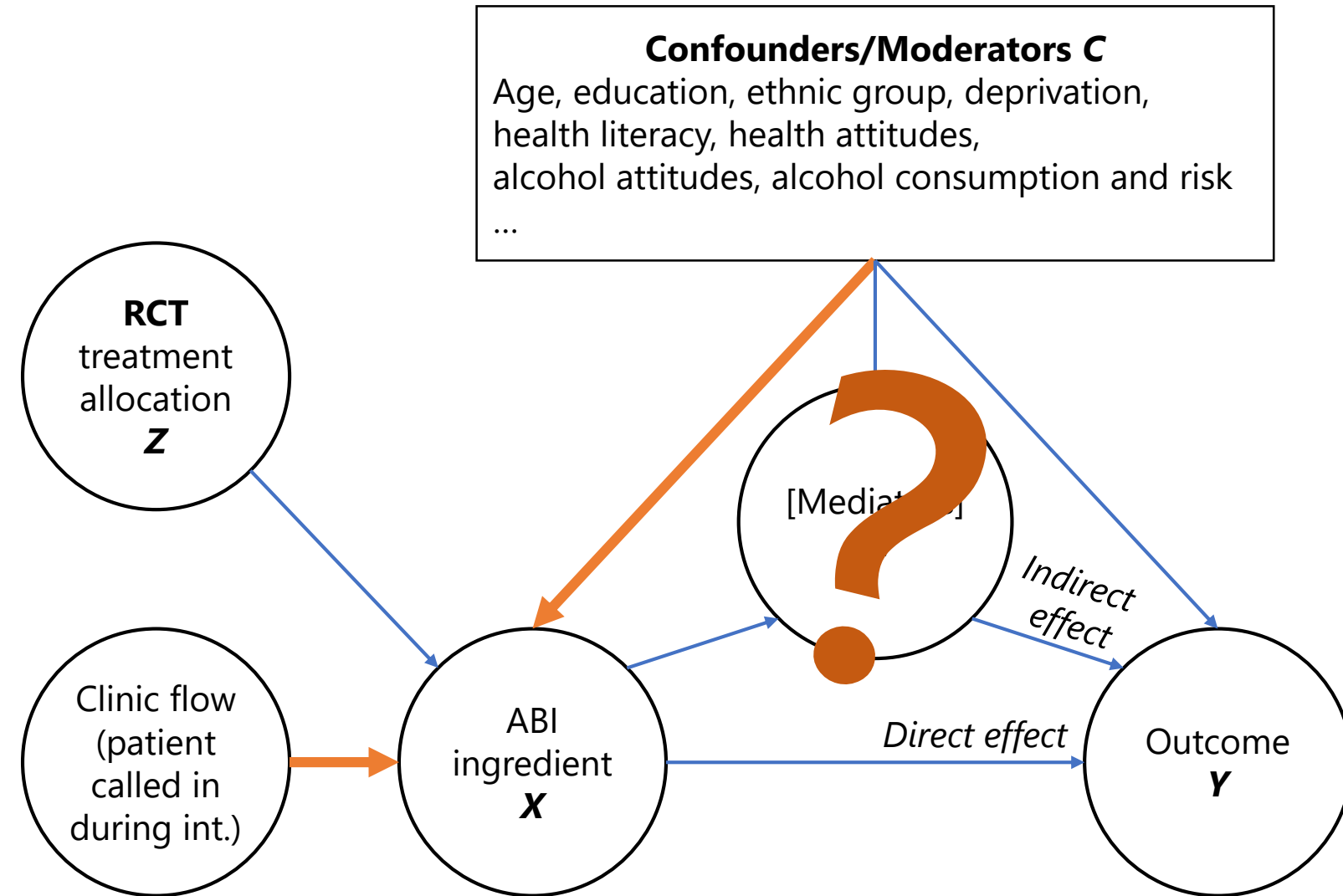
- **Pragmatic effectiveness**
  'Intention to treat'
  Effect of **assigning** a treatment
- **Efficacy**
  'Per protocol'
  Effect of **receiving** treatment

-> ABI components may be very efficacious yet have poor effect because not accessed.

Confounders/Moderators C
Age, education, ethnic group, deprivation,
health literacy, health attitudes,
alcohol attitudes, alcohol consumption and risk
...

RCT treatment allocation Z

Clinic flow (patient called in during int.)

ABI ingredient X

[Mediator]

Indirect effect

Direct effect

Outcome Y

General opinion of the intervention

- Women support the principle and the content.
- Average rating of 4.4/5.
- Simple, factual. No jargon. Neutral language is popular.
- Multi risk factor is a good thing, not a distraction from alcohol.
- Graphs and interactive design add value and capture interest.
- Desire for more tailoring to personal circumstances (e.g. conditions)
- Always some women feeling they are being call an alcoholic.
- Need to maximise exposure to alcohol content of the app and monitor self-selection (analytics).

Acknowledgements

Criteria for progression to RCT

A priori agreed progression criteria	Study results
70% women approached agree to take part.	76% agreed to take part (N=406).
60% engage with the intervention (e.g. complete data submission).	96% completed data submission.
30% use optional contents and modules (to assist behaviour change).	95% clicked on at least one optional page (56% at least one alcohol page).
80% of participants describe themselves as 'satisfied' with the prototype.	100% of those who gave ratings (91% of those who started) rated the prototype of ≥ 3/5 (average score of 4.43/5).