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First steps to smoke-free:

using air quality feedback to facilitate smoke-free homes through the NHS Lanarkshire First Steps programme

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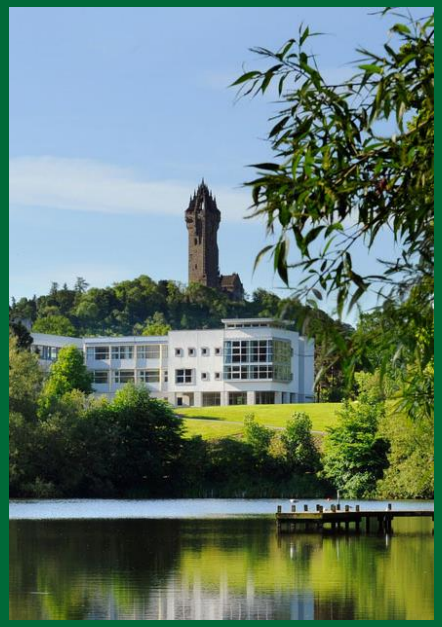
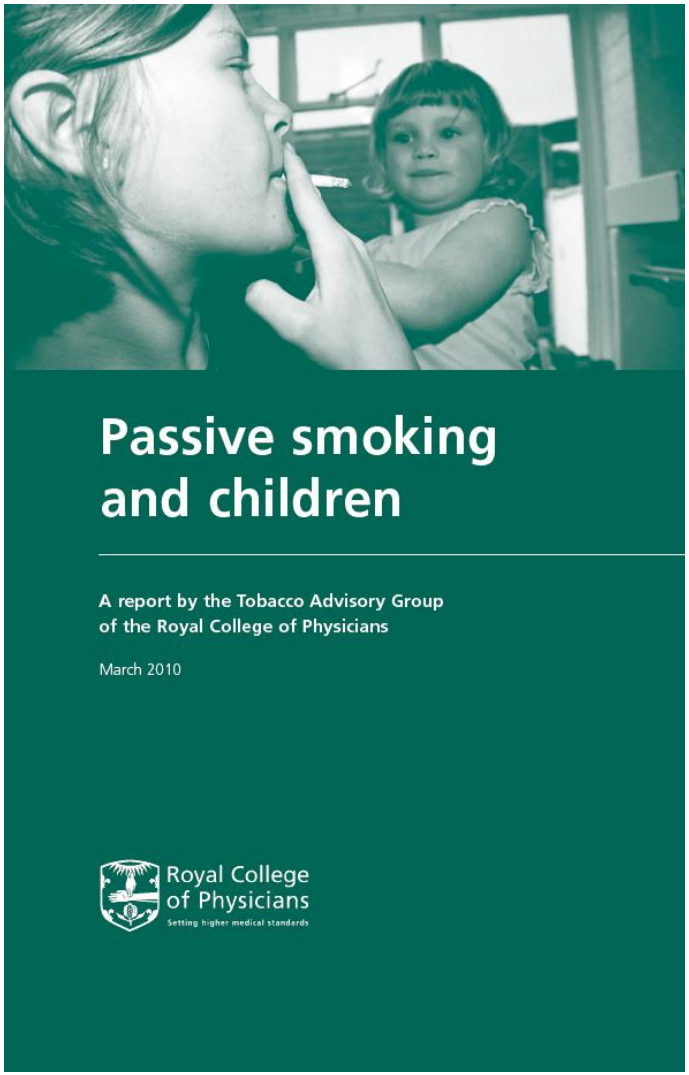


Smoke-free Homes Network Meeting
21 January 2019

BE THE DIFFERENCE

Why are smoke-free homes important?

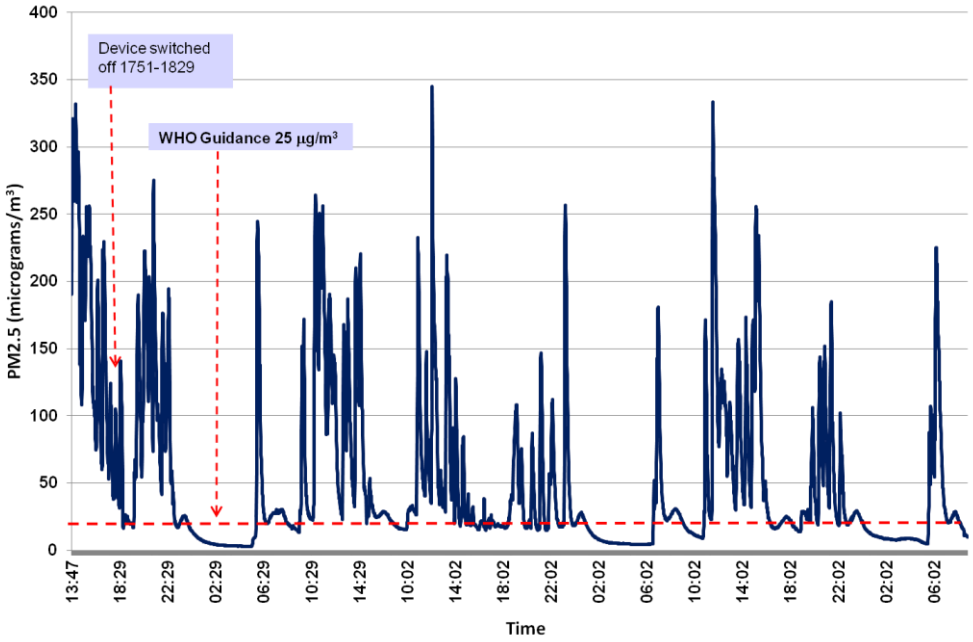
- As a result of SHS exposure related ill-health:
  - 800* children per day see a doctor
  - 25* children per day admitted to hospital
- A smoke-free home makes successful quitting **x5** more likely for smokers
- Reduced risk of child becoming an adult smoker...
  - Children of non-smoking parents 70% less likely to become smokers than children of smoking parents
- Current estimates are that 50,000 children in Scotland are still exposed to SHS at home



* UK figures – from RCP March 2010 report

First Steps to Smoke-Free project (FS2SF)

- We use personalised feedback to change many types of behaviour (speeding, cholesterol, weight)
- Can we use measurement of household air quality to encourage parents to make their homes smoke-free?



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FS2SF study design

first steps

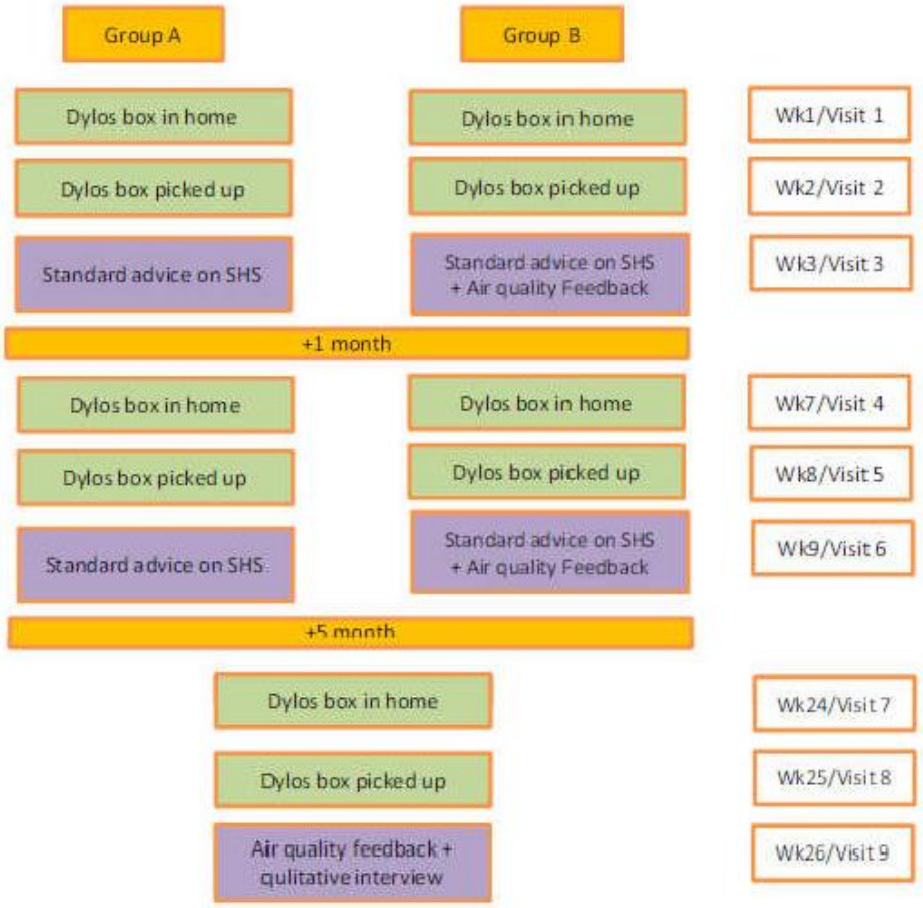
- Teamed up with NHS Lanarkshire First Steps Programme

- Does providing air quality feedback help people make their homes smoke-free?
- Randomised trial: two groups (A+B)
- Group A receive standard NHS advice about SHS
- Group B receive this advice + personalised feedback about SHS levels

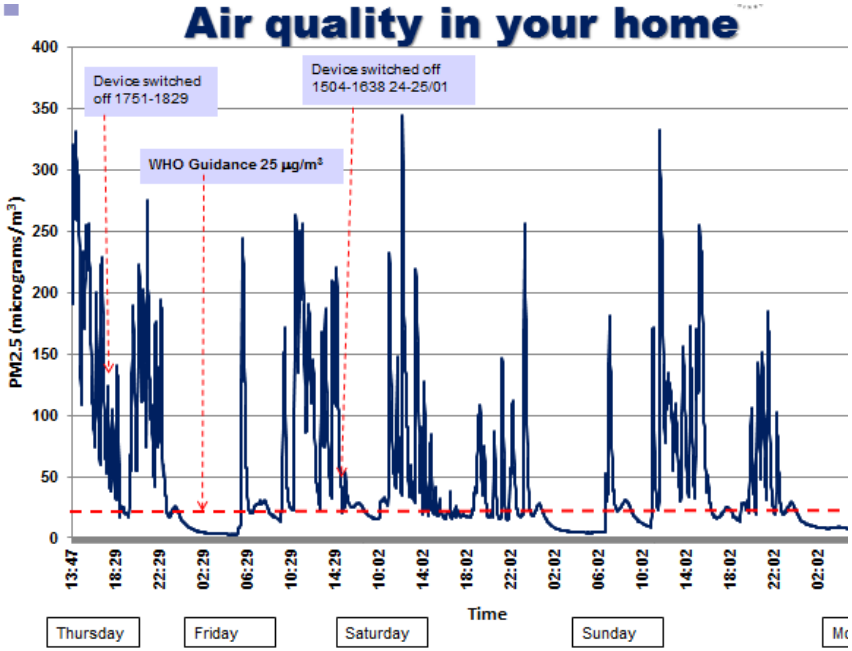
- SHS levels measured by a low-cost laser particle counter (Dylos DC1700) left in each home for 4-7 days
- Repeat measurements at +1 and +6 months later

What we did

- 120 first-time mums recruited (70% response rate) (62A+58B)
- 117 homes took part in baseline
- 102 took part @1 month follow-up
- 78 took part @6 month follow-up
- 21 qualitative interviews



Feedback – what did it look like?



Particulate matter levels in your home

- Total measurement time in your home = 4 days, 2 hours, 49 mins
- Average value = **54** µg/m^3

  (more than **two times** the World Health Organisation guidance limit of **25** µg/m^3)
- Maximum level recorded = **345** µg/m^3
- Total time that your air quality is above the WHO guidance value = **50%**
- Total time in your house when particle levels were above the average found in Scottish bars before they became smoke-free = **2%**

Fine particle levels in your home are **above** the WHO guidance limit for **about 12 hours each day** and suggest frequent smoking in your home leads to **poor air quality**

Second-hand smoke

Breathing in second-hand tobacco smoke has been shown to have many harmful effects on health. These include:

- An **increase in the risk** of heart attack, stroke and lung cancer for non-smokers
- **Children are particularly susceptible** to the damaging effects of breathing in smoke because they have smaller airways, they breathe faster and their immune systems are still developing
- Children exposed to smoke are **more likely to have chest infections** and suffer from wheezing and coughing
- Children living in a home where one parent smokes are 50% **more likely to have middle-ear infections**
- Approximately **9,500 children in the UK** are **admitted to hospital** every year because of illness linked to breathing in tobacco smoke
- Children who grow up around smokers are **three times** more likely to become a smoker themselves

What can you do?

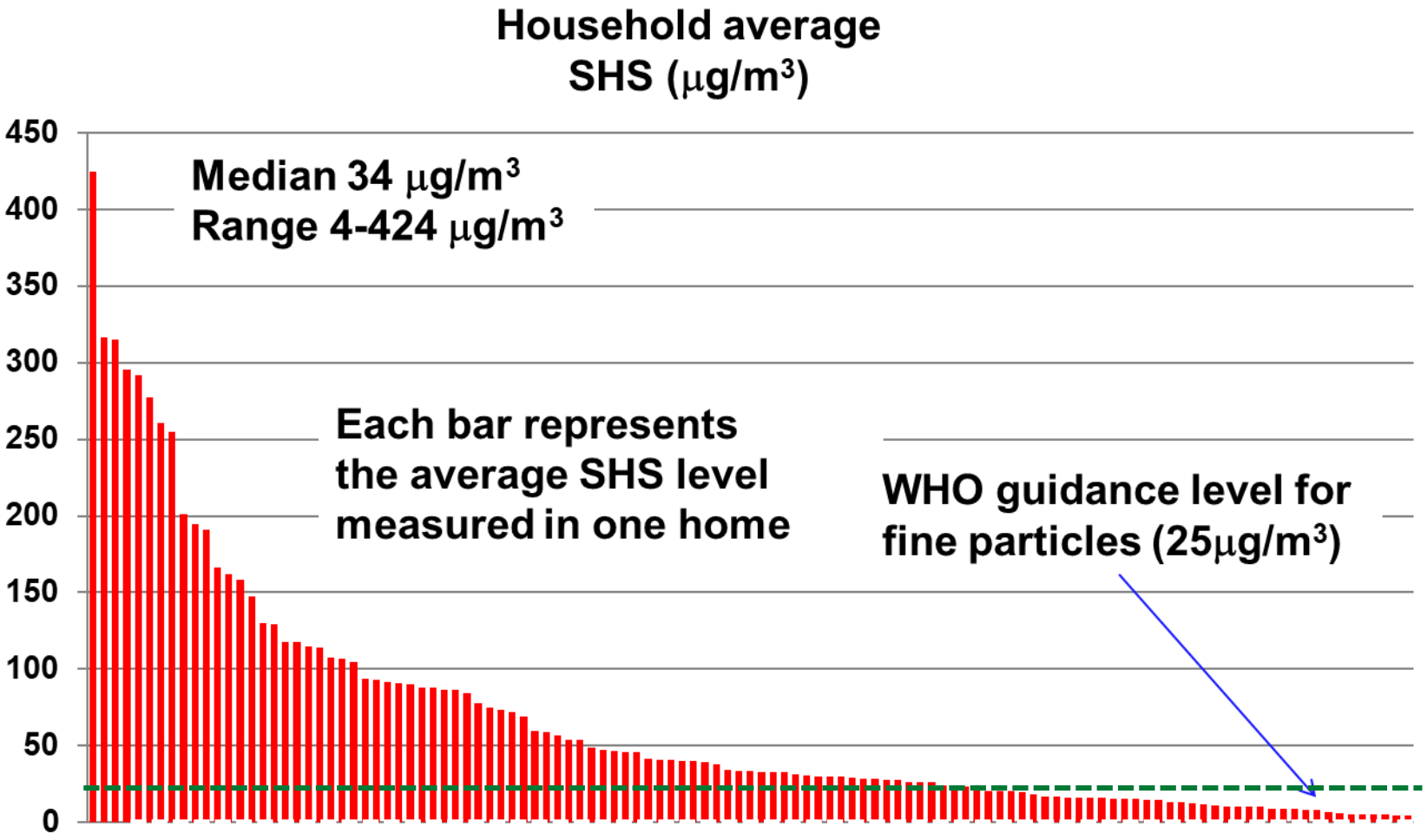
- Set **a date** to make your home and car smoke-free
- **Discuss your plans** to go smoke-free with your family and friends and ask for their support
- **Remove ashtrays** from your home/car – put them outside or at the backdoor. Put an umbrella at the door for rainy days
- Make some **no-smoking signs** with your kids and put them in your home and car to remind everyone
- Make a list of things you can do to **distract yourself** when you feel like having a smoke
- Think about **quitting** – call 0500 600 332 for local NHS help

Participant characteristics

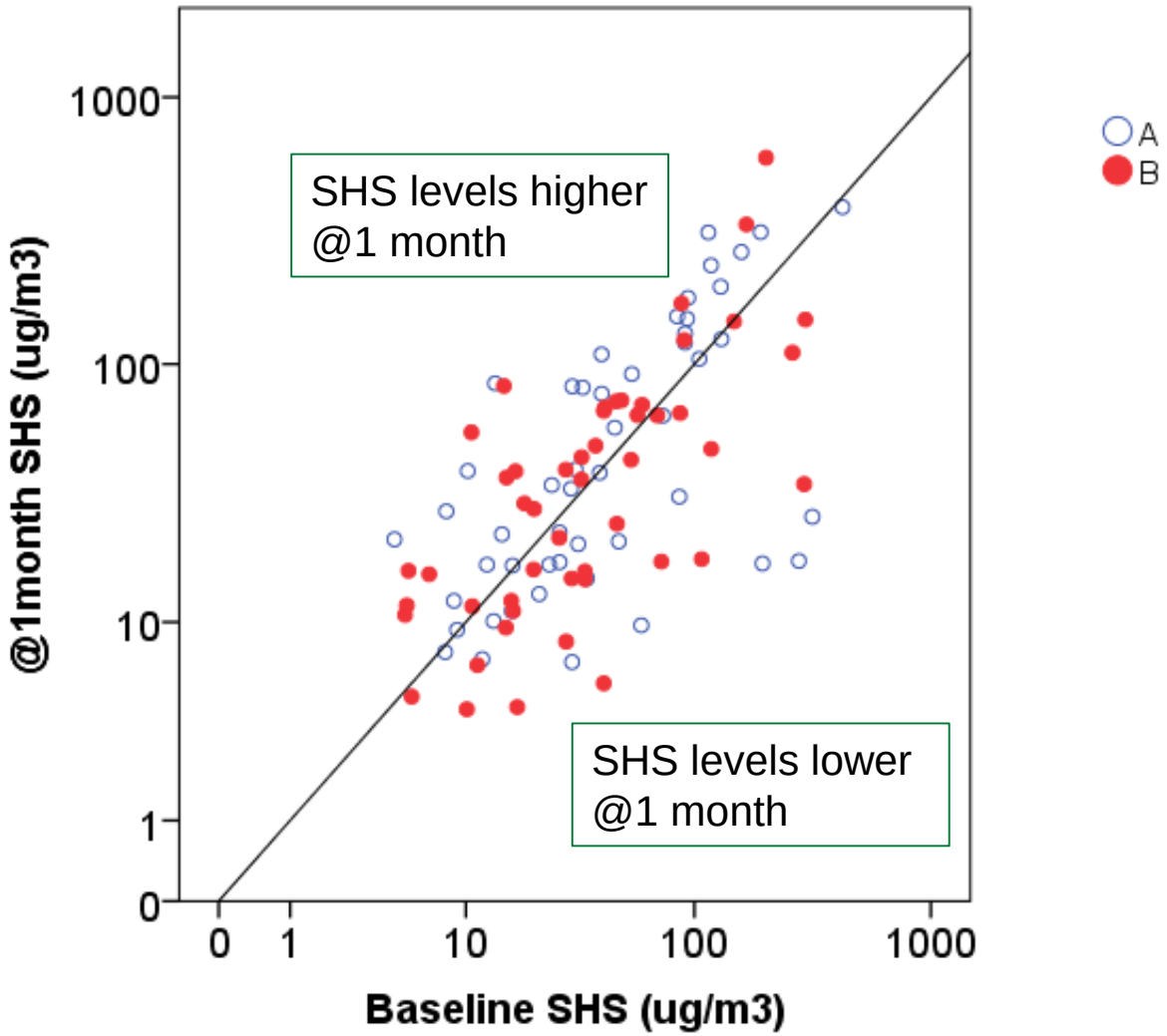
	Group A (n=59)	Group B (n=58)
Age (IQR)	21 (18-22)	20 (19-23)
SIMD decile (IQR)	2 (1-4)	2 (1-4)
Ante/post natal	39%/61%	17%/83%
Housing	68% flat	71% flat
Garden space	75%	64%

- Mean measurement duration 5.3 days at each visit
- Total measurement data: 2,278,614 minutes

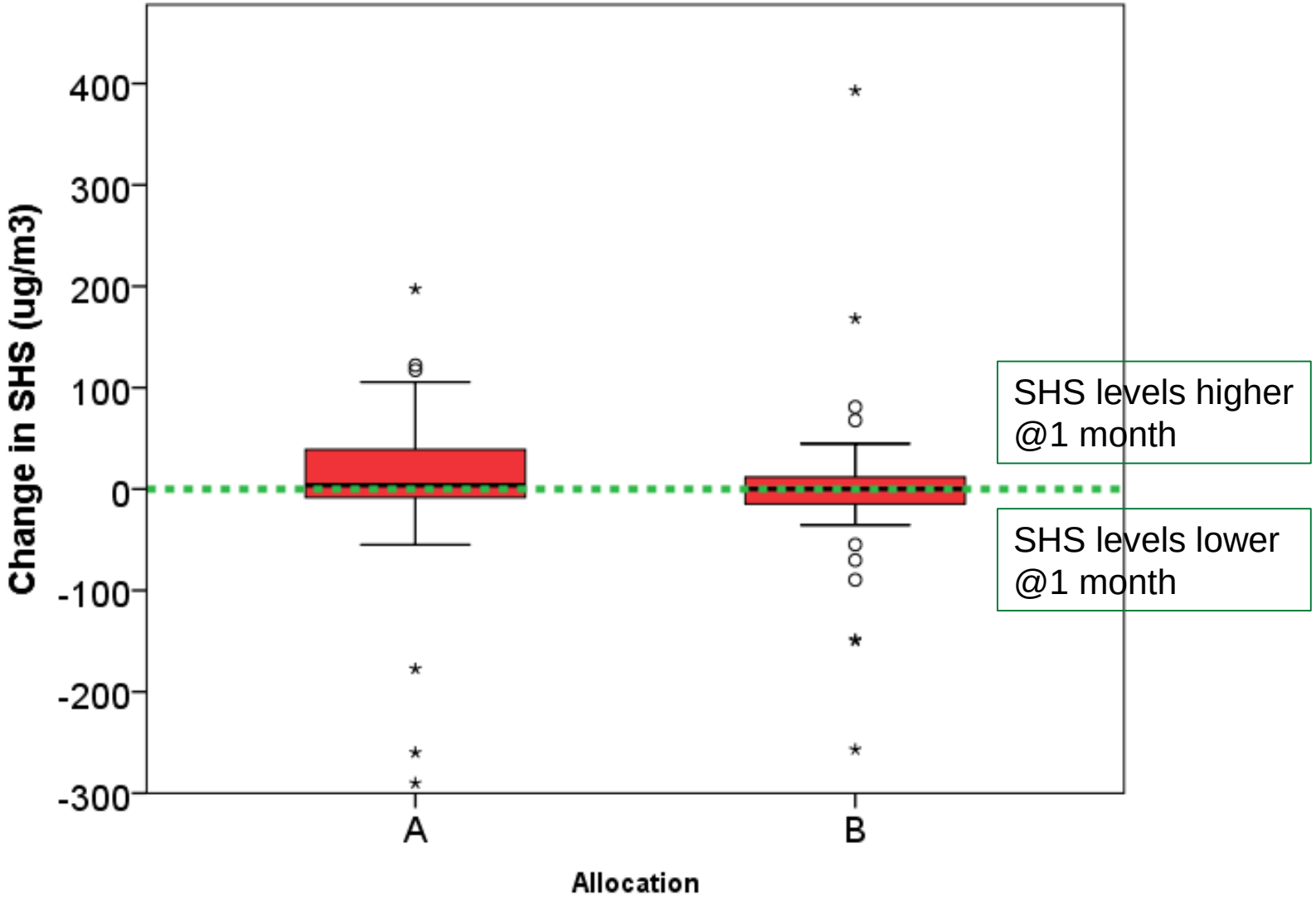
Results – baseline measurements



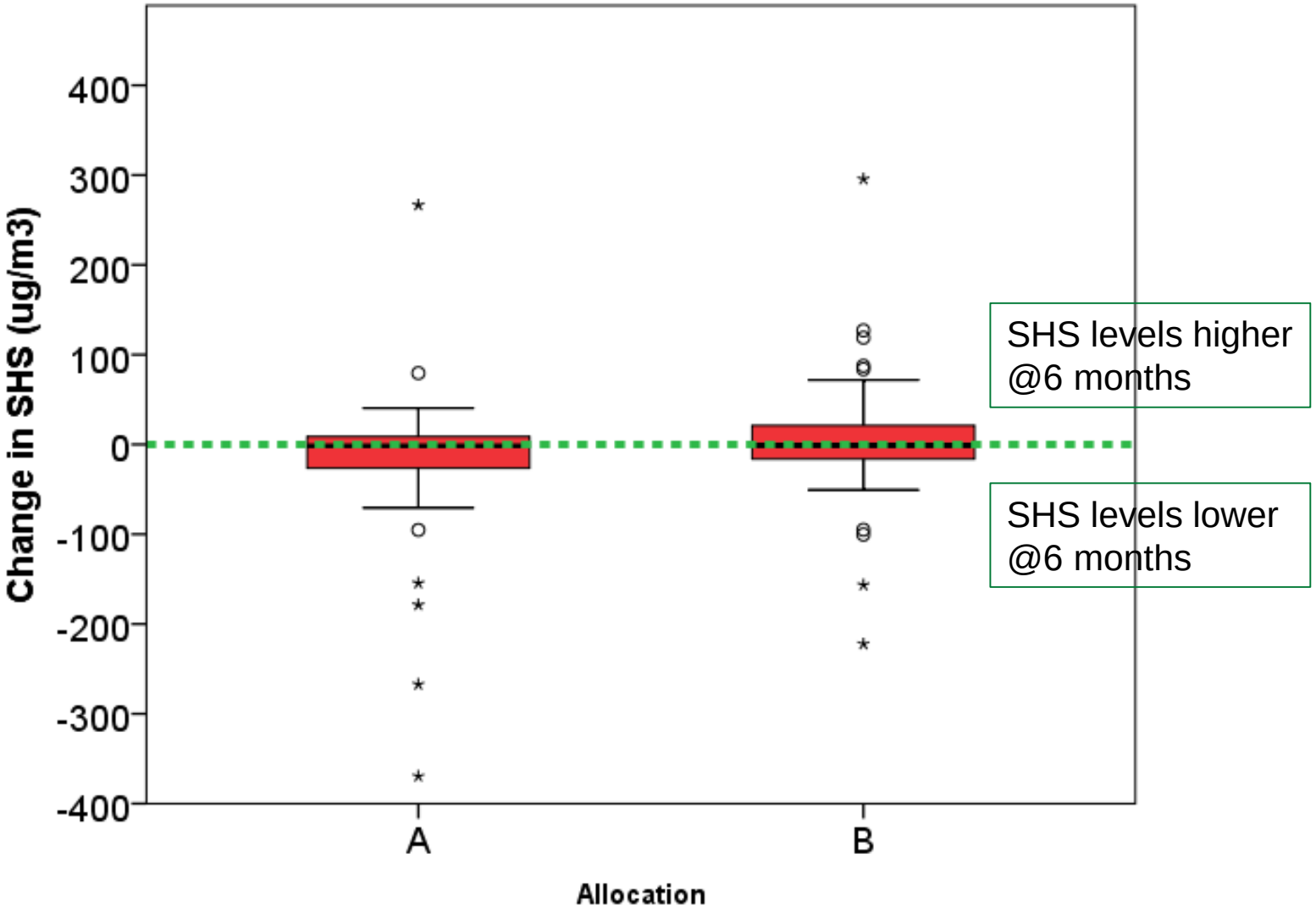
Results – how did SHS levels change?



Differences between groups @ 1 month



Differences between groups @ 6 months



Discussion

- Our results are contrary to previous studies using air quality feedback
- REFRESH intervention -31% reduction in SHS concentrations
- A similar study in Nottingham has indicated -35% reduction

- Why the difference? The qualitative data…

- COM-B model (Michie et al., 2011)

- The qualitative analysis of the 16 Group B interviews indicates that the enhanced intervention had the capacity to increase both mothers' capability to change their smoking behaviour in the home, and their motivation to act

Interventions in the real world...

However, taking significant action was often constrained by mothers' limited, and often changing, social and physical opportunities...

Discussion

- The enhanced intervention increased mothers' capability to change their smoking behaviour in the home, and their motivation to act. But when social and physical opportunities are limited, changing smoking behaviour in the home is less feasible.

- The evidence not sufficient to enable implementation of air quality feedback for this group of mothers

- Targeting parents who are at contemplative or preparative stages of change may be the way forward for this approach

Results published in open access high impact journal

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Using air-quality feedback to encourage disadvantaged parents to create a smoke-free home: Results from a randomised controlled trial

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ABSTRACT

Objective: To determine if low-cost air-quality monitors providing personalised feedback of household second-hand smoke (SHS) concentrations plus standard health service advice on SHS were more effective than standard advice in helping parents protect their child from SHS.
Design: A randomised controlled trial of a personalised intervention delivered to disadvantaged mothers who were exposed to SHS at home. Changes in household concentrations of fine Particulate Matter ($PM_{2.5}$) were the primary outcome.

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