Financial Incentives to help women stop smoking during pregnancy : a new trial

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Outline

- Background & Literature
- Examples from UK practice
- Methods
- Results
- Limitations
- Conclusions

Background

- Making healthy lifestyles an ‘easier’ option for people is a key theme in recent policy documents in a number of countries
- Many of the most effective policy levers (taxation, advertising bans, smokefree legislation) prohibit particular behaviours or make them more difficult
- Relatively few policy levers reward behaviour change

Financial Incentives

- Provide a tool to ‘frame’ the environment to guide people to make better choices
- Offer a payment (in cash or in kind) as a reward for behaviour change
- Have been used in a number of other areas of public health.
- Smoking cessation is one area where there is a relatively rapidly growing evidence-base for incentives

Earlier studies: Incentives for medication compliance

- Example of ‘simple’ behaviour change

Systematic review (Giuffrida and Torgerson, 1997):

- 11 trials (all U.S)
- Incentives varied from $5 cash to gifts worth $1,000
- 10 of 11 trials found a positive effect
- Range of interventions i.e. dental care, immunisation, screening.

Earlier studies: Incentives for weight loss

- Example of ‘complex’ behaviour change.

  Systematic review and meta-analysis (Paul-Ebhohinhen and Avenell, 2007):
- 9 studies (8 U.S. 1 Canada)
- Incentives varied from 0.2% to 10.2% of disposable income (some deposit contracts) all as adjuvant to treatment
- Small incentives made no difference to weight loss at 12 months
- Larger incentives made some (but very small) change to weight loss at 12 months

Incentives for smoking cessation

- Cochrane review of competitions and incentives for smoking cessation (Cahill and Perera, 2011 – currently being updated)
- 19 trials included
- No significant effect beyond 6 months except in one study (Volpp et al, 2009)

Cochrane review conclusions

- Incentives and competitions do not generally appear to enhance long-term cessation rates. Early success tended to dissipate when the rewards were no longer offered, and the normal relapse pattern re-established itself.
- The only trial to achieve sustained success rates beyond the reward schedule concentrated its resources into substantial cash payments for abstinence rather than into running its own smoking cessation programme. Such an approach is feasible only where independently-funded smoking cessation programmes are already established.
- Rewarding participation in contests and cessation programmes may have potential to deliver higher absolute numbers of quitters.

Why only short term effects?

- Offering incentives may be an attractive means to increase the uptake of an intervention
- Once accessed, people may engage with the intervention in the short term
- In the longer term, however, they may have developed arguments for not complying, which may add to the likelihood that they will relapse before the incentive ends.
- Might incentives appeal to less motivated clients?

More promising?

The only trial with non pregnant smokers to find longer term impact was conducted in the U.S.A in a workplace (Volpp et al, 2009). This trial provided incentives:

- After completing a smoking cessation treatment course: $100
- Following cotinine validated cessation within 6 months of study enrollment: $250
- Following cotinine validated cessation 6 months after that: $400

Table 2. Smoking-Cessation End Points According to Group Assignment.*

End Point	Control Group (N=442)	Incentive Group (N=436)	P Value
	no. (%)		
Enrollment in smoking-cessation program			
Participation in program	24 (5.4)	67 (15.4)	<0.001
Completion of program	11 (2.5)	47 (10.8)	<0.001
Smoking cessation at 3 or 6 mo			
Self-reported	62 (14.0)	102 (23.4)	<0.001
Confirmed	52 (11.8)	91 (20.9)	<0.001
No sample submitted	9 (2.0)	9 (2.1)	0.79
Positive sample submitted	1 (0.2)	2 (0.5)	0.56
Smoking cessation at 3 or 6 mo with continued abstinence through 9 or 12 mo			
Self-reported	27 (6.1)	66 (15.1)	0.002
Confirmed	22 (5.0)	64 (14.7)	<0.001
No sample submitted	5 (1.1)	2 (0.5)	0.06
Positive sample submitted	0	0	
Self-reported relapse	21 (4.8)	21 (4.8)	0.96
Continued abstinence at 15 or 18 mo among participants who quit at 3 or 6 mo and remained abstinent through 9 or 12 mo			
Self-reported	17 (3.8)	47 (10.8)	<0.001
Confirmed	16 (3.6)	41 (9.4)	<0.001
No sample submitted	1 (0.2)	6 (1.4)	0.03
Positive sample submitted	0	0	
Self-reported relapse	3 (0.7)	12 (2.8)	0.02

* Smoking cessation was confirmed by means of a negative result on a cotinine test.

With pregnant smokers

- Cochrane review (Lumley et al, 2009, then updated 2014)
- Examined the effectiveness of smoking cessation interventions in pregnancy
- Incentives paid to pregnant women to promote smoking cessation were found to be significantly more effective than other intervention strategies [RR 0.76, 95% CI 0.71 to 0.81]

With pregnant smokers

- However, only 4 trials* of incentives were included in the 2009 Cochrane review
- All were conducted in the USA
- Sample across the 4 trials was 1,285 women
- More recent meta-analysis of 3 of these trials** found incentives to be effective, giving an odds ratio for smoking in later pregnancy of 0.73 [95% CI 0.66 to 0.82].

*Sexton et al, 1984, Donatelle et al, 2000, Higgins et al, 2004, Heil et al, 2008

** Bauld and Coleman, 2009

Why is smoking cessation in pregnancy so important (UK figures)?

- **> 20%** of pregnant women smoke in Scotland - **< 1 in 20** quit
- Prevent **5000** miscarriages, **180** stillbirths, **110** infant deaths each year in UK as well as pre-term birth & low birth weight
- Lifelong benefits include reduced incidence asthma/adult CVD
- Children of smokers more likely to become smokers themselves
- Extra NHS pregnancy cost for smoker **(£100-£700)** & extra first year NHS cost for infant **(£150 - £300)**

Examples from practice: NHS Tayside

- Andrew Radley and colleagues developed GIUFB in Dundee in 2007 and then expanded the scheme to cover other parts of Tayside
- In its first year in Dundee, 55 women registered – a significant increase compared to the number of pregnant women who had accessed smoking cessation services the year before

- A qualitative study was conducted (Eadie and Macaskill, 2009) but no formal outcome evaluation
- NHS Tayside estimated the cost per quitter at around £1,700

Financial Benefits

Poverty line is 60% median income £145/wk (in 2008)

Lone parent, 2 children, on Income support = £182/wk

Add GIUFB	£12.50/wk
Cigarette money	£38.50/wk
	£51.00/wk

Source: Radley, 2008

BBC Sign in News

NEWS HEALTH

Is it right to pay people to be healthy?

COMMENTS (228)

Offering people financial incentives to adopt healthy behaviour is a controversial area of public policy.

People understandably question why some people should be paid for doing something that many others do for nothing.

Surely, the fact it benefits them personally in terms of their health - or their baby in the case of the latest idea put forward to offer mothers £200 of shopping vouchers to encourage breastfeeding - should be enough of an

The NHS has a mixed record when it comes to offering people financial incentives to be healthy

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Bribing women to breastfeed wastes taxpayers' money

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NHS Tayside cash to quit smoking scheme 'success'

Only one in five pregnant women paid by NHS Tayside to stop smoking is able to quit for more than three months after their baby is born, figures have shown.

But health officials said the number was higher than any other smoking cessation scheme in Scotland.

EXCLUSIVE: Fury as 'failed' £40k pregnant smoking scheme to be rolled out

12 November 2013 Last updated at 15:15

Share

Breastfeeding mothers offered £200 in shop vouchers

Pregnant women bribed £400 to give up smoking

By **Dean Herbert**

PREGNANT women are being offered £400 to give up smoking under a controversial new taxpayer-funded scheme.

Hundreds have received vouchers as a reward for renouncing cigarettes under the new cash-to-quit scheme.

Piloted by NHS Greater Glasgow and Clyde, the £750,000 scheme saw 600 women paid the incentives. Now, the team behind the project has applied for more funding to test it in Lanarkshire and wants the Scottish Government to roll the programme out nationwide.

on urine, saliva and blood. At the end of the trial, more than a fifth had managed to stop smoking.

Professor Linda Bauld of Stirling University, who headed the pilot scheme, said: "Policy makers and the NHS may worry about the costs of the intervention but in the long run it would make massive healthcare savings if we can get women to stop smoking in their pre[g]nancies. Even if you paid the wome[n] double, it would be cost effective."

A Scottish Government spokesma[n] said: "Action to reduce the harm cause[d] by smoking continues to be a priority.

Investment that does not disappear in puff of smoke

financial incentive.

The women received £20 when they signed up and (if blood, urine and saliva tests were clear) a further £20 four weeks later. After three months of not smoking, they were given £100. And if they managed to remain an ex-smoker all the way to their baby's delivery they collected a £200 lump

precious cargo that is their baby?

Well, first let's look at some other facts.

In affluent areas of Scotland, five per cent of pregnant women smoke. In areas of greatest deprivation almost 30 per cent do – nearly one in three. Most women give up as soon as

Hundreds of women given taxpayer rewards by health bosses... for NOT harming their babies

The Mail ON SUNDAY

Taxpayers' cash going up in smoke

CASH for smokers sounds like a satire on extravagantly wasteful government spending – but is in fact the latest scheme devised by health officials, currently operating in Glasgow but being considered elsewhere across the country.

PREGNANT SMOKERS GET £400 NHS 'BRIBE' TO QUIT

Cessation in Pregnancy Incentives Trial

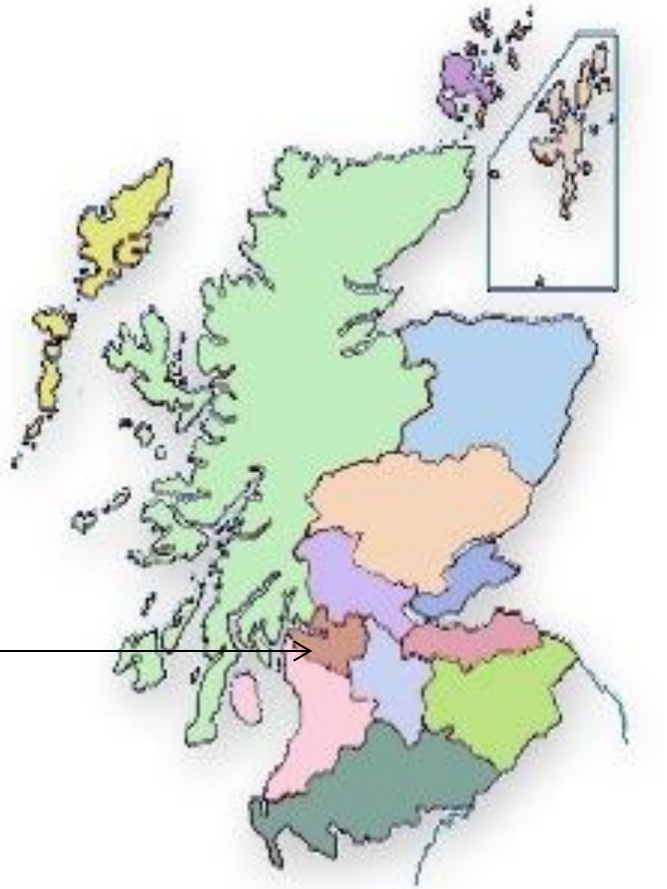
- Phase II trial developed following a feasibility study funded by the Glasgow Centre for Population Health (GCPH)
- Began in 2011 funded by the Chief Scientists Office, NHS Greater Glasgow and Clyde and GCPH
- Aimed to begin to answer a question on incentives in the 2010 NICE (UK health guidance organisation) guidance on smoking cessation in pregnancy

NICE Smoking in Pregnancy guideline 2010
Research recommendation

Within a UK context, are incentives an acceptable, effective and cost-effective way to help women who smoke to quit the habit when they are pregnant or after they have recently given birth? Compared with current services, do they attract more women who smoke, do they lead to more of them completing the stop-smoking programme and do more of them quit for good? What level and type of incentive works best and are there any unintended consequences?

Greater Glasgow & Clyde Health Board Area

Greater Glasgow & Clyde



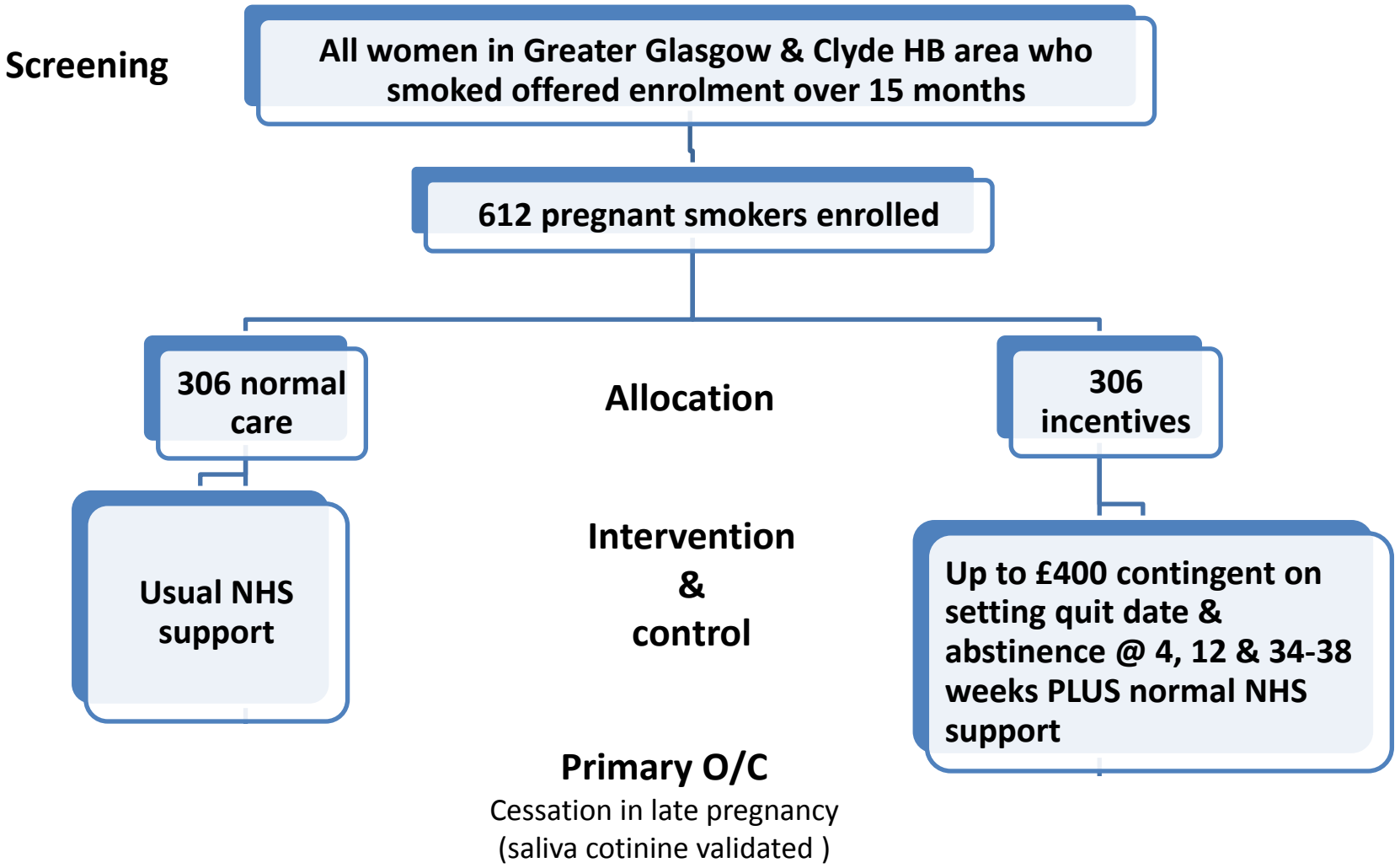
City of Glasgow

smokefree PREGNANCY SERVICES

- All women offered CO monitoring at maternity booking
- Women with CO > 4ppm automatically referred to SPS
- Advisers contact - ask about smoking & cessation and make appointment - women can opt out at this point
- Continued phone / text support until 4-weeks post quit
- Routine follow-up monitoring at 12 and 52wks post quit
-  Free prescription of NRT for pregnant smokers

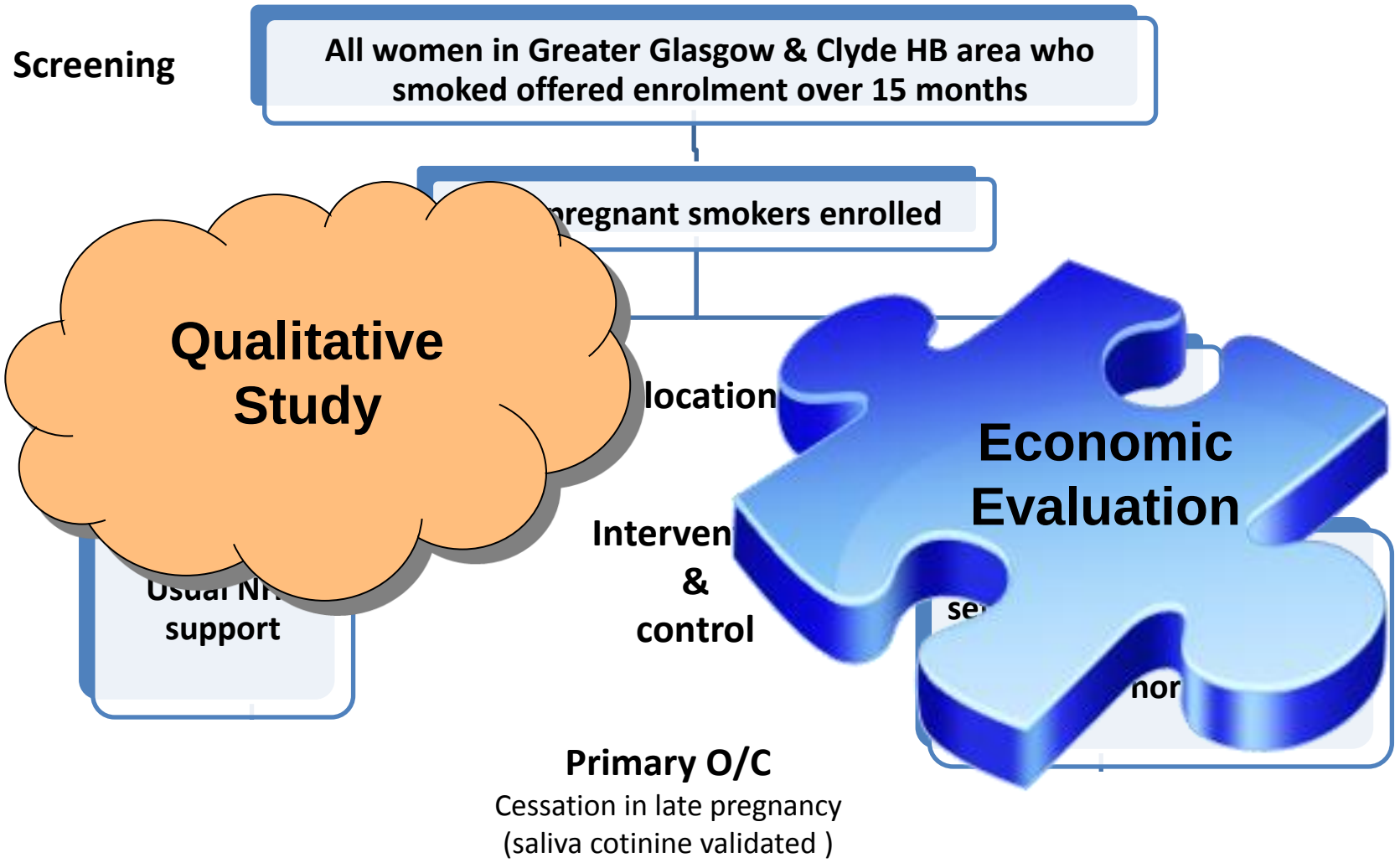
Trial Design

Phase II Individually randomised controlled trial



Trial Design

Phase II Individually randomised controlled trial



Economic Evaluation

Health Economist – Dr Kathleen Boyd

- Cost effectiveness of financial incentives plus usual care vs usual care
- Incremental cost-effectiveness ratio (ICER)

$$\text{ICER}: \frac{\text{Cost}_A - \text{Cost}_B}{\text{Effect}_A - \text{Effect}_B} \leq £20{,}000 \text{ per QALY}$$

- Within-trial analysis: Incremental cost per quitter
- Lifetime analysis: Incremental cost per QALY
- Sensitivity analyses to assess impact of changes & help increase confidence in model

Main Trial Results

- **14%** absolute reduction in quit rates late pregnancy (**9%** vs **23%**)
- Number Needed to Treat= **7**
- RR smoking at end of pregnancy **0.85** [95% CI 0.79-0.91, p<0.0001]
- Improved postnatal cessation at 6 months after birth (**4%** vs **15%**)
- **No difference** in birthweight, stillbirth, miscarriage, or premature births

Qualitative & Health Economic Results

- **Qualitative analysis**

  - incentives generally **acceptable** to women & HCPs

  - home based monitoring visits **acceptable**

  - Type, amount & staging of payments **positively received**

- **Health economic analysis**

  - within-trial incremental cost **£1127** per additional quitter

  - lifetime incremental cost **£482** per QALY gained

  - **uncertainty** around sustained quit rates post-natally & results sensitive to this

Voucher Spend

Retailer	Spend		Retailer	Spend
Argos	£11,053		Matalan	£3,915
BHS	£755		Mothercare	£4,872
Boots	£3,312		New Look	£4,485
Comet	£50		Officers Club	£72
Debenhams	£1,842		Peacocks	£114
DW Fitness	£139		Poundstretcher	£1,360
Early Learning Centre	£153		River Island	£2,666
Ernest Jones	£25		Semichem	£462
H Samuel	£149		Shoezone	£202
Halfords	£248		Superdrug	£1,183
HMV	£418		The Factory Shop	£1,184
Homebase	£287		TJ Hughes	£313
House Of Fraser	£40		Toys R Us	£3,891
Iceland	£8,626		Wilkinson	£461
JJB Sports	£170		**Total**	**£51,363**

Limitations

- **Phase II** exploratory trial
- **One** geographic centre
- **One model** of SSS for pregnant women
- **Uncertainty** about post-natal relapse rates
  - based on self-report only - important for longer term health economic evaluation (cost per QALY gained)
  - when use self-reported postnatal estimates at 3 months financial incentives are cost saving and improve QALYs!

Conclusions

- Financial incentives **may double** rates of abstinence from smoking at the end of pregnancy when added to existing cessation services
- Financial Incentives are **likely to be highly cost-effective** & well below the NICE threshold of £20,000/QALY
- **Uncertainty** remains regarding post-natal relapse
- **Larger trial now required** to demonstrate if this can work in other areas of the UK

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