

**DERBYSHIRE COUNTY COUNCIL**

**CABINET**

**06 May 2014**

**Report of the Director of Public Health**

**REDUCING SMOKING IN PREGNANCY: RESULTS OF A PILOT STUDY  
(Health and Communities)**

**1. Purpose of the Report:**

To consider the results of a research study in Chesterfield that tested the impact of a financial incentive scheme to help pregnant women who smoke to quit.

**2. Information and Analysis:**

**Smoking in pregnancy**

Smoking during pregnancy and in the postnatal period harms the baby and mother. It is a major determinant of low birth weight and a range of adverse infant health outcomes including death. Smoking in pregnancy is heavily patterned by social class with women in routine and manual occupations more than four times as likely as those in managerial and professional occupations to have smoked throughout pregnancy (29% vs 7%) and age, with 45% of pregnant women aged 20 years or less smoking throughout pregnancy, compared with 9% of women aged 30 years and over. These patterns of smoking contribute not only to the health inequalities associated with adult smoking but also to those in infancy following exposure to cigarette smoke before and after birth. For example, there is a growing association between low birth weight and attention deficit hyperactivity disorder (ADHD) in children and heart disease, obesity and diabetes in adults.

32% of women smoke in the year prior to their pregnancy, but a third of these, about 11% of all pregnant women, stop prior to pregnancy or on learning of their pregnancy. Only a further 1% of all pregnant women, 3% of all smokers, stop later in pregnancy and stay stopped. NHS support concentrates on helping women who are still smoking by the time they book for pregnancy care (first booking appointment). It can double cessation rates, but only 17% of all women smoking at booking take up the offer of support. 45% of these women stop in the short-term, but the NHS does not record the proportion that stay abstinent throughout pregnancy. Interventions are therefore needed that not only boost referrals to smoking services and their effectiveness but more importantly, reach the vast majority of pregnant smokers who do not use these services.

In a recent systematic review on the effectiveness of smoking cessation interventions in pregnancy, financial incentives were found to be the single most effective intervention. A further meta-analysis of the three most robust trials confirmed this, with women offered financial incentives having an almost three fold increase in quitting. The authors of this meta-analysis noted, however, that replication was needed in the UK and using more robust designs. The National Institute of Health and Clinical Excellence (NICE) also recommended that good quality research on this intervention be conducted in the UK.

### **Smoking in pregnancy in Derbyshire**

Smoking at time of delivery (SATOD) was a key performance measure of primary care trusts and it is now a performance indicator in the Public Health Outcomes Framework which local authorities are charged with achieving. The previous SATOD target was a prevalence of less than 15% by December 2010. This target was never achieved in Derbyshire. The new target is a prevalence of less than 11% by December 2015. The current trajectory suggests that this target will not be met if standard interventions are continued. The quit rate between booking and delivery at Chesterfield was less than 1% in the three years 2009/10-2011/12. In other words, pregnant women who are still smoking by the time they have their first appointment with their midwife (usually at 10-12 weeks of pregnancy) find it very difficult to stop smoking.

### **Pilot financial incentive scheme**

To investigate whether a financial incentive scheme might offer a more successful solution to smoking in pregnancy, Derbyshire County Primary Care Trust developed a partnership with Theresa Marteau, Professor of Health Psychology at the Behaviour and Health Research Unit at the University of Cambridge. Professor Marteau designed a research protocol to study the impact of a financial incentive scheme on pregnant women who smoke, based on her extensive knowledge of health psychology and incentive schemes. This protocol was piloted at Chesterfield Royal Hospital from November 2011 to August 2012 and delivered by the Specialist Stop Smoking Service managed by Derbyshire Community Health Service.

Professor Marteau designed the incentive scheme based on the psychological theory of rewarding positive behavior. Participants had to prove that they had quit smoking by giving a carbon monoxide breath test at regular intervals. If the test proved that the individual was still quit, she received a voucher, not cash, which could be spent at a number of outlets that did not include alcohol or tobacco. The frequency of the tests was initially high at twice a week, when quitting is very difficult. As the participant progressed through the scheme the frequency of testing was reduced and the value of the voucher increased by £1 with every test that was negative for smoking. The first voucher was worth £8 and rose by

£1 per clear test up to a maximum of £39 if the participant was still quit six months after giving birth.

Having taken over responsibility for this work in April 2013 through the transition of some Public Health Services to the local authority, Derbyshire County Council expressed its support for the incentive scheme at the Health and Wellbeing Board meeting on 25 July 2013. The pilot phase ended in October when the final woman enrolled on the scheme reached the six months after delivery point.

Results of the pilot include:

- During the study period there were 615 pregnant women who were still smoking at their first booking appointment
- Of these, 239 (39%) enrolled on the incentive scheme
- Of the 239, 143 (60%) made a quit attempt, ie they stopped smoking for at least 48 hours
- Of the whole group, 48 (8%) were still quit at delivery and 25 (4%) were quit at six months after delivery
- Of the whole group, 10 (4%) women gamed (cheated) on one or more occasion to gain an incentive. This is not considered sufficiently problematic to jeopardise the intervention.

To summarise, the incentive scheme increased the quit rate at Chesterfield Hospital from less than 1% to 8%, with half of these women still quit six months after delivery.

### **Future developments**

The financial incentive scheme was a pilot study that stopped recruiting women in August 2012. As the positive outcomes became apparent, this approach to helping pregnant smokers to quit was built into the redesign of the lifestyle services which is currently out for consultation. The proposal is to restart the incentive scheme in Chesterfield along with the redesigned lifestyle services, between October 2014 and March 2015. Over a period of time the scheme will then be extended to Derbyshire residents in other priority areas of the County, for example women using Derby, Stockport, Tameside, Nottingham and King's Mill Hospitals. It is expected that this will significantly reduce the prevalence of smoking at time of delivery in Derbyshire and will increase the likelihood of Derbyshire achieving the target prevalence of less than 11% by December 2015. As smoking in general and smoking in pregnancy in particular are major contributors to local health inequalities, this intervention will also contribute to Derbyshire County Council's commitment to reduce health inequalities in its population.

### **Significance of this research**

This study is one of only a few in the UK to implement a robust research design on the impact of financial incentives to help pregnant women stop smoking. To our knowledge, it is the only study that is designed to ascertain the prevalence of gaming the scheme. Our protocol has been published in a peer-reviewed journal. A second paper for publication is in progress, containing the results of the study. This research has been submitted for presentation to a conference of the International Congress on Behavioral Medicine to be held in August 2014 and will be submitted to the annual conference of the Faculty of Public Health in July 2014.

### **3. Financial Considerations:**

Providing the financial incentive scheme across the County is estimated to cost £152,000 a year once it is fully operational. This includes vouchers @ £100,000, staff (2x band 4 NHS Agenda for Change) @ £42,000, chemical tests @ £5,000, and staff travel @ £5,000. This funding has been found from the existing tobacco control budget as part of the tobacco control review and will be met from Public Health budget.

### **4. Other considerations:**

In preparing this report the relevance of the following factors has been considered: legal, prevention of crime and disorder, equality and diversity, human resources, environmental, health, property and transport considerations.

### **5. Key Decision:**

No

### **6. Call-in:**

Is it required that call-in be waived in respect of the decisions proposed in the report? No

### **7. Background Papers:**

None

### **8. Officer's recommendations:**

- 1 That members note the results of a Chesterfield based public health research study which has local, national and international significance that tested the impact of a financial incentive scheme to help pregnant women who smoke to quit.

- 2 To make future developments for a roll-out of the service as set out in the report.

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