

# Postpartum contraception: a missed opportunity to prevent unintended pregnancy and short inter-pregnancy intervals

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## ABSTRACT

**Background** Women in the postpartum period need effective contraception. Unintended pregnancies soon after childbirth may lead to abortion or short inter-pregnancy intervals associated with adverse outcomes. Using databases for a 6-month period (September 2013–February 2014) we examined the proportion of women attending for abortion in Edinburgh, Scotland who had given birth in the preceding 12 months, and the proportion of women giving birth in this region after an inter-pregnancy interval of 12 months or less. We also surveyed 250 women prior to discharge from the same maternity service about their contraceptive intentions.

**Results** Some 75/1175 (6.4%) attending for abortion had given birth within the preceding 12 months and 332/4713 (7.0%) postpartum women gave birth following an inter-pregnancy interval of 12 months or less. When considering parous women, percentages were 13.3% and 13.9%, respectively. The majority ( $n=237$ , 96.7%) of postpartum women were not planning another pregnancy within the year but only a minority ( $n=32$ , 12.8%) were planning on using long-acting reversible contraception (LARC), namely the implant or intrauterine device. However, 42.8% ( $n=107$ ) indicated that if the implant or intrauterine contraception could be inserted before they left hospital then they would choose these methods ( $p<0.0001$ ).

**Discussion** Almost one in thirteen women in our population presenting for abortion or giving birth has conceived within 1 year of giving birth. Provision of LARC immediately postpartum appears to be an attractive option to mothers, and could be an important strategy to prevent unintended pregnancy and short inter-pregnancy intervals.

## INTRODUCTION

The World Health Organization (WHO) recommends that birth to pregnancy

## Key message points

- ▶ One in thirteen women presenting for abortion or giving birth has conceived within 1 year of giving birth.
- ▶ More than one in eight parous women presenting for abortion or giving birth have conceived within a year of giving birth.
- ▶ Just under half of women say that they would be likely to choose an intrauterine method or implant if these methods were available in the immediate postpartum period.

intervals be at least 2 years in order to optimise maternal and infant outcomes across both resource-poor and resource-rich countries.<sup>1</sup> Data from the UK have shown that women with intervals between births of less than 12 months are at increased risk of obstetric complications, premature birth and neonatal death, even after the potentially confounding effect of maternal obstetric history has been taken into account.<sup>2</sup> It is therefore essential that in the postpartum period there are as few barriers as possible to accessing effective contraception, particularly long-acting reversible contraceptive (LARC) methods such as intrauterine contraception and the contraceptive implant, since these are the most effective at preventing pregnancy.<sup>3 4</sup>

Guidelines from the National Institute for Health and Care Excellence (NICE) state that method and timing of contraception should be discussed in the first week postpartum, although they provide no guidance about the content of this

discussion.<sup>5</sup> The Faculty of Sexual & Reproductive Healthcare guidelines advise that time should be found in both the antenatal and postnatal period to discuss all forms of contraception.<sup>6</sup> However, a large internet survey of UK mothers found widespread dissatisfaction with the timing and quality of contraceptive advice received postnatally.<sup>7 8</sup> Although traditionally contraception is discussed at the 6 week general practitioner visit, fertility may have returned by this time for women who are not exclusively breastfeeding.<sup>9</sup> There is evidence that 35–57% of mothers resume intercourse within 6 weeks postpartum,<sup>10 11</sup> and that attendance for additional visits required to insert an intrauterine method or implant is poor at this time.<sup>12</sup> Caring for a young baby, as well as fatigue and adapting to a period of change, may make attendance particularly challenging. At delivery, however, the mother is already in a healthcare setting with access to trained health professionals. Provision of implants and intrauterine contraception from the maternity service after childbirth could be convenient for women as they are already in a healthcare setting with skilled providers available. Although some maternity services in the UK currently provide contraceptive implants for some women before they are discharged home,<sup>13 14</sup> this is not universal across UK maternity services.

The Royal Infirmary of Edinburgh (RIE) is the main delivery unit for women in NHS Lothian (Edinburgh and the surrounding region), a district that had more than 9000 births in the year ending 31 March 2013.<sup>15</sup> In NHS Lothian in 2013, there were 2314 induced abortions.<sup>16</sup> The RIE and the Chalmers Centre for Sexual and Reproductive Healthcare are the main providers of abortion in NHS Lothian. The aim of this study was to determine what proportion of women attending the abortion service had given birth in the preceding 12 months, and what proportion of women giving birth in NHS Lothian had given birth following a birth to pregnancy interval of 12 months or less. We also wished to determine views of postpartum mothers on future contraception and in particular on the theoretical acceptability of provision of intrauterine contraception and implants in the immediate postpartum period.

## METHODS

We examined the computerised database for women presenting for abortion at RIE and Chalmers Centre, Edinburgh between 1 September 2013 and 28 February 2014 to determine if women had given birth in the preceding year. All women attending the abortion service have a routine ultrasound for gestational dating, and so we calculated the inter-pregnancy interval from the date of last childbirth to the estimated date of conception of the index pregnancy (abortion request). The date of conception was assumed to be 2 weeks after the last menstrual period (using the ultrasound gestational age).

We used the regional maternity computer database (Trak) to identify women who gave birth during the same study period in the region. We then gathered further data on anyone with an inter-pregnancy interval of 12 months or less, namely a previous birth within 21 months (we assumed a gestation of 9 months for the index pregnancy and added 12 months for an inter-birth interval to give 21 months). This method may underestimate the number of inter-pregnancy intervals less than 12 months, as it does not take account of shorter gestations associated with preterm birth. [For reference purposes, in 2012/2013 the percentage of babies born under 37 weeks was 5.3% (476/9050 births)].<sup>15</sup>

Demographic data collected on women from abortion and maternity cohorts included age, parity and deprivation scores based upon postcode area of residence. Due to the different ways that the services managed data, women presenting for abortion were assigned deprivation scores (DEPCAT) based on 2001 census data about their postcode at the time of presentation,<sup>17 18</sup> but for maternity patients the deprivation measure assigned was the Scottish Index of Multiple Deprivation (SIMD) spread into population-weighted categories of roughly equal quintiles.<sup>19 20</sup>

An anonymous self-administered survey asking women their views on postnatal contraception and contraceptive intentions was conducted between 3 October 2013 and 31 January 2014 on postnatal wards and the Lothian Birth Centre (low risk delivery unit) in the RIE. Specifically, women were asked whether they would be likely to use a contraceptive implant or intrauterine contraception, if these methods were available in the immediate postpartum period, before discharge from the maternity service. Questionnaires were distributed by a research midwife. Women who spoke little English and who were without an interpreter or who had had poor pregnancy outcomes (e.g. stillbirth) were not given a questionnaire. The questionnaire consisted mainly of a series of simple tick box answers or a Likert scale (very likely to very unlikely) to indicate level of agreement with a range of statements on contraception. The questionnaire also provided free space for any comments women wished to make. Women were asked to place completed questionnaires in a closed box on the ward.

The local Quality Improvement Team for obstetrics and gynaecology approved both projects. The scientific officer of the local ethics committee reviewed the project proposal and confirmed that ethical approval was not required.

## Statistics

The questionnaires were coded and the data were entered into Microsoft Excel. Statistical analysis was conducted using IBM Statistical Package for Social Sciences (SPSS) software V.18 (SPSS Inc., Chicago, IL, USA). Descriptive statistics were performed for

demographics and groups were compared by Chi-squared ( $\chi^2$ ) test of significance. Statistical significance was taken as  $p < 0.05$ .

## RESULTS

### Women presenting for abortion within 1 year of childbirth

Over the study period, 1179 women attended requesting abortion. Of these, 75 (6.4%) had given birth within the year preceding conception of this index pregnancy. Considering only the parous women ( $n=563$ ) who attended the clinic, 13.3% of women had given birth within the year preceding the index conception. The average gestation at the time of presentation for abortion was 52 days. The average number of days between childbirth and the start of the index pregnancy as determined by ultrasound was 193 (just over 6 months), with a minimum of 51 days (just over 7 weeks). The average age of women who had given birth in the previous year was 26 (17–37) years. Some 29.3% of women ( $n=22$ ) who attended for abortion within 1 year of giving birth were aged 30 years or older. Table 1 demonstrates their demographics and compares them to the demographics of all women presenting to the same abortion service during this period. Women who had given birth within 12 months were more likely to be deprived ( $p=0.016$ ) and to be aged 20–34 ( $p=0.021$ ).

### Women giving birth who previously delivered within 1 year of pregnancy

A total of 4713 women gave birth in the region over the time period. Three hundred and thirty-two women had given birth within the preceding

21 months (representing a birth to pregnancy interval of less than a year), representing 7.0% of the total births. When considering only the 2393 parous women, the percentage was 13.9%. The average time between births of this cohort was 17 months, with the shortest period being 9.5 months between births (in this case the index birth was significantly preterm). One hundred and eight women (4.5% of parous women) had a birth to birth interval of 15 months or less, representing conception within 6 months of childbirth.

The average age of the women with a birth to pregnancy interval of 12 months or less was 29 years (see Table 2). 53.6% ( $n=178$ ) were aged 30 years or older. Table 2 demonstrates the deprivation and ages of women in both categories. There was a statistically significant difference in the characteristics of women with a short birth to pregnancy interval and the general population of women giving birth. Women who had given birth within 12 months of their previous birth were more likely to come from areas of deprivation ( $p=0.002$ ) and tended to be younger ( $p=0.020$ ).

### Questionnaires

A total of 300 questionnaires were handed out to 318 postpartum women, present in the maternity wards over the study period, representing a distribution rate of 95%. The completion rate was 83% (250 completed). The reasons why 18 women did not receive a questionnaire included inability to speak English and poor pregnancy outcome. These judgments were made through discussion with the midwives looking after the women on the ward. Women may have also

**Table 1** Demographics of women attending for abortion who had given birth within 12 months of conception of index pregnancy compared with demographics of all women attending for abortion within same time period (September 2013–February 2014)

Demographics	Women who have given birth within 1 year ( $N=75$ ) [ $n$ (%)]	All women attending for abortion ( $N=1179$ ) [ $n$ (%)]
Deprivation Category* ( $p=0.016$ )		
1–2 (affluent)	14 (18.7)	193 (16.4)
3–5 (intermediate)	44 (58.7)	820 (69.6)
6–7 (most deprived)	17 (22.7)	146 (12.6)
Unknown	0	20 (1.7)
Age (years) ( $p=0.021$ )		
<20	8 (10.6)	221 (18.7)
20–24	24 (32.0)	362 (30.7)
25–29	21 (28.0)	266 (22.6)
30–34	17 (22.7)	161 (13.7)
35–39	5 (6.7)	106 (9.0)
40+	0	61 (5.2)
Unknown	0	2 (0.2)

\*See McLoone and Boddy.<sup>18</sup>

**Table 2** Demographics of women giving birth who had given birth within the preceding 21 months compared with demographics of all women giving birth within same time period (September 2013–February 2014)

Demographics	Women who have also given birth within 12 months ( $N=332$ ) [ $n$ (%)]	All women giving birth ( $N=4713$ ) [ $n$ (%)]
SIMD Quintile* ( $p=0.002$ )		
4–5 (affluent)	107 (32.2)	1927 (40.9)
3 (intermediate)	79 (23.8)	912 (19.4)
1–2 (deprived)	137 (41.3)	1715 (36.4)
Unknown	9 (2.7)	159 (3.4)
Age (years) ( $p=0.020$ )		
<20	10 (3.0)	190 (4.0)
20–24	61 (18.4)	633 (13.4)
25–29	83 (25.0)	1165 (24.7)
30–34	105 (31.6)	1554 (33.0)
35–39	64 (19.3)	927 (19.7)
40+	9 (2.7)	244 (5.2)

\*The Scottish Government.<sup>19</sup>

SIMD, Scottish Index of Multiple Deprivation.

been absent from the ward when researchers were distributing questionnaires.

Of those completing the questionnaires, 49% ( $n=121$ ) had given birth before. The average age was 30 (16–47) years. Twenty percent of women were from DEPCAT Categories 1–2 (affluent), 65.6% were from Categories 3–5 (moderate deprivation) and 8% were from Categories 6–7 (severely deprived). Some (6.4%) did not provide their postcode. Of the 242 (97%) women who answered the question about whether or not they could recall ever having a discussion antenatally with a health care provider about future contraception, 73 (30%) women indicated that they had discussed contraception during the pregnancy. Of this group, 56 women (77%) had found the discussion helpful.

The majority of the women (237/245, 96.7%) stated that they were not planning a baby in the next year. Table 3 shows which methods of contraception women intended using.

Only 32 (12.8%) women were planning on using the contraceptive implant or intrauterine contraception and 27 (10.8%) were planning male or female sterilisation; 88 (35.2%) women indicated that they did not know what contraception they would be using postnatally. Four percent ( $n=10$ ) of women indicated that contraception was not necessary for them. The most popular method that women were planning to use was condoms (see Table 3).

Of 239 women who answered the question about whether they would choose an intrauterine method if it could be inserted prior to leaving the hospital, 78 (32.6%) described themselves as ‘very likely’ or ‘quite likely’ to choose this method. Of 241 women answering the same question about the likelihood of choosing the contraceptive implant if it could be fitted before leaving the hospital, 74 (30.7%) said they

would be ‘very likely’ or ‘quite likely’ to choose this. Combining the numbers of women likely to choose either intrauterine methods or implants gives a total of 107 (42.8%) respondents who stated they would opt for one of these methods if insertion were available before leaving hospital. The difference in planned use of implant and intrauterine method and ‘theoretical’ use of the method if it was immediately available was statistically significantly ( $p<0.0001$ ). Only 12 (4.8%) women who completed questionnaires were aged 20 years or under and six (50%) indicated that they would be very likely or quite likely to choose a contraceptive implant if available before discharge home.

## DISCUSSION

Almost one in thirteen women in our population presenting for abortion or giving birth have conceived within 1 year of giving birth. Of women who already have children, over one in eight requesting an abortion or giving birth conceived again within 1 year of their previous birth. Yet the survey suggests that the vast majority of postnatal women do not plan on having another pregnancy within the next year. Does this suggest that we are failing to meet the contraceptive need of women postpartum? It may well do. Most women had not discussed ongoing contraception during the pregnancy with a health professional and most were unsure about what method they would use. Although one in ten women were considering intrauterine contraception or implants, almost one in two women indicated that they would ‘in theory’ choose these methods if they could be provided before they left hospital. This interesting finding may reflect the convenience of this option, or the removal of important barriers that would otherwise deter them from choosing this method. Immediate postpartum provision of these methods could therefore be an important strategy to prevent unintended pregnancies for women, in the same way that immediate uptake of LARC post-abortion reduces a woman’s risk of having another abortion in the next 2 years.<sup>21</sup> There is also evidence that uptake of contraceptive implants in the early postpartum period reduces the risk of another pregnancy in young women in the next 12 months.<sup>22–23</sup> Although there has been some concern about the impact of early initiation of progestogen on breastfeeding, the available evidence is consistently reassuring and shows no adverse effects on lactation or infant growth.<sup>24</sup>

Women who attended for an abortion within 1 year of giving birth were more likely to be from areas of deprivation, as were women who gave birth to a baby that had been conceived within 1 year of childbirth. Nevertheless, both women who gave birth after a short inter-pregnancy interval and those attending for an abortion were from a wide age range and all socio-economic groups, suggesting that all women, not only

**Table 3** Intentions for contraceptive use ( $n=250$ )

Intentions	[ $n$ (%)]*
Don’t know	88 (35.2)
Condoms	71 (28.4)
Progestogen-only pill	28 (11.2)
Combined oral contraceptive pill	24 (9.6)
Progestogen-only implant	16 (6.4)
Intrauterine contraception†	16 (6.4)
Progestogen-only injectable	13 (5.2)
Male sterilisation	14 (5.6)
Contraception not necessary	10 (4)
Female sterilisation	10 (4)
Lactational amenorrhoea	7 (2.8)
Combined contraceptive patch or ring	2 (0.8)
Question not answered	5 (2)

\*Numbers add up to more than 100% as some respondents ticked more than one answer. †Intrauterine contraception includes both the copper intrauterine device and the levonorgestrel-releasing intrauterine system.

those from vulnerable groups (who are often the focus of targeted, contraceptive interventions),<sup>23 25–28</sup> could benefit from immediate access to implants and intrauterine contraception postpartum.

Although a significant proportion of women expressed a desire for immediate intrauterine contraception, this service is not usually available in the UK, with insertion usually taking place after 4 weeks postpartum.<sup>29</sup> There is, however, reasonable evidence from low- and middle-income countries that post-placental insertion of intrauterine contraception (within 10 minutes of placental expulsion) is safe and effective,<sup>30–33</sup> although expulsion rates of between 7% and 25% have been reported.<sup>30–32 34</sup> Insertion immediately postpartum may also be easier since the cervix is dilated. Small studies also show that insertion at elective caesarean section may be a particularly beneficial option, with low expulsion rates of 0–4%.<sup>33 35 36</sup>

A major limitation of our study is that the survey asked women about what contraceptive method they would theoretically choose: that is, they are open to the idea in theory, but this is not the same as evidence of acceptability. Addressing the question of whether women would choose LARC immediately postpartum and whether this would result in fewer unintended pregnancies and fewer short inter-pregnancy intervals will need further research. In addition, this study is unable to determine what proportion of the pregnancies following a short inter-pregnancy interval was intentional. Any intervention to improve uptake of LARC postpartum would ideally therefore contain an educative component which makes clear the risks of short inter-pregnancy intervals, as well as providing the means to prevent them. Finally, although our research was conducted in one of the largest maternity services and abortion services in the UK, our findings cannot be assumed to reflect others throughout the UK.

## CONCLUSIONS

This study shows that short inter-pregnancy intervals are not uncommon. However, our survey data suggest that a significant proportion of women might be open to choosing one of the most effective methods of contraception (intrauterine contraception or the implant) in the immediate postpartum period, if this option was available. Provision and uptake of these methods at this time could in theory prevent more unintended pregnancies that currently end in abortion, miscarriage, ectopic pregnancies or short inter-pregnancy intervals. This would have important health benefits for women, their children and their future opportunities. Research is therefore necessary to progress strategies to provide LARC in the immediate postpartum period and to evaluate the acceptability and effectiveness of such strategies. This will necessitate both training of healthcare providers in

maternity services to counsel and provide LARC to women postpartum, and funding to provide this service.

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**Data sharing statement** Women who filled in questionnaires were also asked about what they thought would make it difficult to obtain contraception after delivery. These data were not included as they were not felt to be relevant to the main argument of the paper. These data are available by contacting the corresponding author.

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