NCSCT

Smoking in Pregnancy

Project Report

June 2012

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Executive summary

Smoking in pregnancy remains a key public health concern and is the single most modifiable risk factor for adverse outcomes in pregnancy. It contributes to a wide range of health problems for expectant mothers, their unborn babies and their families. It is a significant risk factor in infant mortality and can cause serious problems including complications during labour, increased risk of miscarriage, premature birth, low birth weight and stillbirth.[1–4]

Pregnancy is therefore recognised as a window of opportunity in which to engage with pregnant smokers. It is a time when women are in contact with numerous health professionals and interacting with a variety of other professionals as they seek health and social advice regarding their pregnancy. In response, the National Institute for Health and Clinical Excellence (NICE) published the 'Quitting Smoking in Pregnancy and following childbirth' (PH26) guidance in 2010, which provided evidence-based recommendations to support the design and delivery of local stop smoking in pregnancy support. The recommendations included actions for the identification of all pregnant women who smoke and referral to stop smoking services. Following a short survey conducted by the NCSCT, it was apparent that whilst some local areas were implementing NICE guidance these actions were not consistently implemented in every area, and often less efficient fax or paper based referral systems were in use rather than electronic referral methods.

To explore this area of smoking cessation further, the NCSCT was commissioned by the Department of Health (DH) to develop and deliver a systems-based approach designed to improve the identification and referral of smokers during pregnancy and the postpartum. This report summarises the pilot outcomes and recommendations.

NCSCT smoking in pregnancy project

The aims of the project were to:

- Provide a system that embeds identification and referral of pregnant smokers (as per NICE guidance) for a range of health professionals
- Provide a standardised and efficient referral process to aid health professionals to refer more easily and quickly to the stop smoking services

In order to deliver the project aims, a systems-based approach was developed that provided a stepped tiered model to enable local implementation of NICE recommendations for midwives and health professionals. For the purposes of the pilot the NCSCT focused on testing the feasibility of implementing level three of the tiered model, which included routine carbon monoxide (CO) testing and opt-out referral of all pregnant smokers, as well as the implementation of an electronic referral system with referral and feedback mechanisms for use by a number of health professionals (midwives, health visitors, practice nurses and pharmacists) in a selected pilot site.

An electronic web based referral system (NPRS) was developed through which registered users could refer pregnant women, partners and other family members to the local stop smoking service(s). The system was also designed to include a feedback mechanism so that referrers would receive notification of the referral outcome. This was mainly tested in Central and Eastern Cheshire; however additional testing was carried out in Knowsley, Halton & St Helens.

In addition, the maternity units within the Queen Alexandra Hospital in Portsmouth were already testing an alternative electronic referral system designed for use within secondary care settings, which allocated patients to the most suitable stop smoking service based upon the patient's postcode. These wards were also asked to implement routine CO testing for women upon admission to support the referral pathway and to indicate, upon the labour wards in particular, whether CO testing could be a feasible method of collecting more accurate 'smoking at time of delivery' (SATOD) data.

Outcomes and recommendations

The key outcomes from the pilots were:

- In total, 80 referrals were made in Central and Eastern Cheshire, 44 in Knowlsley, Halton & St Helens and six in Queen Alexandra
- In general the health care professionals involved recognised the importance of their role in identifying and referring pregnant smokers into the effective support provided by local stop smoking services
- The implementation of an electronic referral system was welcomed by staff and, for most, appeared to be easily incorporated within routine practice. This suggested that where established care pathways are already in place, the introduction of an electronic referral system is feasible
- There were some implementation delays encountered due to information governance issues, caused in part by disparities in the definition of opt-out
- Despite enthusiasm amongst maternity colleagues within Queen Alexandra it became apparent that the existing workload and competing priorities hindered implementation
- Regardless of the challenges encountered however, the majority of health care professionals believed that national roll out and adoption of the tested approach would be appropriate

Based upon the outcomes and learning points taken from the projects outlined in this report, the following recommendations are made to local service providers, commissioners, stop smoking in pregnancy coordinators, project leads and researchers:

- Effective and systematic identification and referral processes for pregnant smokers, their partners and family members who smoke in line with NICE guidance should continue to be implemented locally
- Electronic referral systems should be considered as an alternative to existing paper or fax based systems
- Information governance colleagues across all organisations involved should be engaged in any proposed changes to local practice that concern patient data to ensure that appropriate processes are followed and relevant agreements are in place to support implementation

- Clear definitions should be provided and agreed at the outset of any future projects, in particular the local definition of 'opt-out'
- Variance in definitions of key terms such as 'opt-out' should be considered prior to any future testing or evaluation of such approaches
- Implementing changes in day-to-day practice requires a considerable period of time and should be taken into account when planning implementation at a local level
- Commitment and ownership is required in order for implementation to succeed. It is therefore recommended that key stakeholders and local champions are identified and involved from the outset

Further recommendations for national consideration include:

- To ensure consistency and quality of implementation a nationally led and funded phased roll out approach is advocated
- Further evaluation of the longer-term use (12–24 months) of referral pathways and electronic referral systems during pregnancy and into the postpartum period is suggested. In particular this would allow further investigation into re-referral activity, including how this is best supported and what impact this has on the number of women accessing support and successfully stopping during pregnancy
- Further investigation into biochemically testing smoking status at time of delivery is also encouraged as this would increase confidence in the SATOD data submitted by local areas and support more accurate measurement to inform the relevant public health outcome indicator
- Finally, the beliefs of broader health care professionals such as GP practice staff and pharmacy staff regarding their role with pregnant smokers are yet to be investigated in detail. Whilst, it is logical and important to focus policy and communications predominantly on dedicated maternity professionals such as midwives, obstetricians and maternity assistants as well as health visitors, it would be useful to have a greater understanding of the opinions of other professionals who are involved in the care of pregnant women. Funding such research could help ensure that any opportunities to maximise policy and communication developments have been explored

1. Background and introduction

Smoking in pregnancy remains a key public health concern and is the single most modifiable risk factor for adverse outcomes in pregnancy.

1.1 Health effects of smoking in pregnancy

Smoking during pregnancy contributes to a wide range of health problems for expectant mothers, their unborn babies and their families. It is a significant risk factor in infant mortality and can cause serious problems including complications during labour, increased risk of miscarriage, premature birth, low birth weight and stillbirth.[1–4]

It is estimated to contribute to 40% of all infant deaths,[5] a 12.5% increase risk of premature birth and a 26.3% increased risk of intra-uterine growth restriction.[6] A total of one in 14 babies in the UK have a low birth weight, which is associated with both immediate and longer term health consequences.[7]

In summary, women who smoke during pregnancy have an increased risk of:[8–10]

- Low birth weight baby (<2500g)
- Preterm birth
- Ectopic pregnancy
- Spontaneous abortion
- Premature rupture of membranes (PROM)
- Perinatal mortality (still birth and neonatal death)
- Intrauterine growth restriction (IUGR)
- Placenta praevia
- Placental abruption
- Sudden infant death syndrome (SIDS)

1.2 Prevalence and identification of pregnant smokers

Currently the national measure of smoking prevalence among pregnant women in England is the percentage of expectant mothers recorded as being smokers at the time of delivery. In 2010/11 this equated to 13.5% of pregnant women.[11] The 2010 Infant Feeding Survey [12] also provided an estimated smoking prevalence among pregnant women in England of 12%, a reduction from 17% in 2005. However, studies have consistently shown that smoking in pregnancy is under-reported in surveys and in the collection of routine data during ante-natal appointments.[13] This combination of under-reporting and issues with record keeping mean that the true rates of smoking in pregnancy in England maybe higher than those reported in the Infant Feeding Survey or in routine data.[14] It is also worth noting that rates of smoking are also affected by the age and socio-economic status. In particular, mothers under 20 years old are four times more likely to smoke before or during pregnancy than mothers aged 35 and over,[12] and routine and manual women are five times more likely to smoke throughout pregnancy than women in managerial or professional occupations.[12]

The identification of pregnant women who smoke is also problematic as self-reporting of smoking status has been found to be less reliable in pregnant smokers than in the general population, which is often due to social pressure and stigma. Biochemically validated prevalence rates among this population, measured by carbon monoxide (CO) or cotinine levels have been found to be significantly higher than self-reported prevalence.[15–16]

1.3 Brief stop smoking interventions in pregnancy

Pregnancy is a window of opportunity in which to engage with pregnant smokers. It is a time when pregnant smokers are in contact with numerous health professionals and interacting with various other professionals as they seek health and social advice regarding their pregnancy. Identifying and offering brief advice to stop smoking is the single most cost-effective preventive action a healthcare practitioner can undertake and it doubles the likelihood of a successful quit attempt taking place.[17] Having triggered a quit attempt however, it is important that smokers receive the most effective support, which is currently provided by local stop smoking services,[18] and therefore brief interventions should include the referral of smokers into local stop smoking service providers.

1.3.1 NICE guidance

In 2010 the National Institute for Health and Clinical Excellence (NICE) published the 'Quitting Smoking in Pregnancy and following childbirth' (PH26) guidance,[19] which provided evidence-based recommendations to support the design and delivery of local stop smoking in pregnancy support. The recommendations included actions for the identification of all pregnant women who smoke and referral to stop smoking services, namely:

- *Recommendation 1: Identifying pregnant women who smoke and referring them to stop smoking services – action for midwives*

  Midwives should (at first maternity booking and subsequent appointments):

  - Routinely establish smoking status by asking the woman and undertaking a CO test
  - Provide information to the woman about the effects of smoking and the benefits of stopping
  - Inform the woman it is normal practice to refer all women who smoke for help to quit and a specialist midwife or adviser will phone to offer support
  - Refer all smokers to a stop smoking service, including women who have stopped in the preceding two weeks and all women with a CO reading higher than 7ppm
  - Offer support to partners and other family members who smoke
  - Check progress at the next appointment and offer a re-referral as appropriate
  - Record smoking status, CO readings, referral activity (including whether accepted or declined) and feedback within the woman's hand-held notes or as per local protocol

- *Recommendation 2: Identifying pregnant women who smoke and referring them to stop smoking services – actions for others in the public, community and voluntary sectors.**

  Key actions:

  - Use any appointment or meeting as an opportunity to ask women if they smoke, provide advice and information about stop smoking services
  - Offer a referral into local stop smoking services and refer where this offer is accepted
  - Record in the hand-held notes or as per local protocol
  - Provide the national smoking in pregnancy helpline number and the local helpline number (where possible)

* This includes GPs, practice nurses, health visitors, family nurses, obstetricians, paediatricians, sonographers, maternity team members (other than midwives), those working within youth and teenage pregnancy services, children centres, social services, fertility clinics, dental practices, pharmacies, voluntary and community organisations.

The NICE Public Health Interventions Advisory Committee (PHIAC) advocated that higher referral rates are important if smoking in pregnancy rates are to be effectively reduced. Maximising every contact with a pregnant smoker, to identify and refer them to evidence-based stop smoking services should therefore be a priority.

1.4 Policy context

In 2011 the Department of Health (DH) published the White Paper *Healthy Lives, Healthy People: A Tobacco Control Plan for England,* within which the Government set a national ambition to reduce the rates of smoking throughout pregnancy to 11% or less by the end of 2015 (measured at time of giving birth). This demonstrated national recognition of the importance of effectively engaging and supporting pregnant smokers to stop, which was emphasised further by the inclusion of a smoking in pregnancy indicator within the Public Health Outcomes Framework published in 2012.*

The NHS Future Forum report 'The NHS's role in the public's health' published in January 2012**, further emphasised the importance of healthcare professionals using every patient contact as an opportunity to maintain or improve that individual's mental and physical health and wellbeing.[3] In particular the report recommended targeting the four main lifestyle risk factors: tobacco, diet, physical activity and alcohol.

In terms of maternity in particular, the Midwifery 2020 *Delivering Expectations* report[20] stated that the vision was for midwives to embrace a greater public health role, including tobacco control, and be supported by those who plan and commission maternity services to meet the challenges of reducing inequalities, such as those caused by smoking, and improving maternal and family health. In addition, the Government's commitment to increasing the provision of health visitors to aid the delivery of the DH *Healthy Child Programme: Pregnancy and the first 5 years of life prevention programme, as well as the Maternity and Early Years: Making a good start to family life* report,[21] highlighted the importance of antenatal screening and surveillance to increase identification and referral of pregnant smokers and their partners by health visitors.

* 2.3 Smoking status at time of delivery per 100 maternities.

** www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh_132114.pdf

1.5 Local delivery

1.5.1 Local stop smoking services

The number of pregnant women supported by local stop smoking services has consistently increased over the last 10 years. In 2010/11 local stop smoking services supported over 21,839 pregnant women, with 9,864 (45.2%) self-reporting stopping for a minimum of four weeks.[22]

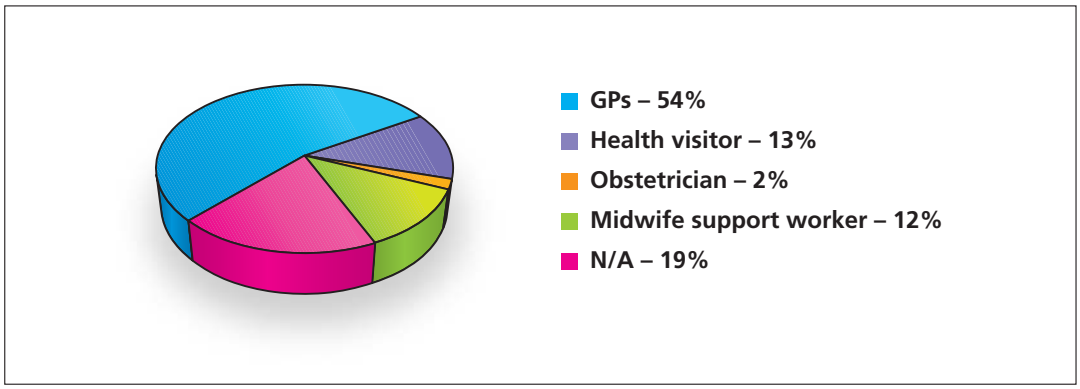
1.5.2 NCSCT survey

As referral data is not routinely captured at a national level, the NCSCT conducted a short survey in 2011 to ascertain the extent to which the NICE guidance 26 'Quitting smoking in pregnancy and following childbirth' recommendations one and two were currently being implemented at a local level. The survey was administered as an online questionnaire and sent to stop smoking service managers in England; there were 52 responses to the survey (56% of recipients of the questionnaire).

Nearly three quarters (71%, n=37) of respondents reported that pregnant smokers were being identified by CO testing, whilst just under a third (29%, n=15) remained reliant upon self-reported smoking status. The use of cotinine testing was not reported within the respondent sample.

Just under three-quarters of respondents (71%, n=37) reported that the identification of pregnant smokers was routine practice at antenatal booking by midwives. In addition, over half, 54% (n=28) of respondents reported that GPs routinely identified pregnant smokers, with further respondents reporting that other health care professionals including the health visitor and midwife support workers also routinely identified pregnant smokers as shown in figure 1. There were no reports of smokers being routinely identified at any postnatal contact.

Figure 1: Routine identification by health care professional



The majority of respondents 73% (n=38), reported that the referral system most commonly adopted locally was telephone based, with other respondents stating that they used a fax (12%, n=6) or a paper (10%, n=5) based system to refer identified pregnant smokers to their local stop smoking service. A small number (6%, n=3) mentioned that they had implemented an electronic referral system linked to a database.

Respondents were also asked to indicate any support they felt was needed to facilitate the implementation of the NICE recommended actions (recommendations one and two). The responses were categorised into key themes according to the number of times the support type was mentioned. Most respondents indicated that they would welcome additional support from midwifery managers. They also indicated that appropriate commissioning and contracting of maternity services would help to support the implementation of the recommendations contained in the guidance. Furthermore, a number of areas indicated that additional financial resource to increase midwifery and stop smoking services capacity would be helpful and aid compliance in implementing the actions recommended in the guidance.

Finally, respondents were asked to select from a list which resources (if any) they would find useful including:

a) An electronic referral system

b) Examples of best practice guidelines e.g. carbon monoxide testing on pregnant women

c) Examples of best practice protocols e.g. smoking in pregnancy referrals (maternity services)

d) A 'how to implement' toolkit

Most respondents (63%, n=33) said an electronic referral system would be useful.

The findings from the survey therefore indicated that:

- NICE guidance recommendations one and two for midwives and health professionals are being implemented in some areas
- These actions are not being consistently implemented in every local area
- Electronic referral systems are not commonly in use although the development of such systems would be useful

1.5.3 UKCTCS smoking cessation services in pregnancy pilot

In 2010 the UK Centre for Tobacco Control Studies (UKCTCS) was commissioned by the DH to carry out six health inequality pilot projects, including one relating to smoking in pregnancy. The aim of the project was to develop and pilot an integrated referral pathway for stopping smoking in pregnancy and to test the best method of identifying pregnant smokers. Outcomes from the pilot are available on the UKCTCS website (www.ukctcs.org). Recommendations from the pilot included:

- Routine CO monitoring and referral pathways should be implemented by maternity services at booking as this does increase referrals to the stop smoking service
- 4ppm should be used as the cut off to validate smoking status in pregnant women when using carbon monoxide readings
- Engaging with maternity services and developing links between these services and SSS takes time and should be started well before any intended rollout of interventions
- A local champion is essential to make sure that engagement is facilitated and processes and procedures are put into place and are followed
- The processes should be developed and agreed by the NHS staff who will be completing hem. Thus ensuring that maternity service front line staff are involved in any steering or project group is essential
- Maternity assistants (or similar) were most effective at undertaking routine CO readings compared to midwives. This model is recommended if possible to maximise the potential of this approach. There is also a need to monitor the staff delivering the procedures regularly
- Any additional data collection should be minimal, relevant and easy to complete and enter
- If cotinine testing is going to be done, NRT use must be recorded
- Referral to the stop smoking service should be simple and fast – electronic referrals are the recommended route

1.5.4 NCSCT smoking in pregnancy project

To explore this area of smoking cessation further, the NCSCT was commissioned by the DH to develop and deliver a systems-based approach designed to improve the identification and referral of smokers during pregnancy and the postpartum. The remainder of this report provides an overview of the NCSCT smoking in pregnancy project, pilot outcomes and recommendations.

2. Project overview

The aims of the project were to:

- Provide a system that embeds identification and referral of pregnant smokers (as per NICE guidance) for a range of health professionals
- Provide a standardised and efficient referral process to aid health professionals to refer more easily and quickly to the stop smoking services

2.1 The systems-based approach

In order to support the delivery of the project aims, a systems-based approach was developed that provided a stepped tiered model to enable local implementation of NICE recommendations one and two for midwives and health professionals.

The tiered model is based upon four intervention levels as shown in table 1.

Table 1: Identification and referral of pregnant smokers – a tiered model

Level	Activity
Level one	Midwife CO testing at booking to identify the pregnant smoker and activate referral to stop smoking services Referral system – paper based, e-mail, telephone
Level two	Midwife CO testing at booking to identify the pregnant smoker and activate referral Further opportunities for re-referral during the antenatal period and making every contact count up to 10 days postnatal Web-based electronic referral system
Level three	Midwives and health professionals (comprehensive range of health professionals including the midwife, GP, Obstetrician, Health Visitor, Pharmacy staff) systematically identify pregnant smokers as part of their routine practice in accordance with evidence based guidance and activate referral to the stop smoking service Referral opportunities are maximised up to two months postnatal Incorporates the addition of a web-based electronic referral system linked into the stop smoking service database
Level four	Midwives and health professionals systematically identifying pregnant smokers (as above Level 3) Incorporates the web-based electronic referral system linked into the stop smoking service database with additional commissioner dashboard reporting functions

2.2 Piloting the system

For the purposes of the pilot the NCSCT focused on testing the feasibility of implementing level three of the tiered model (see annex A). This included the implementation of an electronic referral system with referral and feedback mechanisms for use by a number of health professionals in a selected pilot site. The decision to concentrate on level three was based upon the recognition that many areas had reported that they were already implementing level one and that further testing in this area was already being undertaken through the UKCTCS health inequality pilot. Level two would only test the addition of an electronic referral system to level one and thus, to maximise the potential of the pilot, level three was chosen.

In practice, implementation of the third level of the model meant that:

- Every pregnant woman would be carbon monoxide (CO) tested by the midwife at booking to identify whether they were a smoker. The midwifery team would refer all identified pregnant smokers to the stop smoking service using an electronic referral system linked into the service's database
- Whether the woman attended for her initial appointment would be recorded by the stop smoking service on their database and the midwife or other health professional would be able to access feedback regarding their referral using the electronic referral system
- Where the appointment was not taken up, then following the normal pregnancy clinical pathway and at their subsequent maternal health assessment, the woman would be offered re-referral via the electronic referral system
- Referral and re-referral would also be possible by other health care professionals (HCPs) during the pregnancy enabling every contact to become an opportunity for revisiting the client's smoking status as appropriate
- During the postnatal period the midwife and the health visitor would ask the woman about smoking at appropriate postnatal visits. If the woman self-reported as a smoker, the midwife and the health visitor would have the opportunity to refer her to the stop smoking services from time of delivery up to two months postnatal using the electronic referral system. This would therefore provide an opportunity for re-referral in the immediate postnatal and neonatal period

2.2.1 Benefits of the proposed approach

One of the intended key benefits of implementing this level of the tiered model was the potential for maximising opportunities for referral along the various stages of pregnancy and into the postnatal period by a number of health care professionals. This provided further opportunities for referral and re-referral and was based upon the premise that utilising a common health assessment and referral framework in regard to smoking during pregnancy and postpartum by a number of health professionals, would provide a systems based integrated service model for pregnant smokers.

The intention was to provide a seamless, more efficient and effective referral system from the referrer to the stop smoking service provider. The development of an electronic referral system had the potential to provide the local area with the opportunity to capture data that would inform local planning for service provision in the future.

2.2.2 The electronic referral system

To support the pilot an electronic referral system was developed by AN Computing called the National Pregnancy Referral System (NPRS). This system is a web based data management tool that registered users can use to refer pregnant women, partners and other family members to the local stop smoking service(s). The system was also designed to include a feedback mechanism so that referrers could receive notification of the referral outcome.

From a user perspective, referring a client involved little more than completing the client's details and submitting the referral.

In addition, as the pilot site (see below) used the Quit Manager (QM) database, additional development work was carried out to ensure that the two systems would recognise and work together, so that referrals made via the NPRS system would be successfully received directly into the QM database.

2.2.3 The pilots

In July 2011, a request for expressions of interest for pilot areas was disseminated to the services that had responded to the NCSCT smoking in pregnancy survey (see 1.5.2), alongside an eligibility criteria checklist (see annex B). Based upon responses to the checklist a pilot site, Central and Eastern Cheshire Primary Care Trust (PCT), was chosen.

In 2010, Central and Eastern Cheshire had a smoking rate of 20.1%. The local prevalence of smoking in pregnancy is measured by the smoking at time of delivery data provided by two Maternity Units within the PCT, Leighton Hospital Maternity Unit and Macclesfield District Hospital. At the time of the pilot the reported smoking rate was 18% in Leighton and 13% in Macclesfield.

Both Leighton and Macclesfield Maternity units reported being compliant with NICE guidance actions for identifying smoking in pregnancy by midwives. All pregnant women were offered carbon monoxide screening at booking and identified smokers were offered a referral to the stop smoking service. Referrals were completed on a dedicated paper form, which was faxed across to the service. The Macclesfield Maternity Unit had commissioned support for their pregnant smokers and this was provided by a smoking in pregnancy midwife specialist. Within the unit, following referral, follow up was proactive and support was provided on-site, whilst follow up and support for Leighton Maternity Unit's pregnant smokers was provided by the stop smoking service.

In addition to implementing level three of the tiered model, the pilot site were keen to investigate the use of CO testing upon admission to a labour ward in order to improve the recording of smoking at time of delivery (SATOD) data and as a result it was agreed to also include this within the pilot.

To support the planning and implementation of the model, a working group was established, chaired by the local stop smoking service manager, which included representation from midwives, health visitors, pharmacists and practice nurses.

In line with the tiered model, other HCPs were also included within the pilot, although due to the short timescales, the working group decided that this could only be managed on a small scale. Therefore in total, one GP practice and two pharmacies were approached and agreed to become involved.

The pilot ran from 17 January to 31 March 2012.

2.2.4 Pilot adaptations

During the pilot planning phase, a number of adaptations had to be made.

2.2.4.1 *Feedback mechanism*

It was found that the feedback mechanism from the stop smoking service database (QM) to the electronic referral system (NPRS) could not be developed within the anticipated timescales for the system to go live in the pilot site. Therefore the scope of the testing had to be reduced to testing the feasibility of implementing the NPRS referral system and importing of the referral to the stop smoking service only.

2.2.4.2 *Information governance and opt-out*

The identification of information governance (IG) issues during the implementation phase had a significant impact on the timescales for the pilot going live.

Initially it was understood that as the local area were already implementing an opt-out system for referral, that this project would be a continuation of current practice and therefore did not require further sign-off from the Trusts' IG leads. However, following discussions amongst the working group it became apparent that there was some variance in the definition of 'opt-out'. In particular, concerns were raised about the fact that all women who smoked, whether they reported it themselves or whether this was shown via their CO reading (6ppm or above), should be informed that they were being automatically referred to the local stop smoking service. It became clear that the system adopted locally still required explicit consent from the woman for referral and that any change to this would require IG approval.

IG were not in a position to agree to this change, citing that specific consent must be obtained before the woman, or any other client, could be referred. This resulted in a necessary change to the pilot model, which could no longer pursue an opt-out approach but rather follow an opt-in process where the woman would be expressly asked whether she consented to her details being sent to the stop smoking service.

In addition, information sharing agreements were required and this initial oversight unfortunately led to significant delays in starting the pilot. This resulted in reducing the length of the pilot to two months.

2.2.4.3 *Leighton Maternity Unit*

Once the pilot was in a position to begin, Leighton maternity unit were experiencing a high level of organisational changes that had resulted in crisis management within the unit. In light of this situation, it was agreed that the unit could no longer participate in the pilot and that this project would only continue within Macclesfield Maternity Unit.

2.2.4.4 *SATOD data collection – CO testing*

Following discussions with IG colleagues it became clear that the introduction of CO testing upon admission to a labour ward (to support the collection of SATOD data) would require further discussion and additional agreements to those already in place for the referral system. Given the delays that had already been incurred and the fact that this element of the pilot was additional to the original scope of the project, it was agreed that this would not be implemented.

2.2.5 Knowsley, Halton & St Helens

Knowsley PCT and Halton & St Helen's PCT approached the NCSCT regarding the NPRS system as they were interested in implementing an electronic referral system for pregnant smokers.

Both PCTs used the 'Quit With Us' database, which meant that the referral feedback function embedded with the NPRS system could be tested, as had been the original plan within the Cheshire pilot.

An opt-out approach had been implemented within the area and community midwives completed paper referral forms, which were then either faxed directly to the relevant stop smoking service, or left in a designated place within the local hospital for collection from a member of each stop smoking service.

Whilst recognising the limited time to implement the system, it was agreed that the NPRS would be provided for use by both PCTs to provide further testing of the system and to complement the Cheshire pilot. Implementation began on 13 February 2012 and included midwives only.

2.2.5.1 *Knowsley PCT*

In Knowsley, due to a lack of access to IT, community midwives continued to complete the paper referral forms but rather than faxing them across to the service these were faxed to two public health midwives who inputted the referrals into the system. Any completed forms left at the hospital were collected by a support worker who then inputted the referral details into the NPRS. It was estimated that this resulted in 90% of referrals entering the service via the electronic system, with some still received via fax if the referral came from other areas.

The stop smoking service then followed-up and contacted the referred women, who were seen by two dedicated advisers from the stop smoking service, predominantly within the woman's home.

2.2.5.2 *Halton & St Helens PCT*

Similarly to Knowsley, the community midwives continued to complete the paper referral forms due to a lack of IT access. The original intention was for a nominated midwife to collate the referral forms and input the information into the NPRS however, due to staff shortages and limited administrative support this was not possible and therefore the forms continued to be faxed and collected by the stop smoking service who then inputted the information into the NPRS and followed up the referred clients. Therefore this element of the pilot did not test the use of the system by the midwives themselves.

2.2.6 Queen Alexandra Hospital, Portsmouth

Finally, as part of its programme of work, the NCSCT was also testing an alternative electronic referral system designed for use within secondary care settings. This system allocated patients to the most suitable stop smoking service based upon the patient's postcode. Within this pilot the maternity inpatients ward at the pilot hospital, Queen Alexandra Hospital in Portsmouth, were included. The maternity ward itself was not originally identified as a setting to include within the project; however it became apparent that many of the midwives had voluntarily completed the online very brief advice (VBA) training as part of the pilot and were keen to become involved. According to the local protocol, it was already policy on the ward to identify smokers upon admission and automatically refer pregnant smokers to the local stop smoking service unless they specifically requested that this did not happen.

Following discussions with the Deputy Head of Midwifery, it was agreed that an action plan would be developed to support implementation. This involved:

1. Identifying an administrative member of staff who could access the relevant functions on the hospital system (PAS)
2. All ward staff accessing the VBA training. Information about the VBA training was cascaded to all ward staff via their management teams
3. Implementing supportive resources such as the referral labels that were affixed to the patient's paperwork to indicate to the administrator that a referral was required

The referral process was first discussed with maternity in November 2011. However, the pilot did not go 'live' in the maternity unit until 16 January 2012, as there was a delay with accessing the internal IT training required to use the hospital's electronic system.

2.2.6.1 *CO testing at time of delivery*

CO testing was not included within the Streamlined Secondary Care System however so, the maternity wards including the labour ward, were also asked to capture CO levels from women upon admission. This was included to reflect NICE guidance and to also briefly test the use of CO to support greater accuracy of smoking at time of delivery (SATOD) reporting, the intention being to suggest whether more detailed testing in this area could be recommended.

Information about the monitoring process was provided (see example guidelines in annex C) and following discussions with the senior midwifery manager, a simple monitoring form was developed to support the collection of the data required for the pilot. Additional guidance and demonstrations regarding CO monitoring were provided to staff during handover meetings and shifts. Ward visits were repeated throughout the pilot to collect the monitoring forms and to show any outstanding members of staff how to use the monitors.

This element of the pilot ran from 16 January to 31 March.

2.2.6.2 *Pilot adaptations*

Due to a shortage of administrative staff, a member of staff from a different area within maternity had to be used to input referrals on behalf on the in-patient unit.

3. Outcomes

3.1 Central and Eastern Cheshire

In total, 80 clients were referred to local stop smoking service including 65 (81.3%) pregnant women, nine (11.31%) partners / family members and six (7.5%) re-referrals. As referrals were not routinely inputted onto the system during the contact with the woman however, it is not possible to infer from these figures the rate of agreement to referral.

3.1.1 Demographics

The majority of women were white British (90.1%, n=64), had a routine and manual occupation (42.3%, n=30) and were aged between 16 and 43 years old as shown in table 2.

Table 2: Key demographics

		% (n)
Ethnicity	White British	90.1 (64)
	Other White Background	4.2 (3)
	Mixed White and Black Caribbean	1.4 (1)
	Not stated	4.2 (3)
Occupation	Routine and Manual	42.3 (30)
	Never worked or Unemployed	26.8 (19)
	Intermediate	5.6 (4)
	Managerial and Professional	5.6 (4)
	Home carer (unpaid)	7.0 (5)
	Full time student	1.4 (1)
	Unable to code	11.3 (8)
Age	Mean (range)	26 (16 – 43)

Where recorded, the average CO reading was 8ppm, ranging from 0–22ppm. Number of weeks pregnant was recorded for 25 (35%) of referrals, with an average of 13.9 weeks and a range of 8–35.

3.1.2 Referrals

Over 75% (77.5%, n=55) of the referrals for pregnant women were made by midwives with the remaining referrals (22.5%, n=16) made by health visitors. This included six (8.5%) women referred in the post-natal period. There were no referrals received from the pharmacies or GP practice involved in the pilot.

Almost a quarter (24%, n=17) of women reported that they lived in a household where at least one other person smoked. Smokers, other than the pregnant woman, were also referred from five (29.4%) of these households resulting in nine additional referrals.

3.1.3 Conversion and support outcomes

At the point of data capture 13 (18.3%) pregnant women had agreed to support in principle, six (8.5%) had declined support and four (5.6%) had not responded to three contact attempts and were therefore classified as 'unable to contact'. Contact outcomes for the other women were currently 'unknown'.

Nine (69.2%) women who had agreed to support in principle had gone on to access the service and set a quit date and at the point of data capture, two (15.4%) had quit at four weeks and one (7.7%) was lost to follow up.

3.1.4 Process evaluation

Qualitative interviews were undertaken with a small sample of HCPs who had been involved with the implementation of the pilot or had experienced the pilot through their daily practice. The interviews set out to:

- Gather knowledge about the HCPs' attitudes towards identifying and referring pregnant smokers within NHS settings
- Assess the HCPs' experiences of the web based referral pathway that was being piloted
- Further understand how well the web based referral pathway had been accommodated into the HCPs routine practice
- Test the effectiveness of the referral system and using the electronic referral system to make a referral
- Gain insight into the HCPs understanding of and opinions about opt out referral processes
- Explore the need for web based feedback
- Gain insight into successes, difficulties, barriers and issues to implementing the model
- Gather information to further inform the implementation process

Telephone interviews were conducted with six HCPs in January 2012.* Interviews explored the HCPs' involvement and role within the set up and implementation of the pilot, their views on identifying pregnant smokers in a healthcare setting, their experiences of and opinions about the web based referral system, their understanding of opt out referral processes and discussion about rolling out the pilot nationally.

The six interviewees were all HCPs based within Central and Eastern Cheshire PCT, staff were based in the community, within the hospital or within the local stop smoking service. The HCPs covered a range of roles, all of whom had some form of involvement with pregnant smokers. Some of the HCPs had direct contact with the pregnant smokers, others were in managerial positions. Some of the interviewees had been involved with the implementation of the pilot from the beginning; some had come on board during the planning process, whereas others only became aware of the pilot when they learnt of its implementation in relation to changes to their daily practice.

As previously stated, it was initially intended that the pilot would be implemented across two hospitals, Leighton Hospital and Macclesfield District General Hospital, which are both supported by Cheshire East Stop Smoking Service, however Leighton Hospital withdrew their involvement from the pilot imminently prior to implementation. One interviewee was based at Leighton Hospital, the others were based at Macclesfield District General Hospital (3), based out in community (1) or worked for Cheshire East Stop Smoking Service (1). The semi structured interviews lasted for between 20 to 60 minutes, were audio recorded with permission and transcribed verbatim.

Following thematic analysis the subsequent key themes emerged.

3.1.4.1 *Identifying and referring pregnant women*

The foundation of the web based referral process was to improve the system of identifying and referring pregnant smokers for support to stop smoking. However, an assumption was made that the HCPs believed that smoking status should be identified and discussed with pregnant women. Interviews began by initially exploring this assumption, asking whether they agreed that it was right to ask pregnant women about their smoking status, and if so, whether they felt that the NHS should be offering support to these women.

All interviewees agreed with the principle of asking about smoking and offering support to stop. Some justified this with descriptions of the harm that smoking can cause to mother and unborn child or by highlighting the benefits of cessation during pregnancy.

* Interviews had initially been intended to take place half way through the data collection period, to explore opinions of the web-based referral pathway, examining any issues that had arisen and highlight benefits of the new system. However due to the delay to implementation, five out of the six interviews were carried out prior to the referral system 'going live' – this limited the extent to which questions could be answered and many responses were answered prospectively.

It is very important, because there are many implications to women who smoke ... I think we can easily split into groups, smokers and non-smokers ... just by looking at outcomes, because higher incidence of still births, abruption, antepartum haemorrhage, bleeding in pregnancy and mid trimester miscarriages, all that is linked to smoking (P6)

We're trained to give the women all the information, and then they make a choice from that information and I believe that's the same with smoking, that we shouldn't treat it any differently, we tell her that it is harmful in pregnancy, these are the reasons why. We offer them support and if they then decline that that's absolutely fine, that's the woman's choice, and then obviously if she does, then she can access a service and try her best to quit (P3)

This was identified to be the duty of all HCPs, but acknowledged as the midwives responsibility in particular. Many of those interviewed also highlighted that on the whole they were very comfortable with discussing smoking with a pregnant woman.

I'm very comfortable and I think it's a really important thing to talk about. I think we're used to asking quite awkward questions, so no I think smoking is such a health risk ... because we are public health practitioners as well, so, it's a very important part of public health (P2)

When interviewees were subsequently asked whether the NHS should provide support for pregnant women who were identified as smokers, it was very clear that all were in favour of this.

I think it is appropriate to offer support for the reason that if we don't they have problems and then you spend more of your resources treating those problems. So I think if we do the preventative bit now this will save the NHS lots of resources ... so we have the benefits for future (P6)

One member of staff mentioned the potential difficulties of discussing smoking with pregnant women, suggesting that it can be a sensitive issue to raise due to a number of factors, including possible social stigma.

I can see it's quite a contentious issue in as much as there is a massive social stigma attached to smoking in pregnancy, I mean there's a social stigma probably to smokers in general but probably more so to women who smoke ... so to have this (cessation) imposed and then to feel the social stigma ... you've got a population of people where the vast majority of people around them smoke, and you've probably got mothers that are saying to them well I smoked when I had you and your brother, and you're all right, so you've got that social myth as well, ... you'll have a smaller baby, it will be much easier, you're all right, your brother's all right, and I smoked and your grandmother smoked with me and I'm all right (P5)

3.1.4.2 *Existing practice for identifying and referring pregnant women*

Staff interviewed were asked to describe how they, or their team, would identify and refer pregnant smokers in their current practice, prior to the implementation of any changes introduced by the pilot. All members of staff described what they saw as relatively robust systems that were already in place.

These systems included community midwives asking all women for their smoking status at the booking appointment and carrying out a CO test, with six parts per million as the cut off for active smoking. Those women who were identified as smokers would be given brief advice by the community midwife and then asked if they wished to be referred for further support. A referral letter, found in the women's hand held notes would then be either sent to the specialist stop smoking service midwife directly (in Macclesfield) or sent to the office of the local stop smoking service (in Leighton), this difference was site dependent.

> *What we do currently is we already CO monitor at booking, so what happens is when the woman gets booked with the midwife, the midwife does a CO test, it's part of the computer system, it prompts them to ask the question. Every single woman whether they're a smoker or not everyone has the test. If that then shows that they are a smoker they do an automatic referral, which is located in their care plan, the handheld notes (P3)*

Women would be asked again throughout their pregnancy, most probably by the community midwives, whether they were a smoker. It was stated that there was space in the hand held notes to record the women's smoking status at these subsequent appointments. In Macclesfield midwives had been recording smoking status as routine practice for approximately six years, with routine CO monitoring being in place for approximately two years. It was not known how long the system in Leighton had been in place for.

It was discussed that it was mandatory for community midwives to ask smoking related questions, however any HCP could discuss the women's smoking status with her, and thus in theory, anyone could carry out the referral.

Other systems were also discussed, including health visitors routinely asking the woman her smoking status at their initial postnatal visit; however a CO test would not necessarily be carried out at this point. Health visitors would offer the woman information about the dangers of smoking, discuss second hand smoke and how to avoid exposure for the baby, however a specific referral process did not seem to be in place at this stage, at either site. It was suggested that the woman may be directed to their GP or a pharmacist for support.

Further to this it was highlighted that (in Macclesfield) those women who were identified to be high risk, for any number of reasons (not including smoking behaviour) would have their smoking status discussed when attending specialist high risk clinics. It was suggested that a large proportion of these women were likely to be smokers and their specific circumstances, such as a previous premature delivery, placenta abruption or the loss of a previous infant from sudden infant death syndrome could be used as a starting point to discuss cessation. This could incorporate an offer of a referral to the specialist stop smoking midwife or a more general referral to the local stop smoking service.

> *We try to highlight things from her history that would have major impact in her quitting the habit, personalise the information, for example, she may come to you discussing that her previous baby was small for their age, baby was of low birth weight, or would have arrived early, or she would have had things like antepartum haemorrhage in pregnancy previously. So, in these women it is strongly recommended that they quit smoking to reduce their risk of reoccurrence of the same problem (P6)*

Once the referral had taken place, it would be sent or faxed to the relevant service and the pregnant smoker would either be seen by the specialist stop smoking service midwife (if available) or by a stop smoking advisor within the community or in a clinic run by the stop smoking service.

HCPs interviewed felt that this was a fairly robust system which was working successfully. There did however appear to be some confusion as to whether what was in place before the pilot was in fact a genuine opt out process or not, some felt that the process of providing a referral was automatic for all smokers, whereas others believed that the pregnant woman would be asked whether she was interested in having a referral for smoking related support. This is discussed in more detail later under the theme 'Opt out referrals' (3.1.4.5).

3.1.4.3 *Changes to existing practice for identifying and referring pregnant women*

Interviewees were asked to describe the changes that the current pilot was going to result in once implemented. The main difference was that a web based referral system was to be introduced, so referrals would be made to the local stop smoking service and the specialist stop smoking midwife electronically. It became apparent that the changes were seen to be relatively minor by many of the HCPs, who suggested that they did not see this as a significantly large change to their current system.* As illustrated below the HCPs perceived the pilot changes to be a small amendment to the process they were previously using.

> *They're doing the paper process now, so we've introduced an electronic booking system into the community, so it would just be an add on to that (P1)*

> *In addition we will be doing for the pilot the electronic referral as well, and that's the only difference that's going to happen. The only difference is that it's going to be an electronic process rather than paper (P4)*

* It should be noted that the pharmacists and practice nurse involved within the pilot were not interviewed. It is expected that the implementation of the referral system may have required a greater change in existing practice for these professions rather than for the midwives and health visitors.

3.1.4.4 *Opinions of changes to referral system*

All of the HCPs interviewed were positive about the new web based referral system, and although five of the six interviews were conducted prior to the new referral process 'going live', HCPs were in general expecting the new process to be beneficial and a positive addition to practice. This theme was explored in some detail and has therefore been broken down into a number of sub-themes, as illustrated below.

Increased ease of accessing referral information and making referrals

The HCPs anticipated that the new web based referral system would increase the ease of finding out whether a woman had previously been identified as a smoker, and had subsequently been referred for smoking cessation support. Prior to the implementation of the pilot (and at the time of interview), staff would have had to search through paper records to find out a woman's referral history, however it was expected that once the web-based referral was in place, this process would be streamlined, thus freeing up time for the staff to be used elsewhere.

> *I think ease, you know, the information is easily accessible. Anybody can see who's been referred and who's accessed the services, rather than ploughing through paper notes, information is not always easy to find on paper (P1)*

> *I suppose it's another reference where the community midwives, the team, midwives can actually look up on the system and to see if the lady has been referred and what contact she's had because that's what that will provide as well. Whereas not all the midwives have that access now, so that will be an advantage (P4)*

Some of the interviewees highlighted that the web based referral system would make it both easier and quicker for all HCPs to refer pregnant women for stop smoking support, potentially leading to an increased number of referrals.

> *If they're sat at the computer and they're inputting data onto the system, if they just had a quick referral page open and the woman wanted to be referred, they could just put the information in quite quickly and then send it. And then that would save paper and faxing it and everything else. So we just thought it would make the system simpler (P5)*

Benefit of a clear referral system

Some of the HCPs highlighted that by introducing the web based referral system, they now had a clear referral pathway to follow. It was felt that this may be more likely to encourage them to discuss smoking with pregnant women as they would have something to offer to women identified as smokers. This was more so the case for the members of staff who were not as used to asking pregnant women about their smoking behaviour and referring them as part of routine practice.

I think it's good, because I think every mum they would have been asked anyway as part of booking, but again it feels like you're just ticking a box if you haven't got something you can do with that. So although we would give verbal advice at that time, and then subsequently when we see them it's an opportunity again to ask ... with this project ... then you've got somewhere to recommend, so I think it encourages us to do it (P2)

I welcome it, because like I say it raises the profile, it makes it a standard question. It makes it normal for the client the fact that we are asking about that, and we've got somewhere to refer them into, so it's all positive ... I think it's time well spent myself (P2)

Ease of using the system

Although the HCPs interviewed had not yet had the opportunity to test out the web based referral system in practice, most had had the opportunity to practice with a 'dummy referral'. Those that had experience of this commented that they had found the process easy to use, calling it 'user friendly' and efficient.

I did do a test, a pretend name, very useful, very easy (P2)

Well having played with it on the trial if you like, it seems easy to use…all the midwives that are involved in the booking process have had the training on how to use it. We've set up with IT a desktop icon so when they're doing electronic bookings they can just click on the icon rather than typing in a web address, so that's going to make it easier for them. And to be honest it only takes a couple of minutes to fill in and complete (P4)

In a number of cases it was suggested that paper referrals can sometimes be written at the time of referral, however for a number of reasons, not end up being delivered to the specialist stop smoking midwife or local stop smoking service. It was thought that having the web based referral system could resolve this problem.

We don't know how many of the fax referrals weren't done because either the fax was written out and then not faxed and it got lost, or put in the files, you know what I mean, there's a lot of opportunities for human error (P5)

Ethical and practical issues

Despite support for the implementation of the web based referral, a number of potential issues were also raised however. A key issue was the sharing of personal information electronically, both in terms of concerns of how secure this process was and also the potential for delays to the physical implementation of the new system. This problem was mentioned by many of the staff, and identified as part of the reason for the delay to the implementation of the current referral pathway under discussion.

The barriers that we came across was the sharing of information, that's what delayed the implementation of it (P1)

The downsides have been the information governance and everything that's been a bit of a problem really (P4)

An additional potential problem identified was that access to a computer was necessary for the referral to take place. It was suggested that this may be an issue for some of the staff, especially those working out in a community setting, where computer access may be more limited.

Changes to routine practice

All interviewees were asked whether the web based referral system would fit into their own or their team's routine practice. All HCPs agreed that the new process should, in theory, be easily incorporated into routine practice, without too many changes. It was highlighted that, as with any change, staff can initially be put off by learning how to use a new programme, or by having to do things slightly differently. However, once the changes have been made, they often become 'the norm' relatively quickly.

They soon pick it up and once it becomes part of your routine it's then easy isn't it? (P3)

One interviewee highlighted that the new process would not only quickly become routine for the staff implementing it, but also for the pregnant women involved.

It becomes part of the process, and like with lots of new things with pregnancy, once things are introduced, because of women talking to women, they become aware of what goes on during the booking in process, what they're referred for, it just become part of being pregnant (P1)

None of the HCPs raised any concerns that a system such as the web based referral system would not fit into routine practice.

Web based and other feedback

One additional aspect of a web based referral system was the ability to provide the HCP carrying out the referral with web based feedback, about whether the woman engaged with the stop smoking support, attended an appointment, set a quit date or successfully quit etc. As previously mentioned, this was not a function included within the pilot as highlighted by those interviewed.

The only feedback would be probably further down the line when they see the midwife again, she'll probably ask did you go and see the smoking service, how are you doing, and that's the only feedback, but there's no sort of automatic (P5)

HCPs were asked whether they felt there was a need for feedback, and whether providing it in electronic format would be suitable. The majority of the staff interviewed were supportive of the prospect of providing feedback to those doing the referral, suggesting that this may encourage further referrals if HCPs saw that their efforts were having a positive effect.

Yeah, I think it's good to actually see that you've made your referral and actually something's come of it. And it may give them more of an incentive to refer more maybe or ask or try and persuade them more (P5)

It was also suggested that pregnant women may not always be honest when asked if they followed the referral through and made a quit attempt. By having a feedback system, the HCP referring would be able to know whether the referral was taken up or not.

In the reverse of this, however, one interviewee suggested that this could potentially have the opposite effect, if those carrying out the referral saw that the women they were referring were having unsuccessful quit attempts, or not even attending an appointment, this could lead them to feel that their invested time was not worthwhile, resulting in a reduction in the amount of referrals made.

When asked what format the feedback should be provided in, it was apparent that a paper based system, slotted into the women's notes was preferable over a web based feedback process. It was noted that if it was electronic feedback, staff would have to log onto the system to receive this, however if it was slipped into the woman's notes, it was readily available for them.

> *I think just a brief feedback that the person obtained the service or were engaging in the service. I think it's quite good in the patient notes. Just like a little slip to put in the notes. If it comes as a web based feedback you've then got to transfer it into the records, just from a practical point of view. We can put the slips into filing and then it's there for you to access if you wanted it (P2)*

3.1.4.5 *Opt out referrals*

As mentioned, when the new web based referral process was first proposed, it was the intention that it would be an opt out process. It later transpired that there was lack of agreement about what opt-out actually meant between the pilot team and some of the staff implementing the web based referrals, and subsequently the opt out aspect was removed from the web based referral.

> *I think this was one of the biggest issues actually around the pilot. Our view of opt out and the way the system works. I think sometimes it's, because we all have our own speak, we can tend to say things that we understand and assume that other people understand as well. And like you say with opt out, very simple, but like you say everybody's got their own version of it, of what it actually means (P5)*

Interviews explored HCPs understanding of the phrase opt out referral, with each interviewee being asked what they thought it meant, and what their opinion of an opt out process was. It became apparent that there was variance amongst the staff interviewed in terms of their understanding of the term 'opt out'.

Some of the HCPs believed that opt out referred to a process where pregnant women would be asked whether they wanted to be referred or not, if they said no, then they were opting out.

Well you can only opt out if you're asked. If the information is just taken and everybody who smokes is referred ... It's a bit like some blood tests used to be opt out, so you were given the choice, so it's the same with smoking, you're given the choice, do you want me to refer you or not? That to me is opt out because you're actually asked, whereas if it's not opt out all that information is taken and shared with whoever needs it to be shared with (P1)

Opt out ... is when a woman is highlighted as a smoker and they are given the advice and information about the facts of smoking in pregnancy ... and they're then asked would you like further support? If she says no, that is an opt out ... if she says yes I would like further support, then a referral (is made) (P5)

Others followed the NICE approach to opt out, with the pregnant woman who had been identified as a smoker, being informed that she was being given the referral automatically, unless she stated that she did not want to be referred, and therefore opted out.

That would mean that if we identified somebody who was smoking or members of family were smoking they would be automatically referred but obviously they would be given the option to opt out, so it would be everyone opted in unless they actually say that they don't want to be part of it (P2)

That if the woman declines it and is persistent that she doesn't want to be referred, then we would just record that and not complete the referral (P4)

Every single woman whether they're a smoker or not everyone has the (CO) test. If that then shows that they are a smoker they do an automatic referral ... if she does decline ... they still (pass on) the referral, but they write on decline service and then just send them some information about passive smoking and they know that the midwife's going to do that, so they agree to have that done (P3)

After interviewees had explained what opt out meant to them, they were asked what their opinion of opt out was. Their response was obviously dependent upon their definition of the term. There were again a mixture of opinions about the advantages and disadvantages. Some of the HCPs were positive about opt out referral processes, providing that the pregnant women was fully informed that the referral was going to take place, and no objection was raised. It seemed that the women having the chance to refuse was key, and this element of choice was very important to the HCPs.

I think people should be given the choice. It's having enough information…so it's informed consent isn't it really. And if they've not read the information and you've just referred them and then somebody contacts them, that's a bit like the sharing of information (P1)

I think if you explain and said to them (pregnant smokers) something like we would automatically refer you, is that alright or would you like to opt out of that, I can't see anyone would object to that (P2)

Interviewees stated that one benefit of an opt out referral pathway was that it did not single out some women over others. If all were referred unless they opted out, it meant that they didn't feel as though the finger was being pointed, and it was said to make it easier for the maternity team to bring up the topic of smoking.

> *We probably felt that it was less judgemental and we don't pick and choose really, and that empowers the midwives when they're giving advice, that they give the standard advice (P4)*

It was also seen to be a benefit for the pregnant woman, as it could increase the chance that those women who were referred would go on to stop smoking.

> *I think that may seem good, in the sense the ladies sometimes, they are left to make the decision, this will allow them more of a chance (to stop smoking), that many more women may be referred to this service (P6)*

It was highlighted however by some participants that by having an opt out referral system, although it may result in more referrals, these pregnant women may not be fully committed or motivated to stop smoking and therefore would be unlikely to make a successful quit attempt.

> *I think it's quite a good idea. The only thing is that people might agree not to opt out, but would they be the people that actually continued with it I don't know? (P2)*

> *Your quit rates are going to be watered down ... if 90% of the people didn't want to come, so the first question to ask them is ... do you want to be here? ... do you want to quit? (P5)*

3.1.4.6 *Time scale for data collection*

A further suggested barrier to successful implementation was that the period for data collection was too short, which would prevent sufficient amounts of data to be collected. The data collection period was obviously shorter than intended, due to the unexpected delays, however it was noted that even without these delays occurring, the data collection period was insufficient.

> *I don't think the pilot ... would give you a true snapshot. Nine months from beginning, from a booking to the end of pregnancy would be a more realistic picture. It was initially three months they were going to collect data. In an ideal would you would want 10 months probably, you'd get the SATOD information from that, just from those first few that were booked (P1)*

3.1.4.7 *Smoking at time of delivery*

In the original pilot proposal it had been suggested that smoking at time of delivery (SATOD) data collection would be implemented by the midwives in the delivery wards. For a number of reasons it was decided at a later date that this would not in fact be implemented, however HCPs were asked for their opinions about the collection of SATOD data. There were mixed feelings about whether this would have been a successful system to implement, and whether it would have been accepted by the pregnant women. However in general HCPs were positive about collecting this data.

Some HCPs suggested that there was a need for this information to be routinely collected. It was implied that although some SATOD data was currently being recorded, it was based on data collected earlier in the pregnancy, and not at time of delivery, suggesting this data could be unreliable.

> *We input data on our information system for smoking at delivery, but I don't think it's correct. I think people take it from their antenatal notes, I certainly don't think they're asked during the birth (P1)*

Other HCPs reported being disappointed that improving SATOD data collection had not been introduced as part of the pilot.

> *I think CO monitoring at booking is a good idea. And maybe we'd look in the future at CO monitoring at delivery, because I know initially that's what the pilot involved as well but that's been pulled from it. But that was something we'd contemplated ourselves, we just haven't got round to it (P4)*

A number of the HCPs stated that although, as with any new system, it may take some time to be absorbed into routine practice and for HCPs to get used to implementing it, they thought that collecting SATOD data as accurately as possible would not be too difficult a task to do.

> *I think initially it would have been time consuming, but as with everything once you get used to doing it, it's quite quick, it's just part of the process isn't it (P1)*

> *Non-invasive tests should be fine really, because in such a situation where the lady is not having too much of disturbance I think that should be taken into account and should be carried on, if it is going to help in future planning and management (P6)*

As previously stated, most of the HCPs were positive about introducing SATOD data collection to improve the quality of reporting. Any ambivalent attitudes towards it focused around how the pregnant women would respond towards the collection of this data at an often emotional and potentially distressing time.

> *I don't know whether women will like this idea because labour is fairly emotional for many women for the reason that they are in pain and if something is done which may not be to their liking I don't know how this will be taken by the women (P6)*

However despite this apprehension, HCPs were supportive of introducing SATOD data collection at delivery rather than midwives basing the completion of this data on information collected earlier from women. This therefore is an area that warrants further investigation as improved data collection would support the accurate measurement of the national smoking in pregnancy indicator included within the Public Health Outcomes Framework.

3.1.4.8 *Roll out of the pilot*

Interviews explored the potential to roll the web based referral out nationally, asking the HCPs whether they thought this would be a good idea, and the benefits of and barriers to doing this. Their ability to answer this question was compromised by the fact that for most of the interviewees, the pilot had not yet 'gone live', and so it was difficult for them to think as far ahead as national roll out. However, despite this most attempted to answer this question.

All staff were predominantly optimistic about the idea of rolling out a web based referral system nationally. Some highlighted that they thought HCPs who care for pregnant women would be very supportive of it.

I see it as a positive step for care of women (P6)

I don't think health visitors and midwives would object in any way. I think it's a subject close to most of our hearts or should be anyway (P2)

A number of benefits of national rollout were noted, including allowing all HCPs involved in the woman's care to be able to access the referral details through the web system – allowing for better continuity of care.

I can see the advantages of having it yes, because it will mean that all professionals involved in that woman's care will have access to see whether (a) she's been referred, (b) whether she's been accessing the service (P4)

Some staff suggested that if the new process could only be rolled out to a certain number of sites, then it would be important to start with those most in need, i.e. those with high smoking prevalence in pregnancy and high SATOD statistics.

Very few barriers to national rollout were identified, a number of the staff reiterated some of the previously discussed issues that they experienced with the current pilot, such as the additional time that it could take to learn the new system, however they also suggested that they would soon adapt to the changes. It was highlighted that it was key to ensure that all of the systems were in place prior to national roll out to ensure a smooth implementation of the pathway.

Nationally ... I think it's definitely the way forward. But I think it's just getting it right before implementation, that everybody is fully aware, and IG are definitely part of it, people fully understand what the terms mean, and that's laid out as simple as possible I think (P5)

Other suggested barriers included the potential cost that it could take for a national roll out and that all members of staff that were carrying out the referral would need access to a computer with internet access. A few mentioned that a risk of using a web based referral system would be that the system could break down, however it was highlighted that so many other systems are computer and web based, that this should not be a substantial problem.

Everything that we do in health is so much all to do with IT. I see no problems really with implementation, because you have internet access in every clinic that we do really (P6)

3.2 Knowsley, Halton & St Helens

In total 44 women were referred via the NPRS system onto the local stop smoking services. Five women (11.4%) reported being a non-smoker, however two (4.5%) of these provided CO readings of 6ppm or above. In addition, one woman (2.3%) reported she had already quit within the last two weeks.

3.2.1 Demographics

The majority of women referred (where known) were white British (43.2%, n=19) and were aged between 17 and 38 years old as shown in table 3.

Table 3: Key demographics

		% (n)
Ethnicity	White British	43.2 (19)
	Other White Background	-
	Unknown	56.8 (25)
Occupation	Routine and Manual	2.3 (1)
	Never worked or Unemployed	6.8 (3)
	Home carer (unpaid)	2.3 (1)
	Unable to code	88.6 (39)
Age	Mean (range)	28 (17 –38)

Where taken, the average CO reading was 16ppm, ranging from 1 – 70ppm. The average number of weeks pregnant was 11 with a range of 0 – 26.

3.2.3 Referrals

Over 93.2% (n=41) of the referrals were made by midwives with the remaining referrals made by the hospital (4.5%, n=2) and other (2.3%, n=1).

Only one client (2.3%) reported having another smoker in the household but this partner or family member was not referred.

3.2.4 Conversion and support outcomes

At the point of data capture, contact had been made with 39 (88.6%) of women, with three (6.8%) unable to be contacted after three attempts and two (4.5%) being out of the area covered by the stop smoking services. Of those contacted, 24 (61.5%) had accepted support and two (5.1%) had declined. It should also be noted that contact outcome was unknown for 13 (33.3%) women.

Twenty two (91.7%) women who had accepted the offer of support had agreed to a first appointment and 13 (59%) had attended. Nine (40.1%) women had failed to attend their appointment, with other women yet to reach their first session date.

In total 20 (51.3%) of the women contacted had set a quit date. Of these six (30%) had quit and five (25%) had relapsed at four weeks. Outcomes for the remaining women were unknown.

3.3 Queen Alexandra Hospital, Portsmouth

3.3.1 Referral activity

Disappointingly there were only six referrals made electronically over the pilot period.

3.3.2 SATOD CO testing

In total out of all women admitted (n=2,830), smoking status was captured for 0.8% (n=24) within the labour ward. A summary is provided in table 4.

Table 4: Labour ward – CO testing on admission

Month	No. of admissions	No. of women CO tested % (n)	Average foetal CO reading (range)	Average parental CO reading (range)	Smoker % (n)
January	1120	14	0.9 (0.28–3.96)	27 (1–14)	21.4 (3)
February	1036	9	0.7 (0.57–5.09)	20 (2–18)	44.4 (4)
March	674	1	0.57	2	-
Total	2,830	24	1.2 (0.28–5.09)	4 (1–18)	7

3.3.3 Process evaluation

In order to qualitatively evaluate the 'Streamlined Secondary Care System' pilot within the maternity department, telephone interviews were conducted with staff at the start of the pilot (January/February 2012) and later in the process (March 2012) to capture opinions at two different time points of the project. It should be noted that staff were extremely difficult to recruit for the initial interview, and more so for the follow up interview and as such the views presented in this report are based on three initial interviews and one later interview. Those interviewed demonstrated, to a large extent, a lack of engagement with the project hence data collected were certainly lacking in depth. Participants were all working on wards. Participants were asked about their thoughts on the online training that accompanied the pilot, the pilot itself and future recommendations. Interviews were, with permission, recorded and transcribed verbatim by an external transcription company.

3.3.3.1 *Online training*

Two of the three participants had completed the online training and both responded positively when asked their opinions of the 'very brief advice' online training. It was generally reported as being easy to access, quick and straightforward.

3.3.3.2 *Potential problems or concerns*

When asked at the outset about any concerns staff had regarding the successful completion of the pilot, a small number of potential problems were reported. One participant felt that getting staff on board and trained would be an issue as the department was large with a number of rotating staff. Another reported that she felt that staff wouldn't be aware of the project or trained to make referrals.

> *I think it's going to be difficult to get all the staff involved ... they've got too many other things to do ... and there's too many staff as well that come through the ward. It's not, you know, just a small team. It's a huge team that rotate through.*

3.3.3.3 *Positives of pilot*

One respondent indicated that she had experienced women who had previously declined stop smoking support had changed their mind and accepted the offer of support at the point of the pilot, and this was true at both early and later interviews. It was also reported that the referral system was simple and easy to do.

> *And those that have been asked, occasionally, even though they've declined a referral in the beginning, they will then change their mind when I speak to them. So we've picked up referrals when previously they've said, no thank you.*

3.3.3.4 *Challenges of the pilot*

A range of challenges were reported by interviewees. Primarily, the main issue in the early interviews appeared to be a lack of time for already busy staff and a lack of motivation on the part of the staff being asked to identify smokers.

It's hard to remember to do when you're busy and the workload's high

The other key point raised was the fact that women had been asked about smoking previously in their pregnancy, and it was felt that it was too late to capture women at the point they were admitted to the labour ward.

If they haven't stopped by the time they're coming into Labour Ward the chances are they're not interested, so I wonder if it's a bit late in the pregnancy.

In the later interview, staff reported still not completing referrals, again due to a lack of time and competing priorities within the Trust.

I just have to prioritise other things higher. I have to say it's not high on my list of priorities, but I have been doing it ... There are other things that we have to do – audits and, um, things have to be audited every week – that has to be sent to the Trust hierarchy.

3.3.3.5 *Day to day impact*

Ward staff did not generally report any impact on their day to day job role, the most likely reason being articulated by one respondent who reported that the pilot was of a low priority and so was dropped when the workload was high.

I have to say it's low down on priority so if, if we've got time to do it I'll do it, if I haven't then I drop it. So, no, it hasn't impacted. I still prioritise.

3.3.3.6 *Rollout*

When interviewees were asked whether they thought the pilot could be rolled out on a wider scale, the general feedback was that it could be, as it was easy to do, without any major changes needed. One interviewee responded that the pilot could be rolled out provided it was worthwhile.

Yeah, I'd say exactly what we're doing would be perfectly feasible, but I think we need to find out whether it's worth it first, in how many new referrals we actually get.

Few ideas were reported as to how best to promote the pilot if it were rolled out. One respondent indicated in both the early and later interview that it needed to be shown that the pilot had made a difference and needed to present statistics to show that the pilot was worthwhile and that women do change their minds about accepting an offer of smoking cessation support.

> *I think you would have to say that, out of however many women, or what percentage of women that had said no the first time and then said yes, did actually give up. So I think you would need statistics to show that, by asking again and having women change their mind, there is a relative percentage that do then give up. I think we'd need some statistics ... because of the time constraints with our job, we need proof that it really will make a difference.*

3.3.3.7 *Benefit to patients and patient response to the pilot*

Only one participant was able to offer opinions about the patient response to the pilot, reporting that women either responded positively or neutrally, but that none responded negatively. It was also reported, however, that some women may be responding positively because they had previously been asked and did not want to be asked again.

> *Some of them might be saying yes simply because they've been asked again. Maybe they think if I don't say yes, they'll be asking me again. So, sometimes I get the impression their heart's not fully in it. But others actually do turn round and say, yes, I realise I really need to do something and, yes please, and they are very positive. So, they're not negative*.

4. Discussion

Overall it was very positive that HCPs, particularly midwives and health visitors, included within the pilots believed and recognised the importance of their role in identifying smokers and activating their referral into effective stop smoking support. It was also reassuring that the midwives working within Central and Eastern Cheshire considered discussing smoking with their patients and CO assessment to be already embedded within their routine practice, demonstrating local adoption of NICE recommendations one and two.

It was however interesting that in Portsmouth, where identification and referral appeared less routine, the adoption of the electronic system was less successful. Despite initial enthusiasm amongst maternity colleagues, which led to their inclusion within the broader secondary care project being undertaken within the hospital, it became apparent that the existing workload and a perceived need to prioritise hindered implementation. Including the labour ward as a pilot setting, which is commonly very busy, may have been ambitious although this was required to test CO testing on admission to support recording of SATOD data. It was disappointing that only 0.8% of women admitted were CO assessed upon admission over the pilot period but given the apparent interest among HCPs, who seem to consider that this would be a progressive step, further testing of using CO to verify SATOD outcomes appears warranted and is recommended. The fact that the delivery of VBA even at this late stage in pregnancy, did appear to prompt some women to consider stopping smoking, despite having been asked previously and having declined was also encouraging.

The intention to replace the paper and fax based referral processes with an electronic system did not appear to raise concerns amongst HCPs and in fact seemed to be generally considered a very useful next step. It was felt that this would in particular reduce the time required to refer, simplify the process of ascertaining whether a woman had already been referred and reduce the risk of referrals becoming lost due to human error. Post implementation, anecdotal feedback has reaffirmed these views and the system has generally been easily incorporated within routine practice, particularly for those members of staff using the system within the Cheshire pilot. Testing the NPRS system did highlight some necessary adaptations, which once in place, streamlined the process even further. This therefore suggests that where established care pathways are already in place, the introduction of an electronic system, such as the NPRS, is possible.

The concept of the feedback facility incorporated within the system also received positive reactions from the HCPs interviewed and, where tested in Knowsley, Halton & St Helens, worked as intended. It was however interesting that paper based feedback, which could be slotted into the hand-held notes, appeared to be preferential and therefore it may be appropriate to develop a print-out function from the NPRS so that confirmation of referral outcome can be included in the notes. This could also act as reminder or prompt for other HCPs in contact with the woman to offer re-referral or to praise success as appropriate.

It was somewhat discouraging that none of the broader settings, such as the pharmacies and GP practice involved in the Cheshire pilot, submitted any referrals to the stop smoking service via the NPRS in line with level three of the tiered model (see table 1). However, this was to some extent anticipated given the reduced timescale of the project and not necessarily reflective of the referral system. It is anticipated that the majority of pregnant women are initially seen and predominantly supported by midwives in the antenatal period and health visitors postnatally, and therefore it seems appropriate that the majority of referrals would be generated by these professionals and the teams they work within. Nevertheless it is important that other HCPs recognise the benefit their intervention can also have and therefore it would have been interesting to see if referrals had been made by the other professionals groups involved if the pilot had been extended. It was however very encouraging that a number of referrals were made for partners / family members as well as for pregnant smokers and this highlights the versatility of the electronic system.

It was also positive that despite reduced timescale for implementation and the challenges encountered, the majority of HCPs interviewed believed that national rollout and adoption of such an approach would be appropriate. There are however a number of points to consider before national implementation could be achieved. As emphasised by the short pilot in Knowsley, Halton & St Helens access to IT is an issue, particularly for community based practitioners. This therefore has logistical implications for the management of inputting referrals into an electronic system, which could either be an individual activity or undertaken by a designated member of a team or department. Due to the lack of portable IT, paper based referral documentation would remain a necessity however, which still runs the risk of human error and lost referrals.

More broadly the implementation of systematic identification of smokers and referral, particularly if delivered on an opt-out basis, can result in a significant increase in referral and subsequent workload for stop smoking service providers. As shown in the projects included within this report it can take a considerable amount of time to follow-up and contact those referred. At the point of data collection, 26.8% (n=19) of women referred (n=71) had been contacted in Central & Eastern Cheshire and 88.6% (n=39) in Knowsley, Halton & St Helens.

It is also important to note that acceptance of support can also be variable, for example in Cheshire, where women were only referred if they explicitly agreed, under a fifth (18.3%, n=13) of those referred (n=71) actually agreed in principle to support when contacted by the service. Exact reasons for this are unknown, as unfortunately it was not possible to interview any of the women involved in the pilot. However this could have been the result of a number of factors including the fluidity of motivation to quit, or women consenting to referral out of sense of duty rather than a real intention to make a quit attempt. Anecdotally, conversion from referral into setting a quit date with pregnant clients is often cited as an issue and has been reported in similar projects.[23] Further investigation is therefore warranted into the most successful ways of managing this period of transition to maximise the number of women receiving effective stop smoking support.

Lastly, the challenges experienced through these projects, in particular those experienced in Central & Eastern Cheshire, do provide valuable learning points for other local areas looking to implement similar systems. Firstly, it is very important that relevant IG colleagues are engaged from the outset and that key terminology is commonly defined by all those involved. The disparity in the interpretation of 'opt-out' for example unfortunately led to considerable delays in this pilot. In terms of project management, this highlighted the need for aims and objectives to be unambiguously relayed to everyone included in leading the pilot or project from the beginning. The variance in opt-out definition is also of significance in a wider sense and should be considered in any future testing or evaluation of such approaches. It was also evident across the project that, in line with the findings from the UKCTCS smoking in pregnancy project, considerable time is required before changes in practice are adopted and often such change will have to compete against conflicting priorities. In addition a real need for ownership at a local level in order for implementation to succeed was apparent.

In conclusion, the short smoking in pregnancy pilots conducted by the NCSCT have resulted in the development of a web based electronic referral system for use with pregnant smokers and /or their partners as well as family members, and has shown that such a system can work in practice. Local areas looking to implement systems are encouraged to take into account the learning from the projects as they do so. It is suggested that a longer-term pilot for a minimum of 12 months would allow a full evaluation of the use of the NPRS throughout the pregnancy pathway and could be used to assess smoking status and CO monitoring at booking and, in particular, at time of delivery in more detail.

5. Recommendations

Based upon the outcomes and learning points taken from the projects outlined in this report, the following recommendations are made to local service providers, commissioners, stop smoking in pregnancy coordinators, project leads and researchers:

- Effective and systematic identification and referral processes for pregnant smokers, their partners and family members who smoke in line with NICE guidance should continue to be implemented locally
- Electronic referral systems should be considered as an alternative to existing paper or fax based systems
- Information governance colleagues across all organisations involved should be engaged in any proposed changes to local practice that concern patient data to ensure that appropriate processes are followed and relevant agreements are in place to support implementation
- Clear definitions should be provided and agreed at the outset of any future projects, in particular the local definition of 'opt-out'
- Variance in definitions of key terms such as 'opt-out' should be considered prior to any future testing or evaluation of such approaches
- Implementing changes in day-to-day practice requires a considerable period of time and should be taken into account when planning implementation at a local level
- Commitment and ownership is required in order for implementation to succeed. It is therefore recommended that key stakeholders and local champions are identified and involved from the outset

6. Additional recommendations for national consideration

- To ensure consistency and quality of implementation a nationally led and funded phased roll out approach is advocated
- Further evaluation of the longer-term use (12–24 months) of referral pathways and electronic referral systems during pregnancy and into the postpartum period is suggested. In particular this would allow further investigation into re-referral activity, including how this is best supported and what impact this has on the number of women accessing support and successfully stopping during pregnancy
- Further investigation into biochemically testing smoking status at time of delivery is also encouraged as this would increase confidence in the SATOD data submitted by local areas and support more accurate measurement to inform the relevant public health outcome indicator
- Finally, the beliefs of broader health care professionals such as GP practice staff and pharmacy staff regarding their role with pregnant smokers are yet to be investigated in detail. Whilst, it is logical and important to focus policy and communications predominantly on dedicated maternity professionals such as midwives, obstetricians and maternity assistants as well as health visitors, it would be useful to have a greater understanding of the opinions of other professionals who are involved in the care of pregnant women. Funding such research could help ensure that any opportunities to maximise policy and communication developments have been explored

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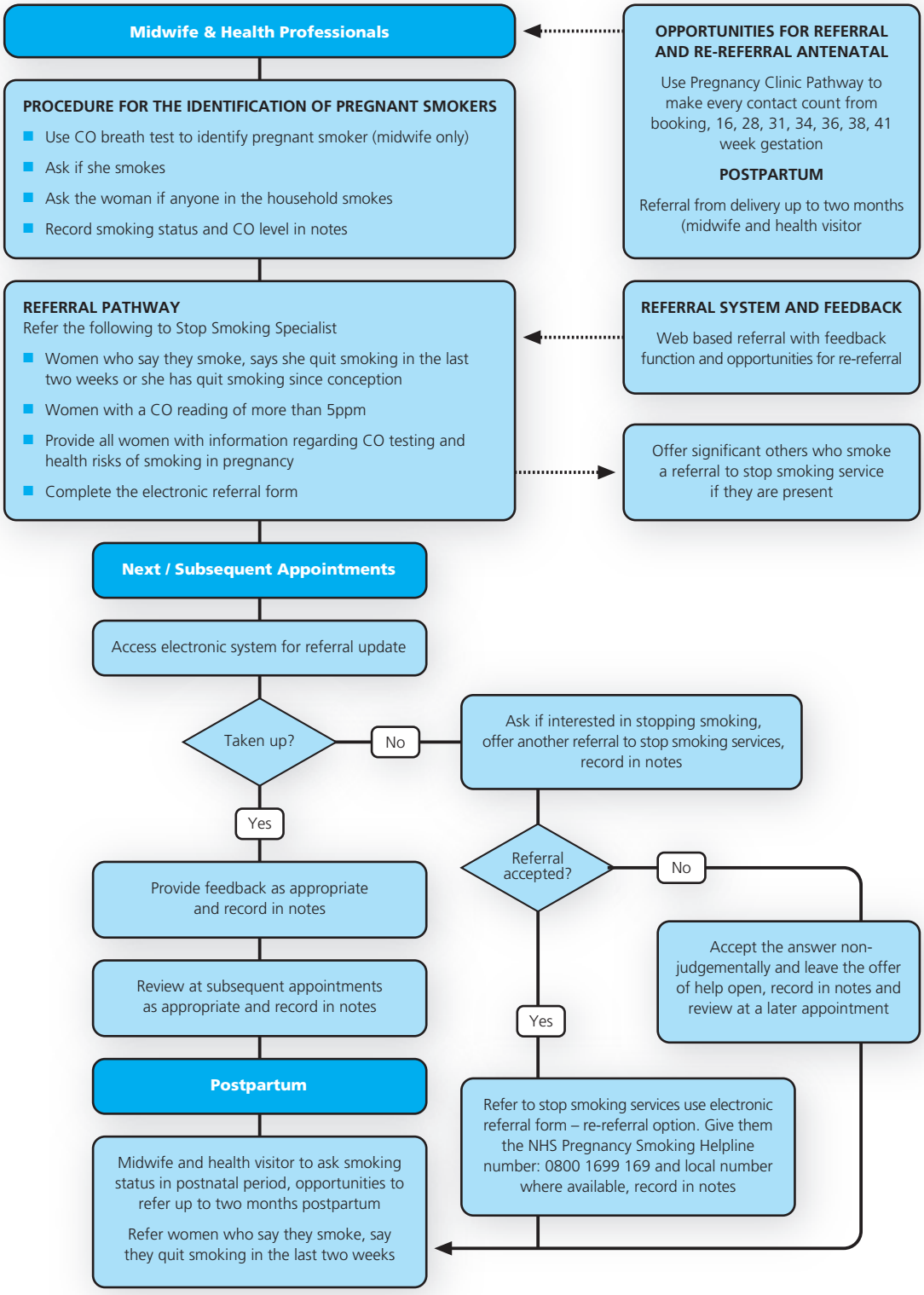
8. Annex A:
Tiered model: level three flowchart



9. Annex B:
Eligibility criteria for interested pilot sites

Smoking in Pregnancy Project – Tiered Systems Based Approach

Option 3 – Midwife and healthcare professionals making every contact count CO identification and web-based referral system (web-based system function opportunities for re-referral)

Pilot Site – Eligibility Criteria Checklist

Name of PCT
Name of Acute Trust Maternity Services
Name of LSSS

Commissioner
Name
Telephone contact
E-mail address

Maternity services
Name
Telephone contact
E-mail address

LSSS
Name
Telephone contact
E-mail address

In order to be considered as a pilot site for this option the pilot site must:

	Tick all that apply	Comments
Have identified in their local area that addressing smoking in pregnancy is a priority (identified by higher than average SATOD)		
Have an identified strategic lead / commissioner to take the lead on the project for the pilot site		
Have appropriate permission and commitment from the commissioner(s) (as required) LSSS / Maternity services to be a pilot site		
Have an identified maternity services lead with responsibilities for reducing smoking in pregnancy (or identified champion in maternity services)		
Have an identified service provider – manager / coordinator with responsibility for the provision of the smoking in pregnancy service		
Be able to ensure that communication links with the LMC are in place and identify an appropriate GP lead / PCT lead responsible for implementing GP actions		
Be able to identify a Health Visitor lead with responsibilities for implementing the health visitor actions within the implementation plan		
Be able to identify a LPC lead		
Partnership working		
Have established effective working relationships with all partners commissioners, maternity services and LSSS, LPC, LMC		
Have in place effective communication links to all partners i.e. commissioners, maternity services, LSSS, LPC, LMC		

	Tick all that apply	Comments
Data collection		
LSSS will need to have in place a web based database system Please specify provider		
LSSS will need to have formal systems in place that can track pregnancy referrals from the referral provider built into data base as per evaluation		
LSSS service configuration		
Established smoking in pregnancy service		
Have an identified project lead or smoking in pregnancy lead that has the dedicated capacity to oversee the coordination, preparation, development and implementation of the project		
Have sufficient administrative support as appropriate in the LSSS to retrieve and follow up web based referrals; and ensure data entry of the referral into LSSS database		
Referrals		
Have in place an opt out referral system for pregnant smokers		
It should be routine practice for the midwife to be using CO testing to identify and refer pregnant smokers throughout pregnancy and appropriately referring in the postnatal period to the stop smoking services		
Midwives and other health professionals referring pregnant and postnatal smokers will need to have access to a computer with e-mail functions		

	Tick all that apply	Comments
Supplementary questions		
Please indicate the number of maternity acute trusts in your PCT		
Please provide the number of smoking in pregnancy referrals received by your LSSS 2010/11		
How does your LSSS currently receive smoking in pregnancy referrals?		
Do you receive any of your smoking in pregnancy referrals via an electronic referral system?		
Protocols / guidelines		
Do you have any agreed protocols / guidelines or procedures in place with your maternity services linked to the identification and referral of pregnant smokers? If yes, please state		
Training		
What % of midwives has been recently trained to deliver smoking cessation very brief advice?		
Have you recently trained any other health professionals to deliver smoking cessation very brief advice? If yes, please indicate which HCP		
What % of midwives has been trained to use CO monitors to identify pregnant smokers?		
Have you trained any other health professionals to use CO monitors to identify pregnant smokers? If yes, please indicate which HCP		

	Tick all that apply	Comments
Resources		
Please indicate the percentage of midwives in your acute trust(s) that have access to CO monitors		
Community midwives		
Wards		
Delivery Suite		
Have you or your partners developed any referral information leaflets/ packs in line with the NICE guidance for either the pregnant smoker or for the health professional?		

10. Annex C: Labour ward CO guidelines*

MATERNITY SERVICES GUIDELINES CARBON MONOXIDE (CO) TESTING PREGNANT WOMEN ON ADMISSION TO THE LABOUR WARD

1.0 Introduction

Smoking in pregnancy remains a key public health concern; it contributes to a wide range of health problems for expectant mothers, their unborn babies and their families. It is a significant risk factor in infant mortality. It can cause serious problems including complications during labour, increased risk of miscarriage, premature birth, low birth weight and stillbirth.

Women who smoke during pregnancy have an increased risk of:

- Low birth weight baby (<2500g)
- Preterm birth
- Ectopic pregnancy
- Spontaneous abortion
- Premature rupture of membranes (PROM)
- Perinatal mortality (still birth and neonatal death)
- Intrauterine growth restriction (IUGR)
- Placenta praevia
- Placental abruption
- Sudden infant death syndrome (SIDS)

2.0 Aims and Objectives

2.1 Aims

- To use carbon monoxide (CO) testing to identify all pregnant smokers presenting in established labour on admission to labour ward
- To aid the identification of risk factors that may impact on labour and inform care planning in labour

* Included with kind permission from Lorraine Frith, Specialist Stop Smoking Midwife, Macclesfield District General Hospital.

2.2 Objectives

- To implement CO testing as part of the routine assessment for pregnant women presenting in established labour on admission to the labour ward
- To verify smoking status of the pregnant women in labour
- To provide biochemically validated prevalence rates for reporting smoking at time of delivery (SATOD) within the local area

3.0 Scope and Principles

3.1 Scope

This guidance applies to all midwives caring for women who choose to have their babies at *[name of organisation]*

3.2 Principles

To ensure evidence based information and best practice guidance is available to all midwives working within the maternity services when caring for a woman during pregnancy.

4.0 Procedure for CO Testing

4.1 CO test

The CO test will be offered to all women admitted to the labour ward in established labour by the midwife as part of the midwife's assessment of the woman's health and wellbeing. The CO test will be carried out as a routine part of the midwife's admission procedure unless the client specifically declines consent.

4.2 CO test consent declined – non- smoker /smoker

- If the woman declines consent for testing, the midwife should document that she has declined the test and reason why in the hand held notes and in the maternity records as applicable.
- The midwife should ask the patient if she smokes and the smoking status should then be recorded *[exactly where to be agreed]*.
- If the patient self-reports as a smoker, the midwife should inform the patient of the implications of continuing to smoke and benefits of stopping for her and her unborn baby.

4.3 High CO readings in self-reported non-smokers

There are very few instances where the patient who has self-reported non-smoking has a high CO reading. If this should occur and the woman was truly not smoking and their CO readings are above that of a non-smoker, it is important to consider the following:-

- Elevated CO levels in non-smokers may be caused by certain environmental factors such as exposure to second hand smoke. If the patient is identified as passive smoking, the midwife should inform the patient about the risks of exposure to her health from inhaling second hand smoke.
- Faulty or poorly installed appliances such as gas fires, boilers and paraffin heaters can emit fatal gases such as CO, presenting symptoms of acute or chronic poisoning.
- If the patient lives in a smoke-free home, the midwife should recommend that the patient has their appliances checked by a registered engineer.

5.0 Record keeping and data collection

Women identified as smokers and non-smokers at time of admission to the labour ward will have their smoking status recorded on the [insert name of system], in the maternity notes as per the trust's protocol and on the maternity trust's data collection system.

6.0 Referral Procedure

6.1 Established smoker

- All women who undertake a CO test and score 6ppm or above will be recorded as a smoker.
- If the patient is found to be a smoker following the CO test, this should be recorded in the notes according to the trust's protocol for the postnatal period and followed up. The patient will be offered a postnatal referral to the stop smoking service either on the postnatal ward or on discharge from the labour ward.
- If the client declines to be referred they will not be automatically referred. It is important that the smoking status of the client is raised again appropriately at another opportunity in the postnatal period.

7.0 Roles and Responsibilities

It is the responsibility of all midwives working within the [name of organisation] to ensure this guideline is followed and to collaborate with the stop smoking services in order to facilitate the common goal of reducing the incidence of smoking in pregnant women who choose to have their babies at *[name of organisation]*

8.0 Key benefits

Women who smoke in pregnancy and their babies are at risk of certain complications during labour that may affect the outcome of the pregnancy. The key benefits of using a CO test to identify smoking status in labour:

- Will provide the midwife with an indication of any risk factors that might need to be considered that could have an impact on the mother and baby during the labour.
- The indication of any risk factors will aid the planning of care in labour for women identified as a smoker.