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# Successful implementation of immediate postpartum intrauterine contraception services in Edinburgh and framework for wider dissemination

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## Abstract

Provision of immediate postpartum intrauterine device (PPIUD) insertion within maternity settings can overcome many of the barriers faced by women in accessing this method after childbirth. Uptake of PPIUD can help reduce the risk of a subsequent unintended pregnancy and improve spacing between births. PPIUD insertion is not yet routinely available in the UK and evidence to support the practical implementation of the service in this setting is lacking. Shared learning and experience of providers may assist in the wider availability of PPIUD. A routine PPIUD service has been successfully established within a public maternity setting in Edinburgh (UK) and this article utilizes an implementation framework to discuss the approach.

## KEYWORDS

Family planning; FIGO initiative; Postpartum contraception; Postpartum intrauterine device; PPIUD; Service implementation; UK

## 1 | INTRODUCTION

It is estimated that at least one-third of births in the UK are not intended at conception.<sup>1</sup> Unintended pregnancy is associated with poorer maternal and neonatal outcomes,<sup>2</sup> and costs the health service £1 billion annually.<sup>3</sup> Pregnancy planning allows maternal health to be optimized before conception, and can be supported by contraception,<sup>2</sup> which is available for free in the UK.

The postpartum period is a recognized high-risk time for unintended pregnancy. Ovulation can begin from as early as 3–4 weeks in nonbreastfeeding women.<sup>4</sup> Although the lactational amenorrhea method (exclusive breastfeeding, amenorrhea, baby under 6 months) can be used for contraception, data from England suggest that only 28.5% of mothers continue to breastfeeding exclusively at 6 weeks.<sup>5</sup>

Access to effective contraception may be difficult for women due to the demands of looking after a newborn. In addition, early resumption of sexual intercourse (at least 50% of couples by 6 weeks)<sup>6</sup> means

that a considerable proportion of postnatal women are potentially at risk of further pregnancy soon after giving birth.

A UK study estimated that one in 13 women requested an abortion in the 12 months after having a baby.<sup>7</sup> Additionally, among a population of women giving birth, one in 13 had conceived within 12 months of previous childbirth.<sup>7</sup> This short interpregnancy interval (less than 12 months) is associated with an increase in the risk of obstetric complications such as preterm labor, intrauterine growth restriction, and stillbirth, and consequently an increase in overall neonatal mortality.<sup>8</sup>

Improving access to effective postpartum contraception could prevent more unintended pregnancies in the UK that end in abortion, and also help women and couples to optimize birth spacing for better outcomes.

## 2 | UK MATERNITY CARE

Maternity care in the UK is predominantly delivered within the publicly funded National Health Service (NHS). Women have access

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to a midwife throughout their pregnancy and the opportunity to attend regular prenatal visits in accordance with their specific clinical and social needs.<sup>9</sup> For otherwise healthy women, care throughout pregnancy, labor, and the immediate postpartum period is mostly delivered by midwifery staff. The majority of women deliver in hospital-based birth units, with most experiencing a vaginal birth.<sup>10,11</sup> However, the overall rate of operative delivery continues to rise, with more than one in four women in the UK now delivering by cesarean.<sup>10,11</sup>

Currently, midwives may discuss contraception with women before they are discharged from the maternity unit. However, studies have shown that there are many barriers to providing contraceptive advice at this time.<sup>12</sup> For example, women may not wish to discuss contraception as they are focused on their baby,<sup>13</sup> and having sex again may not seem an immediate priority.<sup>14</sup> Discussion may be further impeded by a lack of privacy on postnatal wards and the presence of visitors. The current and expanding workload of hospital midwives may mean that contraception becomes a lesser priority,<sup>12</sup> with inadequate time for a full discussion.

General practitioners (GPs) may also provide contraceptive advice and supplies at a 6-week postnatal visit.<sup>13,15</sup> However, there is some evidence that young women and those from deprived areas (who may be at higher risk of an unintended pregnancy) are least likely to attend.<sup>16</sup> Women who wish to use a long-acting, reversible contraceptive (LARC) method may require a further visit to the GP or a specialist contraceptive service. This need for multiple appointments for postpartum contraception gives a margin for unintended pregnancy.

The UK Faculty of Sexual and Reproductive Healthcare have recently recommended that discussion about future contraception should ideally take place during the prenatal period,<sup>17</sup> to allow women time to consider their options. It is increasingly recognized that healthcare professionals should be promoting the most effective LARC methods, which include intrauterine devices (IUDs).

The need for an additional postpartum visit for fitting is known to be a barrier for women accessing intrauterine contraception at this time.<sup>18</sup> The option of immediate insertion after childbirth provides a convenient alternative, and postpartum intrauterine device (PPIUD) provision has consistently been shown to be safe.<sup>19,20</sup>

Most clinical guidelines and public health policies now advocate earlier contraceptive discussion and enhanced provision from within maternity services.<sup>17,21</sup> Routine prenatal contraceptive counselling is both feasible for community midwives to deliver and acceptable to women, and is associated with an increased uptake of methods after delivery.<sup>22</sup> However, there are several barriers to effectively delivering this service, particularly in relation to IUD insertion. It is mostly due to these barriers that the adoption of PPIUD in countries such as the UK and USA has been relatively slow,<sup>23,24</sup> despite evidence supporting the safety and efficacy of the technique.<sup>19,20</sup>

Introducing PPIUD into clinical practice is complex for many reasons. The intervention does not exist in isolation as a delivery unit procedure, as there are pre-counselling and follow-up arrangements to consider. As such, a comprehensive PPIUD service involves aspects of prenatal, intrapartum, and postnatal care, and includes

both hospital and community providers. This presents challenges associated with communication, clinical pathways, and referral.

UK providers' lack of experience with the technique may lead to misconceptions and initial reluctance.<sup>25,26</sup> The service will have to be incorporated into the current remit of maternity care, often without additional dedicated time or funding to support it. This change in role and increased training requirement may also be met with some resistance. Securing funding to support this service may be challenging as although there are data to support the cost-effectiveness of PPIUD,<sup>27</sup> the financial benefits may not be immediately clear or easily demonstrable.

However, many of these potential challenges can be overcome. In this article, we discuss our experience of successfully implementing PPIUD insertion within a UK maternity service in Edinburgh, Scotland. The region contains two maternity hospitals responsible for 9250 live births in 2016, with an overall cesarean delivery rate of 30.3%.<sup>11</sup> PPIUD has been available to women giving birth here since 2015, initially at elective cesarean delivery and more recently following vaginal birth. The timeline for service development is highlighted in Figure 1.

In the 2 years prior to PPIUD service arrival, routine prenatal contraceptive counselling was introduced to the region in conjunction with increased awareness and general training in postpartum contraceptive methods for maternity staff. At this time, more than half (58%) of those women who expressed desire for a postpartum IUD did not attend a follow-up appointment for insertion,<sup>22</sup> reflecting findings from other studies that the additional visit for insertion was a significant barrier to uptake.<sup>18</sup> This provided justification to introduce PPIUD within a maternity culture already geared toward enhanced contraceptive services.

A summary of our overall PPIUD implementation strategy is presented in Figure 2. This is framed around the evidence-based stages of implementation devised by the National Implementation Research Network (NIRN),<sup>28</sup> which has previously been used successfully to structure qualitative interview findings from healthcare providers about their PPIUD implementation experience.<sup>29</sup>

### 3 | FUNDING, ADVOCACY, AND STAKEHOLDERS

This stage consisted of the necessary preplanning steps prior to practical delivery of PPIUD. Formative research on views of women from baseline data indicated support for the service. Of 250 postnatal women surveyed, 30% indicated that they would opt for PPIUD if

November 2013	Pilot of prenatal contraceptive counselling
April 2015	Routine prenatal contraceptive counselling introduced and enhanced availability of nonintrauterine methods
July 2015	Introduction of PPIUD at cesarean delivery
January 2017	Initial implementation of PPIUD at vaginal birth (pilot site)
September 2017	Vaginal PPIUD available across all sites
May 2018	Full PPIUD implementation: 900+ women have received PPIUD to date

**FIGURE 1** Timeline of PPIUD service implementation in Edinburgh, UK. [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]



**FIGURE 2** Key components of establishing a PPIUD service using Stages of Implementation framework. [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

this were available.<sup>7</sup> Demonstration of local unmet need along with service-user support provided a useful tool in gaining the funding and support necessary to introduce a PPIUD service. We established a PPIUD steering group to guide overall project direction and facilitate communication between key stakeholders. This included a senior obstetrician, lead midwife, sexual health lead, general practitioner, clinical and qualitative research teams, and a patient group representative. Involving key individuals at an early stage in the process can assist in identification and resolution of potential barriers.

#### 4 | TRAINING, EDUCATION, AND RESOURCES

The installation stage included the practical factors that needed to be in place prior to formal service introduction. Considerable time was dedicated to training and education of obstetricians and midwives, performed well in advance of anticipated service introduction. This was conducted in two main streams: practical training for maternity staff fitting postpartum devices (obstetricians and labor ward midwives), and more general education for those providing information to women (community midwives and GPs).

When developing the training strategy, it was recognized that the size of the maternity unit and expected uptake of PPIUD would influence the rate and availability of fully trained inserters. Training workshops were tailored to the needs of each staff group and repeated at regular intervals to maximize the number of staff able to attend.

Obstetricians were trained in intraoperative insertion at cesarean delivery using a locally produced video and a period of supervised practice. For vaginal PPIUD, we opted to train both obstetric and

labor ward midwifery staff to ensure consistent availability of fitters. A phase-based approach was adopted where all obstetric staff entered training first, followed by groups of midwives, to ensure that adequate training opportunities and supervisors were available.

For training in PPIUD insertion at vaginal birth, we modified (with permission) resources developed by the Royal College of Obstetricians and Gynaecologists (RCOG) for use in South Africa and Tanzania as part of the Leading Safe Choices initiative.<sup>30,31</sup> This involved a combination of theoretical and simulation training using the Mama-U (Laerdal, Stavanger, Norway) postpartum uterus model.<sup>32</sup>

Following this, a period of supervised workplace-based practice continued until clinical competency with the technique was achieved. PPIUD trainers were appointed to assist with training sessions and clinical supervision. These individuals were obstetricians or senior labor ward midwives identified to have relevant training and practice in contraception, enhanced knowledge and enthusiasm for PPIUD, and experience in clinical teaching. A local policy included a minimum of three insertion procedures performed under supervision until independent competency was achieved.

Education of community midwives about the availability of PPIUD took place concurrently. Gaining support from this group was considered crucial as they were already providing routine prenatal contraceptive counselling for women. Meetings were conducted with all community midwife teams in the area. This stage also involved engagement with other key personnel (hospital theatre staff, pharmacists) to ensure the service was fully prepared and stocked to provide PPIUD. Training events also allowed for patient and staff resources to be disseminated (Fig. 3).

Equipment needs were also addressed at this stage. Kelly forceps for vaginal PPIUD insertion were ordered and processed through sterile services, before being packaged into designated vaginal PPIUD trays along with the other required instruments. Women could choose either the levonorgestrel-releasing intrauterine system or copper-bearing intrauterine device for PPIUD and stocks were ordered from pharmacy to ensure that a consistent supply was available in the labor suite and theatres.

Pre-insertion/prenatal	<ul style="list-style-type: none"> <li>• Patient information leaflet</li> <li>• Self-complete consent checklist</li> <li>• Community midwife pathway for managing PPIUD request</li> <li>• Posters</li> <li>• Local health website information</li> <li>• Information guide for community providers e.g. GPs</li> </ul>
Procedural/post-delivery	<ul style="list-style-type: none"> <li>• Insertion log</li> <li>• Training logbook</li> <li>• Staff posters – ‘SIMPLE’ mnemonic for insertion procedure (<i>Suitability, Informed consent, Materials, Person to fit, Leaflet, Entry record</i>)</li> <li>• Standard Operating Procedure</li> <li>• Supervision/insertion pathway (to access inserter/supervisor)</li> </ul>
Post-insertion/aftercare	<ul style="list-style-type: none"> <li>• Patient aftercare leaflet</li> <li>• Referral pathway for primary care</li> <li>• Quick reference guide/pathway for community providers conducting thread checks</li> </ul>

**FIGURE 3** Resources developed to support PPIUD service delivery. [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

## 5 | SITE-LEVEL ENGAGEMENT AND CLINICAL PATHWAY

We opted to introduce intraoperative PPIUD insertion at cesarean delivery first. Women undergoing planned caesarean delivery were easily identifiable, and pre-existing visits to discuss surgery and obtain consent could be utilized for discussion about PPIUD. Obstetricians performing these surgeries constituted a small and well-defined group and therefore training could be targeted more easily. This also allowed the unit to become more familiar with PPIUD as a concept, easing the transition to later offering at vaginal birth and emergency cesarean.

Due to the increased complexity of establishing a vaginal PPIUD service (training, equipment, etc.), the decision was taken to pilot this at the smaller maternity hospital first. This provided a valuable opportunity to review and modify the process of delivering a vaginal PPIUD service, before introducing this on a larger scale across the region.

The arrival of PPIUD at each site was signaled by a launch week. This involved on-site presence by the PPIUD team in the outpatient prenatal clinic to directly engage with patients and staff, generating further enthusiasm and interest. Distribution of posters and leaflets in clinical areas helped inform about service availability.

Clinical pathways were formalized and tested during this stage. An example of the journey for a woman requesting PPIUD is shown in Figure 4.

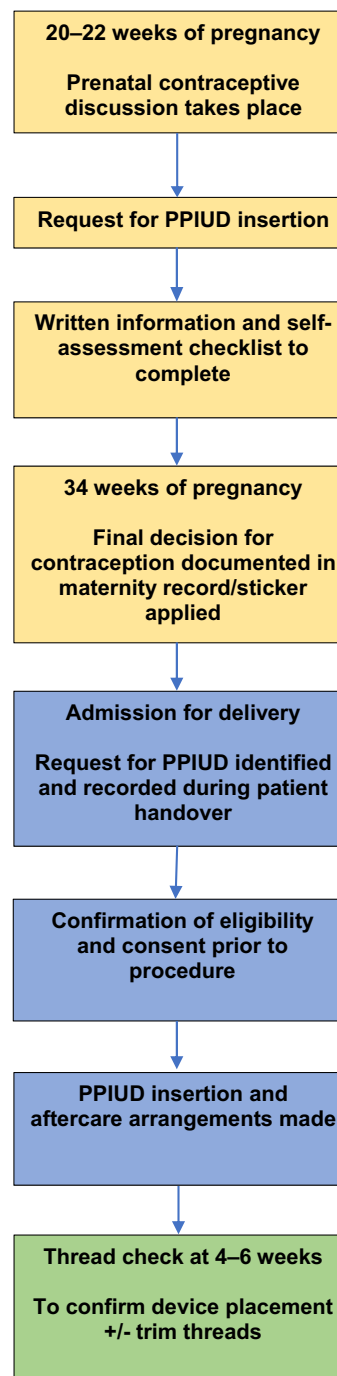
Women requesting PPIUD at delivery were identified via a visible sticker of an IUD on their clinical notes and information in their maternity record. After delivery, the attending doctor or midwife checked eligibility, ensured that there were no contraindications,<sup>30</sup> and reconfirmed consent before inserting the PPIUD.

At cesarean delivery, devices were fitted immediately after removal of the placenta. After vaginal birth, a 48-hour period was available for insertion in line with current clinical guidelines. However, most devices were inserted on the birth unit within the immediate hours after delivery.<sup>17</sup>

Following PPIUD insertion, women were recommended to attend for a thread check between four and six weeks to confirm device placement and trim long threads if required. These visits initially took place in a clinical research setting. Following full implementation of PPIUD, a local enhanced service agreement (LES) has now been developed enabling community-based practice nurses and GPs to perform these checks and refer for ultrasound if necessary in return for a nominal fee.

## 6 | FULL SERVICE IMPLEMENTATION

Following successful installation at the pilot site, the vaginal PPIUD service was extended to the larger hospital. The pilot experience allowed us to achieve installation more quickly and provided foresight into the potential obstacles that scaling-up to a larger tertiary hospital setting may bring; for example, increased training capacity, larger patient population, higher clinical activity, and modification of some aspects of our approach. Experience and testimonies from patients and staff already involved in the PPIUD service assisted in overcoming many of the perceived barriers and gaining wider support.



**FIGURE 4** Clinical pathway for women requesting PPIUD in Edinburgh. [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

The NIRN network define full implementation as when more than 50% of personnel are involved in service delivery, and suggest this may take between two and four years for any new service.<sup>28</sup> All obstetricians and over 50 midwives (almost 50% of the permanent labor ward workforce) have attended PPIUD insertion training in our service. Several midwives and obstetricians are now PPIUD trainers, which is essential to ensure ongoing sustainability of the service.

As the service becomes embedded, continued service promotion exercises to raise awareness among the wider public is important. For



us this has included engagement with patient advocacy groups and involvement of local and national media channels. There is also ongoing evaluation work using both quantitative and qualitative means as part of a health service research project co-funded by Wellbeing of Women and the Chief Scientist Office.

Since its introduction in 2015, almost 1000 women have undergone PPIUD insertion at either cesarean delivery or vaginal birth. The PPIUD service at cesarean delivery is now fully established. Initial published outcome data (n=120) demonstrated a PPIUD uptake rate of 13.7% of all women having an elective cesarean.<sup>33</sup> There were no incidences of uterine perforation and one case of infection (0.8%). At 12 months, the cumulative expulsion rate was 8.8% and of those contactable (82.5%), 84.8% continued to use the method.<sup>33</sup>

Site-wide implementation of vaginal PPIUD is now established with data collection and analysis ongoing. Early outcomes indicate a higher rate of device expulsion in line with other studies; however, this is expected to decline with increasing provider experience.<sup>34</sup>

## 7 | CONCLUSION

Our experience indicates that it is feasible to implement PPIUD within a publicly-funded UK maternity setting. Ongoing investment in PPIUD training and education will be essential to ensure a sustainable service. We have demonstrated clear demand from women for this service, with holistic care and convenience reported as key advantages. It is important that women receive information about all available methods of contraception during the prenatal period, allowing them to make a considered and informed choice.

Development of a PPIUD service can allow more women to access effective contraception after childbirth. In the UK, this may help prevent more unintended pregnancies, and extend interpregnancy intervals to reduce complications. Through ongoing research and development of a shared-learning culture, it is possible for PPIUD to become more widely available across the UK.

## AUTHOR CONTRIBUTIONS

Both authors were directly involved in the introduction and delivery of PPIUD in Edinburgh. MC researched and prepared the manuscript. SC reviewed the manuscript. Both authors approved the final draft.

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## CONFLICTS OF INTEREST

The authors have no conflicts of interest to declare.

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