SAVING BABIES LIVES: REDUCING THE RISKS OF SMOKING IN PREGNANCY

Report of the Director of Public Health

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1. Purpose of report

1.1 The purpose of this report is to highlight the significant risks of smoking in pregnancy and to inform the Panel of a new initiative to improve access and uptake of stop smoking services to pregnant women and their families.

2. Summary

2.1 Smoking remains the single most modifiable risk factor for an adverse outcome in pregnancy.\(^1,2\)

2.2 Reducing the number of women who smoke during their pregnancy is a key tobacco control ambition both nationally and locally. In Hertfordshire, smoking levels at the time of delivery are not showing a consistent downward trend (see Figure1). In 2018/19, 5.8 percent of women smoked to the end of their pregnancy.

2.3 The consequences of smoking in pregnancy not only increase the risk of miscarriage, premature birth, still birth and low birthweight, but also affects outcomes for infants and later life. For example, risk of infant mortality, respiratory diseases and psychological problems such as attention and hyperactivity disorders and obesity increase in later life.

2.4 It is predominately women who are young and/or from lower socio-economic backgrounds who continue to smoke throughout pregnancy\(^3\). Generally, they represent some of the most vulnerable people in our society. They are more likely to have a partner, peers and a family who smoke and therefore do not have smokefree support networks that are available to others. These women do not readily engage with stop
smoking services, and when they do, they are less likely to sustain a quit attempt, and are more likely to relapse during and after pregnancy. Research clearly indicates that cigarettes are as addictive as drugs such as heroin and cocaine and that nicotine metabolism during pregnancy is increased by approximately 60 percent, making carvings stronger and quitting even more difficult.

2.5 Hertfordshire Health Improvement Service (HHIS) is working closely with maternity services to deliver an accessible and high-quality stop smoking service to pregnant women and their families who smoke.

2.6 Where appropriate, specific initiatives are also implemented and evaluated to inform future service development for pregnant women who smoke.

2.7 A pilot project to test the use of financial incentives to support pregnant women to quit smoking is planned from January 2020 - March 2021.

3. Recommendations

3.1 Panel is asked to:

- Note and comment on the content of the report.

- Note that a further paper will be presented at Panel mid-2020 setting out progress made with delivering an accessible and high-quality stop smoking service for pregnant women who smoke.

4. Background

4.1 National/local context

4.1.1 During 2018/19, 10.8 percent of pregnant women in England were smoking at time of delivery. In comparison, 6.5 percent of pregnant women registered with East and North Hertfordshire Clinical Commissioning Group (ENHCCG) were smoking at the time of delivery and 5.1 percent of women registered with Herts Valleys Clinical Commissioning Group (HVCCG) were smoking at the time of delivery (see Figure 1). In absolute terms, in 2018/19, 735 women were known to be smoking throughout their pregnancy in Hertfordshire.

4.1.2 In Quarter 1 2019/20, these levels increased to 8.7 percent and 5.7 percent for ENHCCG and HVCCG respectively (see Figure 1).
4.2 Health risks associated with smoking during pregnancy

4.2.1 Smoking during pregnancy is a leading cause of poor birth outcomes, including stillbirth and neonatal death\(^6\). Exposure to tobacco smoke in the womb also affects outcomes for infants after birth; they are at higher risk of infant mortality, respiratory diseases and psychological problems such as attention and hyperactivity disorders and obesity in later life\(^7\).

4.3 Consequences of smoking in pregnancy

- Miscarriage: 24-32 percent more likely
- Stillbirth: twice as likely
- Neonatal death (dying within 28 days of birth)\(^8\)
- Born with heart defects: 50 percent more likely
- Sudden unexpected infant death (SUID): three times as likely
- Other congenital malformations (e.g. digits missing)\(^9\)
- Childhood cancer\(^10\)
- Small for gestational age
- Attention deficit hyperactive disorder (ADHD) childhood\(^11\)
- Truancy
- Admissions to hospital
- Meningitis
- Respiratory disorders
- Middle ear infection
- Obesity
- Heart disease as an adult
- 3 times more likely to smoke if parents smoke

Further evidence regarding the consequences of smoking in pregnancy can be found in this report: Passive Smoking and Children

### 4.4 Adverse pregnancy outcomes in Hertfordshire 2015-2017

#### 4.4.1 There is no Hertfordshire data which show the number of babies that are born prematurely, have grown less well during pregnancy, or been admitted to intensive neonatal care as a consequence of their mothers either smoking in pregnancy, or being exposed to environmental tobacco smoke. There are also no data which show the number of still births or sudden unexpected infant deaths (SUID) linked to smoking.

#### 4.4.2 Notwithstanding this, the data below indicate where smoking could have been a significant contributory cause of an adverse pregnancy outcome in Hertfordshire:

- **Premature births**
  In 2015-17 there were 3,508 premature births to Hertfordshire women. The rate has increased from 70.5 per 1,000 in 2006-08 to 80.3 in 2015-2017.

- **Low birth weights**
  In 2017 there were 318 low birth weight births to Hertfordshire women; 2.5 percent of all births, statistically significantly below England (2.8 percent). There has been no significant change over time.

- **Still births**
  In 2015-17 there were 166 still births to Hertfordshire women, a rate of 3.8 per 1,000, not statistically significantly different to England (4.3).

- **Neonatal deaths** (deaths within 28 days of being born):
  In 2015-17 there were 89 neonatal deaths among Hertfordshire women, a rate of 2.04 per 1,000, statistically significantly lower than England (2.80).

Data from Public Health England: Tobacco Profiles
4.5  Smoking and inequalities

4.5.1 Smoking is the leading cause of the gap in life expectancy between socioeconomic groups in the UK, accounting for approximately half the difference in life expectancy between the richest and poorest.\textsuperscript{13}

4.5.2 Rates of smoking during pregnancy increase with indicators of disadvantage and poverty. Women in the lowest socioeconomic groups are more likely to be smokers when they become pregnant and they are less likely to quit during pregnancy or after childbirth.\textsuperscript{14} There is a significant age gradient to smoking in pregnancy, with younger mothers being much more likely to smoke, especially those aged under 18.\textsuperscript{2} Older and more affluent women are less likely to be smokers when they become pregnant and are more likely to quit during pregnancy.\textsuperscript{2}

![Figure 2 Smoking status at booking by decile of deprivation (appointments January to June 2017) From: Smoking in Pregnancy Challenge Group. Review of the Challenge 2018](image)

4.6  Public Health Priority

4.6.1 Reducing smoking in pregnancy is a key CCG and Public Health priority and is described in Hertfordshire’s Tobacco Control Strategic Plan (2019-22) which was approved by Cabinet Panel in May 2019\textsuperscript{hi}. It aims to reduce the harm caused by smoking in pregnancy by:
• Reducing the prevalence of women who are known to be smoking at the time of delivery from 7.1 percent in 2017/18 to 6.4 percent by 2020/21 (10 percent reduction)

• Ensuring that all partners and organisations that work with families and pregnant women are engaged with the Saving Babies’ Lives Care Bundle iv to reduce smoking in pregnancy.

• Ensuring that there are continuous improvements in the quality of stop smoking services available to pregnant smokers and their families (see page 8).

4.7 Barriers and obstacles to pregnant women quitting smoking

4.7.1 Women who smoke in pregnancy are often stigmatised and face a range of barriers in attempting to quit smoking and accessing services, with literature identifying both individual and interpersonal obstacles for women to overcome15. These include:

• Poor educational attainment16
• Being young and from a lower socio-economic group17
• High levels of tobacco addiction as nicotine is metabolised rapidly18
• Poor understanding of risks to the baby from continuing to smoke19
• Viewing smoking as a method of coping with stress
• Lack of self-efficacy (not seeing themselves as having control)20
• Living in a community where rates of smoking are high, and smoking is normalised
• 60 percent of pregnant smokers also have a partner who smokes, and this makes it 6 times more likely that they will continue to smoke throughout pregnancy than if they have a non-smoking partner21

4.8 Improving stop smoking services for pregnant women who smoke

• Maintain a priority to increase access to, and the quality of, stop smoking services to pregnant women, their partners, and families who smoke.

• Work with CCG partners to ensure that contracts between CCGs and maternity services include public health metrics to improve the health of pregnant women and their families

• Ensure that all partners and organisations that work with families and pregnant women are engaged with the Saving Babies’ Lives Care Bundle and the ambition to reduce smoking in pregnancy

• Improve accessibility of stop smoking services to pregnant smokers and their families by:
  o Improving intelligence on pregnant women who smoke in
Hertfordshire (including barriers and facilitators to accessing stop smoking services)

- Ensuring that NICE guidance in relation to smoking in pregnancy is fully implemented within maternity services, including Carbon Monoxide (CO) monitoring at booking and at 28-36 weeks of pregnancy, and that an ‘opt out’ referral pathway is in place.

- Increasing opportunities throughout the pregnancy for pregnant smokers to be identified, incentivised and encouraged to stop smoking throughout their pregnancy and beyond.

- Review and relaunch the award-winning social marketing campaign ‘Love Your Bump’.

- Implement and evaluate the ‘Lifeline to your Baby’ intervention (an intensive intervention designed for use with pregnant smokers who do not engage with stopping smoking). It uses a visual aid to demonstrate the physical effects of smoking on the baby and provides an opportunity to discuss the risks of smoking in pregnancy in detail.

- Review the accessibility and availability of stop smoking services to pregnant smokers throughout Hertfordshire.

- Ensure that pathways to Hertfordshire Health Improvement Service (HHIS) are in place with all key stakeholders.

- Deliver bespoke training to all midwives and student midwives, ensuring that they have the skills, knowledge and confidence to identify all pregnant women who smoke through carbon monoxide (CO) testing at booking and throughout the care pathway for known smokers.

- Deliver bespoke training in line with the National Centre for Smoking Cessation and Training (NCSCT) standards to key stakeholders who come into contact with pregnant women who smoke.

- Improve the number and quality of referrals from Health Visitors, Family Centres, community pharmacies, dental practices and sexual health services.

- Ensure that maternity services have the resources to deliver CO testing and that they promote stop smoking services using motivational interviewing techniques and social marketing resources (e.g. Love Your Bump).

- Implement a pilot scheme to financially incentivise pregnant smokers to engage with stop smoking services, quit smoking and stay quit for the duration of their pregnancy (see below).
• Improve the quality of stop smoking services to pregnant women in Hertfordshire by:

  o Monitoring and reporting on smoking in pregnancy, reviewing success rates against regional, national and statistical neighbours, ensuring that success rates are above the national average

  o Ensuring that all providers of stop smoking services for pregnant smokers achieve minimum quality standards

  o Recruiting and retaining specialist stop smoking in pregnancy advisors in Hertfordshire Health Improvement Service

  o Ensuring that all staff delivering pregnancy interventions have the required competencies to deliver interventions to pregnant smokers

  o Maintaining services in line with the latest NICE guidance and national best practice standards

  o Providing flexible and intensive support to pregnant smokers and their families at a range of venues, including home visits

  o Ensuring that medicines guidance follows best practice and evidence-based support to pregnant smokers, including appropriate use of e-cigarettes is in place

  o Improving communication pathways to feedback to maternity services and others on the outcomes of interventions, including information on non-contact/difficult to engage smokers

  o Evaluating services offered to pregnant smokers and taking actions to make improvements where required

4.9 Hertfordshire pilot scheme to financially incentivise pregnant smokers to engage with stop smoking services and quit smoking

4.9.1 As described previously; in Hertfordshire and elsewhere, there remains a cohort of women who continue to smoke throughout their pregnancy and beyond. In 2018/19, 735 women were known to smoke throughout their pregnancy in Hertfordshire. Amongst those who do manage to quit, relapse rates are high both during pregnancy and after delivery. Despite the availability of good quality stop smoking services for pregnant women who smoke, only a small proportion of these women engage with stop smoking services and go on to quit smoking.

4.9.2 Smoking in pregnancy carries significant risks to the mother, the unborn baby and throughout the life of the individual, yet only 50% of pregnant smokers manage to quit smoking before their first
appointment with a midwife. The ideal way of achieving a healthy pregnancy is for women stopping smoking pre-pregnancy. However, those who continue to smoke find it most difficult to quit and are predominantly younger women and women from lower socio-economic backgrounds).

4.9.3 The use of financial incentives has a strong evidence-base elsewhere; they encourage pregnant smokers to accept help and support to quit smoking and to remain quit for the duration of their pregnancy and beyond\(^28\). The pilot is aimed at 300 of our most vulnerable women who smoke throughout their pregnancy. They will be provided with intensive behavioural support and will need to demonstrate that they have not smoked by use of regular Carbon Monoxide breath-test monitoring.

4.9.4 As an incentive, they will be provided with shopping vouchers at key points during their pregnancy. The vouchers can be used to buy a variety of things including food, baby clothing, baby equipment, etc. The proposed vouchers cannot be used for items such as tobacco and alcohol and will help reduce family and child poverty faced by many of these women. The maximum value of the vouchers is £300.

4.9.5 A 2015 randomised controlled trial (RCT) ‘Financial incentives for smoking cessation in pregnancy’ was conducted in Scotland by Professors Tappin and Bauld. It is the largest UK RCT to date. It shows increased CO validated quit rates at 34-38 weeks from 8.6 percent to 22.5 percent; increased 6-month post-partum abstinence rates by almost 4 times, and increased one-year abstinence rates by almost 4 times\(^29\).

4.9.6 Financial incentives have also been tested elsewhere and are supported by a number of key stakeholders (see Appendix 1) they encourage smokers to engage with stop smoking services, increase short term and longer term quit rates\(^30,31,32,33\).

4.9.7 The Hertfordshire pilot will:

a. Run between Jan 2020 - March 2021 (15 months)
b. Test the effectiveness of financial incentives for pregnant smokers in Hertfordshire
c. Seek to increase the number of women that accept a referral to HHIS
d. Seek to increase the number of pregnant women who stop smoking in the short term, for the duration of their pregnancy and beyond.
e. Seek to improve longer term outcomes for mother and baby
f. Be fully evaluated, and if it is successful, consideration will be given to integrating into financial planning after April 2021
Schedule of payments

- £50 voucher for attending a first appointment and setting a quit date (SQD)
- £50 voucher for CO validated abstinence at 4 weeks post SQD
- £100 voucher for CO validated abstinence at 12 weeks post SQD
- £100 voucher for a CO validated abstinence at 34-38 weeks’ gestation

4.9.8 The pilot will be for up to 300 women to engage with the programme (up from 245 in 2018/19) and for 180 of these to quit smoking for at least 4 weeks (up from 85 in 2017/18).

4.9.9 In 2018/18, the Hertfordshire 4-week quit rate for pregnant smokers was 35 percent, so based on the Tappin and Bauld trial showing a doubling effect at this time-point, we estimate this will increase to 60 percent with financial incentives (after applying some caution). At 12-weeks we expect the quit rate to reduce by 17 percent, as observed in the Tappin and Bauld trial.

4.9.10 At 34-38 weeks, following the use of financial incentives, we estimate the Hertfordshire quit rate will be approximately 35 percent (no quit data are currently available for Hertfordshire or nationally at 34-38 weeks). This is based on the Tappin and Bauld trial, which demonstrated financially incentivised quit rates at 34-38 weeks equivalent to non-incentivised quit rates at 4-weeks.

4.11 Evaluation of the Pilot:

- The quality of pregnancy stop smoking services will be reviewed and reported on each quarter through Public Health reports
- A further paper will be presented at Panel mid-2020 setting out progress made with delivering an accessible and high-quality stop smoking service for pregnant women who smoke.
- The views of midwives, pregnant smokers and other key stakeholders will be sought, and actions to improve pathways and services will be taken
- The pilot project on financial incentives will be fully evaluated and reported to Panel in 2021

5. Equality Impact Assessment

5.1 When considering proposals placed before Members it is important that they are fully aware of and have themselves rigorously considered the equalities implications of the decision that they are taking.

5.2 Rigorous consideration will ensure that proper appreciation of any potential impact of that decision on the County Council’s statutory
obligations under the Public Sector Equality Duty. As a minimum this requires decision makers to read and carefully consider the content of any Equalities Impact Assessment (EqIA) produced by officers.

5.3 The Equality Act 2010 requires the Council when exercising its functions to have due regard to the need to (a) eliminate discrimination, harassment, victimisation and other conduct prohibited under the Act; (b) advance equality of opportunity between persons who share a relevant protected characteristic and persons who do not share it and (c) foster good relations between persons who share a relevant protected characteristic and persons who do not share it. The protected characteristics under the Equality Act 2010 are age; disability; gender reassignment; marriage and civil partnership; pregnancy and maternity; race; religion and belief, sex and sexual orientation.

5.4 An Equality Impact Assessment (EqIA) has been undertaken and is appended as Appendix 2. We currently believe there to be no negative implications for any persons with protected characteristics and there are likely to be many positive benefits. Actions will be taken if any negative impacts are identified.

6. Financial Implications

6.1 The ill-health effects from smoking have a detrimental impact on costs to society, with the annual cost of smoking in Hertfordshire estimated to be £240.6 million (ASH, Ready Reckoner 2019 edition). ii

6.2 Smoking is also a significant cause of family and child poverty.34

6.3 The cost of delivering intensive stop smoking support and treatment to pregnant smokers is covered by the existing budget for the Hertfordshire Health Improvement Service and described in the Annual Report on Stop Smoking Services 2018-19 as being effective and cost effective35.

Pilot scheme to test the use of financial incentives in Hertfordshire:

6.4 There is a cost to incentivising pregnant women to engage with services, attend stop smoking services and quit smoking throughout their pregnancy. The cost of the proposed pilot is similar to other schemes in the UK.

Table of incentives

6.5 Based on 300 women attending a first appointment and setting a quit date and a 60% quit rate at 4 weeks followed by a 35% quit rate at 34-38 weeks of pregnancy. All quits will be validated by a Carbon Monoxide breath test.
<table>
<thead>
<tr>
<th>Engaging with the service and setting a quit date</th>
<th>Quitting for 4 weeks</th>
<th>Quitting for 12 weeks</th>
<th>Quitting until 34-38 weeks</th>
<th>Estimated total cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of women</td>
<td>300</td>
<td>180 (300 x 60%)</td>
<td>150 (300 x 50%)</td>
<td>105 (300 x 35%)</td>
</tr>
<tr>
<td>Cost of incentive</td>
<td>£50 (£1st incentive)</td>
<td>£50 (£2nd incentive)</td>
<td>£100 (£3rd incentive)</td>
<td>£100 (£4th incentive)</td>
</tr>
<tr>
<td>Modelling</td>
<td>300 x £50</td>
<td>180 x £50</td>
<td>150 x £100</td>
<td>105 x £100</td>
</tr>
<tr>
<td>Cost of vouchers</td>
<td>£15,000</td>
<td>£9,000</td>
<td>£15,000</td>
<td>£10,500</td>
</tr>
</tbody>
</table>

6.6 Funding for £49,500 has been identified from the Public Health budget to test the use of financial incentives in Hertfordshire over 15 months.

6.7 Financial incentives for smoking cessation in pregnancy are highly cost-effective. The Tappin and Bauld trial estimated an incremental cost per quality-adjusted life year (QALY*) of £482. The UK threshold for interventions which cost no more than £20,000 to provide one person with one year of life in perfect health are supported in the UK, so a QALY of £482 is well below the recommended decision threshold:

*1 QALY equates to one year in perfect health

Background Information


7 Harris et al (2013). Parental smoking during pregnancy and risk of overweight and obesity in the daughter. Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3795801/


10 The Lancet. https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(86)91664-8/fulltext


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15 Twyman et al (2014) Perceived barriers to smoking cessation in selected vulnerable groups: a systematic review of the qualitative and quantitative literature. Available at: https://bmjopen.bmj.com/content/4/12/e006414


23 Hertfordshire Public Health Service ‘Love Your Bump’. Available at: https://www.hertfordshire.gov.uk/services/health-in-herts/smoking/love-your-bump.aspx

24 National Centre for Smoking Cessation and Training (NCSCT) Pregnancy and the Post-Partum period. Available at: https://www.ncsct.co.uk/publication_pregnancy_and_the_post_partum_period.php


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28 Tappin. D, and Bauld, L et al. (2015) Financial incentives for smoking cessation in pregnancy: randomised controlled trial. Available at: https://www.bmj.com/content/350/bmj.h134

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31 Tappin. D, and Bauld, L et al. (2015) Financial incentives for smoking cessation in pregnancy: randomised controlled trial. Available at: https://www.bmj.com/content/350/bmj.h134


33 van den Brand et al (2018). Effect of a workplace-based group training programme combined with financial incentives on smoking cessation: a cluster-randomised controlled trial. Available at: https://www.thelancet.com/journals/lanpub/article/PIIS2468-2667(18)30185-3/fulltext

34 Action on Smoking and Health (2016) Smoking: Low income families. Available at: https://ash.org.uk/information-and-resources/health-inequalities/health-inequalities-resources/smoking-low-income-families/