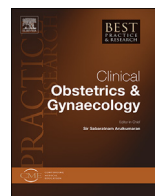




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## Post pregnancy contraception

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### A B S T R A C T

#### Keywords:

Post pregnancy

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Post-abortion contraception and family planning

Ovulation resumes as quickly as 21 days after birth in a non-fully breastfeeding woman. Traditionally, contraceptive services have been offered 6 weeks post-partum. This is far from ideal and results in unnecessary abortions or inadequate birth spacing which both carry an increased risk of morbidity to mother and potential newborn as well as costs to the health care service. It is now clear that contraception should be discussed during the pregnancy so that the method of choice can be offered immediately post pregnancy prior to discharge from hospital. Long acting reversible contraceptive methods such as implants and IUDs are highly effective as they are user-independent. Large studies have demonstrated that they can be safely inserted during the immediate post-partum period with no increase in complication rates. Policy makers should strive to overcome barriers to offering quality post pregnancy contraceptive services.

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## Post-partum contraception

### Background

Traditional practice has dictated that contraception is offered to women at 6 weeks post-partum. The general perception has been that women are not sexually active before that period of time; neither are they inclined to consider contraception options until then. Research, however, has

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demonstrated that this is by no means the case and not only results in missed opportunities to provide holistic health care, but also puts women at considerable risk of unwanted pregnancies. As per Figs. 1 and 2, short inter pregnancy intervals have been associated with small-for-gestational-age (SGA), Pre Term birth, Infant Mortality, and malnutrition [1,2].

Rutstein has postulated that if all women wait at least 24 months to conceive again, under-5 deaths would fall by 13%, while waiting 36 months to conceive again could avoid 25% of deaths. The impact would be a total of 1 836 000 deaths avoided annually in developing countries as demonstrated in Fig. 3 [1]. The WHO therefore advises a minimum interval of 24 months between pregnancies [3].

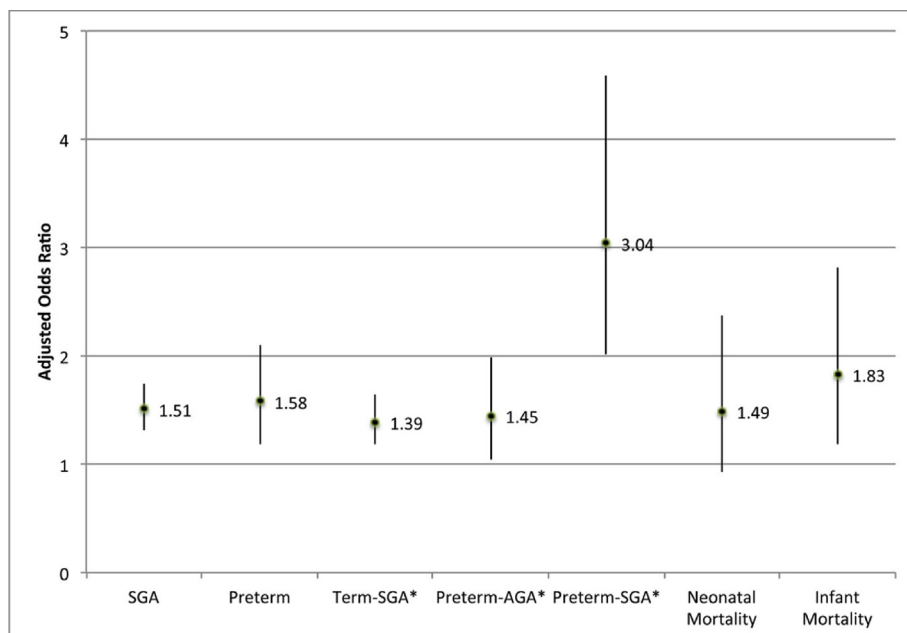
On a global scale, addressing the unmet need for contraception has remained a challenge, particularly in the post-partum period. Although there has been a steady decline up until the turn of the century, these gains have plateaued out in the recent past, as demonstrated in Fig. 4 below.

Addressing the unmet need for contraception as a single intervention could result in a 30% decline in Maternal Mortality as reported in the Saving Mothers' Lives report [5]. The socioeconomic benefits would be widespread, in terms of the mother's ability to complete her education, contribute to her family's income, her children's wellbeing, and the country's economy as a whole. There is also evidence from high income countries that unintended pregnancies are common events. Up to one third of term pregnancies in the UK are unintended [6]. In a Scottish study, 1 in 8 parous women presenting for abortion had conceived within a year of giving birth [7]. The unmet need for contraception immediately post-partum is undoubtedly high.

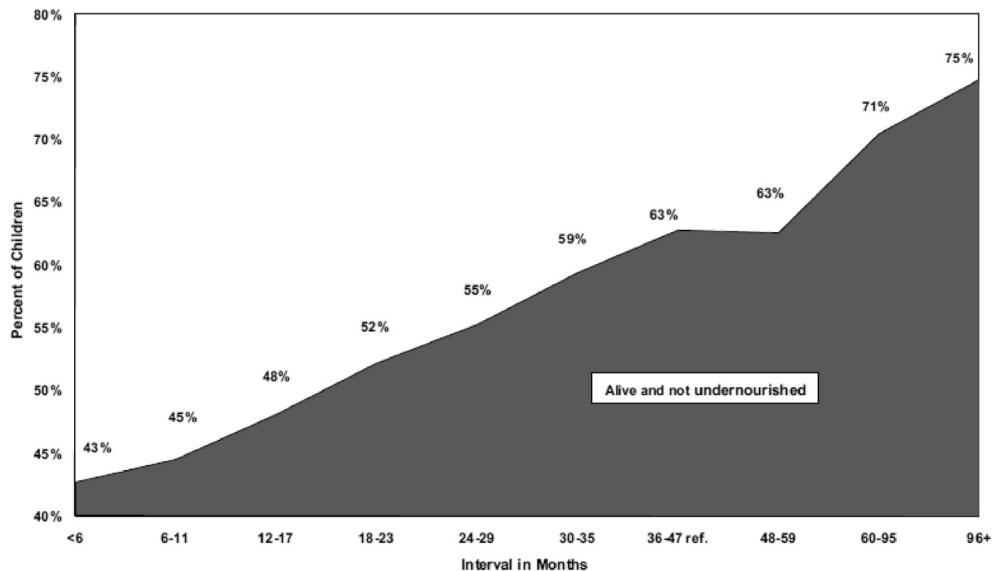
### Definition of post pregnancy contraception

Post pregnancy contraception includes provision of contraception to women after childbirth, abortion, ectopic pregnancy, miscarriage, or gestational trophoblastic disease (GTD).

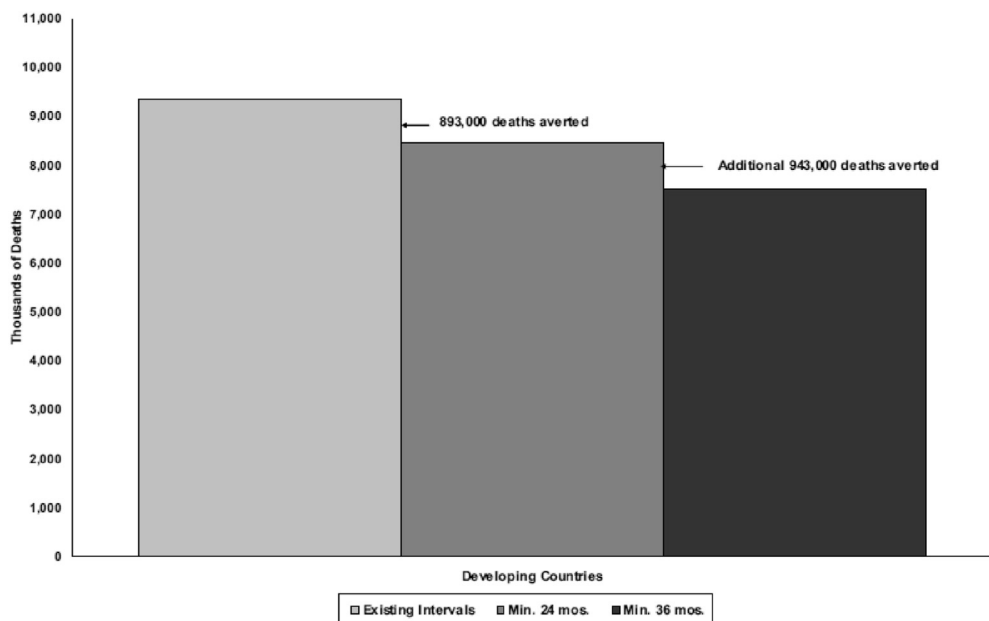
Guidance with regards to the safety and timing of post pregnancy contraception methods have been issued by a number of governing bodies including the WHO [8–10], the UK's Faculty of Sexual and



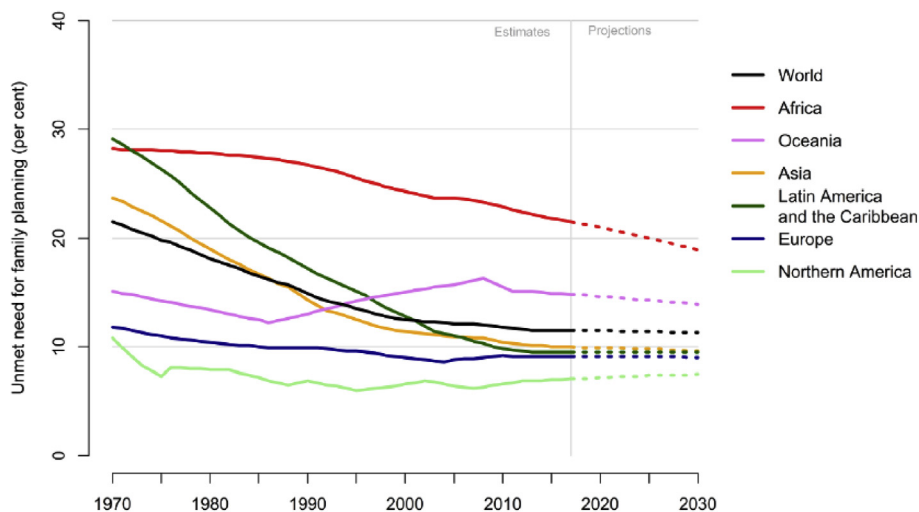
**Fig. 1.** Association between birth interval <18 months and adverse neonatal and infant outcomes. (SGA=Small for gestational age, AGA = Appropriate for gestational age, Preterm = Below 37 weeks. \*Reference: term AGA.) Reproduced with permission Kozuki et al. [2].



**Fig. 2.** Percent of Children Alive and Not Undernourished by Duration of Preceding Birth to Conception Interval. Reproduced from Rutstein DHS papers 2008 [1].



**Fig. 3.** Annual Number of Under-5 Deaths with Existing Birth to Conception Intervals and with Minimum Intervals of 24 and 36 months. Reproduced from Rutstein DHS papers 2008 [1].



**Fig. 4.** Contraceptive prevalence (any method) among married or in-union women, by region, from 1970 to 2030. From 'Model-based Estimates and Projections of Family Planning Indicators', United Nations Department of Economic Affairs Population Division, ©2017 United Nations. Reprinted with the permission of the United Nations [4].

Reproductive Health (FSRH) [11], and the American College of Obstetricians and Gynecologists (ACOG) [12]. The 5th Edition of the WHO Medical Eligibility Criteria (MEC) has also been updated with new guidance regarding immediate post-partum contraception [13].

#### *Types of post pregnancy contraception and when they can be used*

When can a contraceptive be started after pregnancy?

It is now clear that there are many types of contraception that can be safely started immediately after a pregnancy and these will be outlined below. If the mother is not exclusively breastfeeding, ovulation will resume and she is at risk of getting pregnant by the 21st day post-partum or post termination of the pregnancy. There are many methods available and it is important that women are made aware not only of the options that are available to them in their circumstances, but also the effectiveness of these options. Table 1 below demonstrates how effective each method is when comparing perfect use to typical use.

It is important that women are made aware that there is quite a difference between perfect use and typical use in terms of effectivity of contraceptive methods. Long Acting Reversible Contraceptives (LARCs) which are user independent, such as the IUD and implant, have a much lower failure rate than those contraceptives which are user-dependent when considering typical use. There are also many studies demonstrating that in the long term they have a higher rate of retention and satisfaction amongst users [15]. This is also indicated in the 3rd column of Table 1.

The WHO Medical Eligibility Criteria (MEC) for Contraceptive Use outlines in detail not only recommendations about the use of different contraceptives, but also the available evidence which lead to those recommendations [13]. The recommendations are divided into 4 categories as summarised below in Table 2. These criteria will be referred to when describing the suitability of different contraceptive methods in the next section. Table 3 summarises the WHO MEC recommendations for contraception post-abortion which are also discussed further in the next section.

**Table 1**

Percentage of women experiencing an unintended pregnancy within the first year of typical use and perfect use, and the percentage continuing use at the end of the 1st year (modified from Trussell, 2018) [14].

Method	Typical use (%)	Perfect use (%)	Continued use at 1 year (%)
No method	85	85	
Spermicides	21	16	42
Female condom	21	5	41
Withdrawal	20	4	46
Diaphragm	17	16	57
Fertility Awareness Methods	15		47
Male condom	13	2	43
Combined and Progestin-only Pills <sup>a</sup>	7	0.3	67
DMPA	4	0.2	56
Copper intrauterine device	0.8	0.6	78
LNG-releasing intrauterine system <sup>b</sup>	0.1–0.4	0.1–0.3	80
Progestogen-only implant	0.1	0.1	89
Female sterilisation	0.5	0.5	100
Vasectomy	0.15	0.1	100

<sup>a</sup> Includes combined oral contraception, transdermal patch and vaginal rings.

<sup>b</sup> Dose ranging 13.5 mg–52 mg Levonogestrel

## Types of contraception

(i) *Intrauterine contraception (IUC) - including Copper Intrauterine device (Cu-IUD) and Levonorgestrel Intrauterine System (LNG IUS)*

### Post-partum

The Cu-IUD can be inserted immediately post-partum after both vaginal delivery and intra-Cesarean section. Previous concerns about high expulsion rates have now been allayed with expulsion rates comparable to insertions of interval IUDs (3%) in two large observational multi-country studies [16,17]. Both studies adopted a very specific methodology using Kelly's long placental forceps for a high fundal placement of the device. After vaginal birth, insertion can occur immediately after delivery of the placenta (post-placental insertion) or up to 48hrs after birth (MEC 1). There is insufficient evidence to advise regarding the safety of insertion between 48hrs and 4 weeks (MEC 3) and it is not advisable to insert the device in cases of postpartum sepsis (MEC 4). The threads are not trimmed at insertion and so there is a theoretical risk that they may protrude out of the vagina as the uterus involutes. In practice, this only occurred in 0.9% of cases in the largest study where 18 960 women were followed-up [16]. What is more common is that the thread becomes coiled up inside the uterus, particularly if the threads are not straightened following insertion at Cesarean section. At follow up, threads are not visible in 28–29% of cases, which includes insertion after vaginal and Cesarean births [16,18]. The recommendation is to organize an ultrasound to confirm that the IUD is in situ and use a thread retriever to bring the threads down. There is also some anecdotal evidence that the threads often appear once menstruation resumes. A purpose built post-partum inserter has also been developed and is currently on the market [19]. As the threads in this device are longer than that of a regular IUD, a two-week post-partum visit is recommended in order to trim the threads to a suitable length as the uterus involutes.

There are fewer studies looking at the insertion of the LNG-IUS post-partum, but the practice has been widely adopted in some high income countries [20]. In light of a randomised controlled trial (RCT) which detected decreased breastfeeding duration in the group receiving immediate insertion of the IUS, the WHO recommends MEC 2 in breastfeeding mothers and MEC 1 in non-breastfeeding mothers.

### Post abortion/miscarriage

The need for an extra visit to have an IUD inserted has been shown to be a significant barrier to contraceptive uptake post abortion [21]. Guidelines from World Health Organization (WHO), Faculty of Sexual and Reproductive Healthcare UK(11), and NICE [22] all support initiation of IUD at the same time

**Table 2**

MEC recommendations. Reproduced with permission from WHO MEC 2015.

MEC Category	Definition
1	A condition for which there is no restriction for the use of the contraceptive method
2	A condition where the advantages of using the method generally outweigh the theoretical or proven risks
3	A condition where the theoretical or proven risks usually outweigh the advantages of using the method
4	A condition which represents an unacceptable health risk if the contraceptive method is used

**Table 3**

WHO Medical Eligibility Criteria for Contraceptive Use. Categories applicable to women following an abortion (also miscarriage &amp; ectopic pregnancy).

Post abortion	Cu-IUD	LNG-IUD	IMP	DMPA	POP	CHC
(a) First trimester	1	1	1	1	1	1
(b) Second trimester	2	2	1	1	1	1
(c) Presence of sepsis	4	4	1	1	1	1

WHO MEC 1 – No restrictions, 2 – Advantages outweigh risks, 3 – Risks outweigh the advantages, 4 – Unacceptable risk.

as the surgical abortion or as soon as possible after expulsion of the pregnancy following medical abortion (MEC 1). Initiation of the IUD at this time has been associated with higher uptake and a reduced risk of another unintended pregnancy compared to when the provision is delayed [23]. Immediate insertion is just as safe as delayed insertion, with no increased risk of infective complications or perforation. As gestation advances into the late first trimester and beyond, there does seem to be an increase in the risk of device expulsion [24,25], hence the classification of MEC 2. However, a economic evaluation has reported that immediate insertion remains cost effective, and would remain so even with expulsion rates as high as 30% [26]. However, the device should not be inserted immediately post septic abortion (MEC 4).

Although insertion of the Cu-IUD does not adversely affect duration or heaviness of bleeding after an abortion [27,28], it has been shown that women who choose an LNG-IUS after medical or surgical abortion can benefit immediately with reduced bleeding. It is also possible that the insertion of an IUD soon after a medical abortion may be easier than when delayed, as the cervix may be slightly dilated. Given that delayed insertion is associated with lower uptake rates, it is good clinical practice in such circumstances to offer women a temporary (bridging) method of contraception.

It is important to highlight that there are no contraindications to adolescents using LARCs. Much to the contrary, numerous studies have highlighted the value of these methods in preventing unintended pregnancies in this age group.

(ii) *Progestosterone only Contraception (POC) - including Progestosterone only Pill (POP), Progestosterone-Releasing Vaginal Ring (PRVR), Depot Medroxyprogestosterone Acetate (DMPA) Injectable, Norethisterone enanthate (NET) Injectable, and Levonorgestrel and Etonogestrel Implants*

#### Post-partum

For breastfeeding women under 6 weeks post-partum, the WHO recommends MEC 2 for the use of POP and implants and shows concerns about injectable POCs such as NET and DMPA (categorizing them as MEC 3). The latter is due to the theoretical concerns of exposing the neonate to DMPA/NET. There is an acknowledgement that the POC injectables may be the only accessible form of contraception in some remote areas of the world, where repeat pregnancy related morbidity and mortality may be high enough to warrant its use despite this concern. Post-partum implant insertion has now become a widely accepted practice in many parts of the world. The ease of insertion, its relative discretion, and the fact that no internal examination is warranted, has made this a very popular post-partum method. Studies have demonstrated that immediate insertion (pre-discharge from hospital following delivery) versus delayed insertion (at 6 week follow up) results in higher uptake in the long run [29–31] and is more cost-effective [32]. The issue with Implants remains the high cost for low and middle income

countries striving to provide universal health care. Studies on cost effectiveness are context specific but a recent study in Uganda suggests that PPIUD is considerably more cost effective than Implants [74].

The PRVR is suitable for breastfeeding women and is categorized as MEC 1. It is suitable for women who are breastfeeding at least 4 times per day and can be commenced 4–9 weeks after giving birth. Each ring is kept in place for 90 days and can then be replaced up to 4 times, with no breaks. The natural progesterone extends the post-partum amenorrhea of the breastfeeding woman and with correct use, the failure rate is 1–2 per 100 women using it for 1 year [9].

#### *Post abortion*

Guidelines support immediate initiation of the implant at abortion. In spite of concerns that initiating a progestogen containing contraceptive at the same time as a progesterone receptor modulator (mifepristone) might adversely interact with the efficacy of medical abortion action, there is evidence from randomised controlled trials that starting the progestogen only implant at the same time as mifepristone does not affect the efficacy of early medical abortion (<9 weeks) [33]. A randomised controlled trial that compared outcomes ( $\leq 63$  days gestation) amongst women having medical abortion who wished to have an implant and were randomised to immediate insertion (mifepristone) or delayed insertion (several weeks later) showed that immediate implant insertion was associated with a clinically important reduction in the rates of subsequent unintended pregnancy, and higher rates of patient acceptability and satisfaction [34]. The progestogen only injectable can also be started immediately following surgical or medical abortion. One RCT of women undergoing a medical abortion (up to 75 days gestation) reported that there was a higher rate of ongoing pregnancy when the depot medroxyprogesterone acetate (DMPA) intramuscular injection was given at the same time as mifepristone compared with administration several weeks later (3.9% versus 0.9% ongoing pregnancy rate respectively [35]). The study was not powered for ongoing pregnancy and there was uncertainty around this estimate of the risk. Furthermore, the absolute risk was small and satisfaction was higher amongst women receiving the injection immediately. In view of this, both FSRH and NICE guidelines recommend that the injection can be given at the same time as mifepristone as long as women are advised of the potential risk [11,22]. In contrast, an observational study has suggested that intramuscular administration of DMPA 24–48 h after mifepristone i.e. at the same time as misoprostol (the second part of the medical abortion regimen) is not associated with an increased risk of continuing pregnancy [36]. There is no evidence to recommend a specific timing for DMPA administered subcutaneously.

It is recommended that POCs can be used freely (MEC 1) after septic abortion.

(iii) *Combined Hormonal Contraception (CHC) - including the Combined Oral Contraceptive Pill (COCP), the Combined Injectable Contraceptive, the Combined Hormonal Patch, and the Combined Hormonal Vaginal Ring*

#### *Post-partum*

There are restrictions on the use of CHCs in the post-partum period. This is due to the increased physiological risk of venous thromboembolism (VTE) in the first 6 weeks after birth. With no added risk factors for VTE, the WHO recommendation is to wait at least 21 days for those not breastfeeding (MEC 2), and 6 months for those breastfeeding (MEC 2). The concern with exclusively breastfeeding mothers is that studies thus far have been inadequately designed to determine whether exposure of infants to exogenous estrogens could result in serious or subtle long term effects.

#### *Post abortion*

The recommendation is that CHCs can be used immediately, all other conditions being acceptable – i.e., nonsmoker, normal body mass index, age, and medical conditions (MEC 1). Women who are medically eligible for and wish to use an oral contraceptive pill, patch, or ring can be advised to start this immediately after the abortion [10,11,22]. Evidence shows that immediate initiation of the combined oral contraceptives does not affect the duration of bleeding after a medical abortion [37].

#### *(iv) Barrier methods*

Barrier methods include: Male condoms (Latex and Polyurethane), female condoms, diaphragm with spermicide, and the cervical cap. In countries or within groups where there is a high risk of

sexually transmitted infections (STIs) including HIV, the correct and consistent use of condoms is recommended to avoid infection. However, condoms are user-dependent and so have a higher typical use failure rate than other methods (see Table 1). In this situation, women are advised to use dual protection, in other words, condoms and an effective user-independent method of contraception such as LARCs. In the post-partum period, condoms can be used effectively immediately (MEC 1), although the diaphragm and cap should only be used after six weeks once uterine involution is complete. Condoms, diaphragms, and caps can be used immediately after 1st trimester abortions and post septic miscarriage (MEC 1).

(v) *LAM*

Breastfeeding can be used safely and effectively for birth-spacing as long as the 3 Principles of the Bellagio 1988 Consensus are fulfilled (exclusively breastfeeding, has complete amenorrhea, and is less than 6 months post-partum). Advocates quote a failure rate of less than 2%, although a recent Cochrane review was unable to pool the data due to differing definitions of amenorrhea [38].

(vi) *Female Surgical Sterilisation*

Female Surgical Sterilisation is an appropriate option for women in the immediate post-partum period if this has been discussed antenatally on multiple occasions and the decision has been reached independent of the outcome for the newborn. The procedure is permanent and should be considered irreversible. It is easily performed as a small additional procedure during a Cesarean section. For those having a normal delivery, it can be performed through a mini-laparotomy incision prior to discharge from hospital (within 7 days). When performed after 7 days, it is suggested that it should be delayed until after 42 days, given the increased risk of VTE with surgery.

Sterilisation can be safely carried out at the time of abortion, although may be more likely to be associated with regret and failure when performed at this time [11]. In view of this, tubal occlusion may be better performed after some time has elapsed after the abortion.

(vii) *Emergency contraception*

Women who are breastfeeding can use levonorgestrel (LNG) and COCs regimes. Ulipristal acetate (UPA) is excreted in breast milk. It is recommended to express and discard the milk for one week after taking UPA (MEC 2) [13]. The UK FSRH advises emergency contraception for women having unprotected sex from 5 days after an abortion. All methods are accepted (MEC 1).

*Particularities of each post pregnancy contraception category*

(i) *Post-partum*

The post-partum period is traditionally defined as up to 6 weeks after delivery and is also known as the puerperium. By the end of this period of time, the body physiologically returns to its pre-pregnant state. If not fully breastfeeding, ovulation can start as early as 21 days after birth. It is also clear that women do not wait until 6 weeks before recommencing sexual activity [39]. It is therefore not appropriate to advise women to wait until their 6 week post-natal check to start looking into their preferred method of contraception. Even if it were appropriate, many women do not access that appointment for a variety of reasons including travel with a newborn, availability of transport, cost, and time. A study in India demonstrated that only 6.8% of women attended 6 week post-partum appointments to discuss contraception [40].

It is also now clear that many contraceptive methods, particularly the highly effective Long Active Reversible Contraceptives (LARCs), can be commenced immediately post-partum. Shorter acting methods such as the progestogen only pill and the progesterone injection can also be commenced immediately after birth. A one stop procedure where a woman can give birth and leave with her contraceptive of choice is a huge advantage and health care providers should be striving to achieve this. Nevertheless, it is well documented that barriers to receiving immediate post-partum contraception across the world are considerable [41–46].

Barriers related to the woman's or her family's cultural or religious beliefs surrounding contraception are a serious issue in many parts of the world [47,48]. This is often linked to a fundamental issue



of a woman's autonomy regarding her own sexual and reproductive rights and body. Husbands and mother in laws may be the decision makers and the woman's health may not always be their priority. There have been behavior change communication strategies described [49], often involving community health workers. These can range from formally trained health care providers such as community midwives and nurses as described in the Scotland [50] and Sri Lanka [51], to informal non-medically trained community health volunteers as has been described in Pakistan [52] and Bangladesh [53]. These health care providers often play a key role not only in educating women and their partners and wider family about the benefits of family planning but also in dispelling myths and taboos regarding different contraceptive methods.

The existence of timely, quality counselling in family planning can also be a barrier. In order for the woman to receive her contraceptive method of choice immediately post-partum and prior to discharge, it is necessary that she is counselled in the antenatal period. Midwives in many countries have taken on extra duties in various task sharing/shifting schemes particularly in LMICs and family planning can be seen as one task too many. There are nevertheless several examples in the literature of successful task sharing of PPFP counselling and service provision by nurses and midwives particularly with insertion of LARCs like the implant and PPIUD [54,55]. It has been documented that those countries adopting task sharing of insertion of PPIUDs saw a huge increase in uptake as the method became accessible to all women, not only those who had had a doctor involved in their care. Some countries also opted to employ dedicated counsellors in order to help clinical staff with counselling women on family planning options and alleviate the heavy workload in large antenatal clinics. This strategy was well accepted by women and allowed for more in depth conversations to be had during hospital visits [56]. Group antenatal counselling has also been employed as an effective and time saving strategy [57,58]. Counselling through multiple episodes has been found to be the single factor across countries which has been associated with an increase in the uptake of reliable immediate PPFP methods [59]. However, strategies that improve counselling that are not coupled with improvements in service provision were not found to increase uptake in one study [60]. A Cochrane review looking at post-partum counselling methods found no sufficient randomised controlled trials to reach sound conclusions [61]. Given the importance of cultural norms and beliefs when discussing contraception, studies on counselling in post-partum family planning are likely to be context specific, lending themselves to a mixed methods or qualitative design. Appropriate further research is needed in this area.

Structural issues secondary to the way health care services are set up have also presented challenges.

In governments, the family planning department will often be under a different jurisdiction to hospital services resulting in logistical challenges when trying to provide family planning services to an inpatient in a hospital. For example, this can impact on the purchase of commodities, as well as budgeting and the need to allocate time to train relevant staff in these new skills.

In systems where universal health coverage is not the norm, the up-front costs of more effective methods such as LARCs sometimes negate the possibility of offering the service [43]. The importance of engaging all stakeholders from the start cannot be understated [62,63]. Educating policy makers regarding the health benefits and cost savings of post-partum family planning should be the mainstay of any initiative aiming to offer PPFP services.

Advantages have also been gained when services in family planning have been integrated within maternal, neonatal, and child health services [64], and also within HIV services in countries with a high incidence of the disease [65]. With regards to HIV services, the recent ECHO trial has allayed previous fears from observational studies which suggested that there may be an increased risk of acquiring HIV in women using DMPA [66]. The recent multicenter randomised controlled trial demonstrated that this is not the case, when comparing DMPA, IUD, and implants. Women should be reassured about this during consultations regarding family planning options. Furthermore, with regards to primary health care, Tran et al. demonstrated that a simple package of six low-technology interventions aimed at strengthening existing primary health care services and enhancing demand for services effectively increased modern contraceptive use for up to 1 year post-partum in rural Burkina Faso [67]. In conclusion, integrating family planning into multiple services, is time saving for the woman and makes uptake of contraception much more likely in the post-partum period.

*(ii) Post abortion*

Initiation of effective contraception in the immediate post-abortion period is important as ovulation and sexual activity resume quickly. Evidence suggests that more than half of women will have resumed sex by two weeks post abortion and that that 15% may have resumed sex within one week [28]. Studies have shown that more than 80% of women ovulate in the first month after abortion and are thus clearly at risk of another pregnancy in the absence of effective contraception [68,69]. A full range of reversible contraceptive options should be available for women on the same day as their surgical or medical abortion, and providers should discuss future contraception with women in advance of the procedure and provide them with their chosen method where medically eligible. Contrary to concerns that women may be too distressed to consider contraception at this time, it has been shown that women value the opportunity to have a discussion about contraception and to receive supplies [70]. Many women who present for abortion have been using a method of contraception around the time of conception, but these have often been methods of low effectiveness or methods used inconsistently. This suggests that higher uptake of the most effective LARC methods could prevent any more unintended pregnancies. Women who choose to initiate LARC methods post abortion have a significantly lower risk of another abortion within the following two years than those choosing less effective methods [71].

*(iii) Post miscarriage, ectopic pregnancy, and gestational trophoblastic disease*

There is evidence that a significant proportion of pregnancies that end in miscarriage were unintended at conception. In a survey from the US of over 1300 women, the pregnancy was unintended in 44.5% of the cases that had a spontaneous miscarriage [72]. Guidelines advise that the need for contraception should be discussed with women experiencing an early pregnancy loss [11]. If a woman wishes to delay or prevent a further pregnancy, contraception should be initiated as soon as possible.

Most contraceptive methods can be safely commenced after an early miscarriage or ectopic pregnancy. The method-specific guidance following abortion, can also be applied in these settings. Contrary to popular myth, a previous ectopic pregnancy does not preclude the use of IUD. Since the IUD is one of the most effective methods of preventing pregnancy, it is effective at preventing ectopic pregnancy and can be inserted at the time of medical or surgical management.

Women should also be advised that if they are treated medically with methotrexate for ectopic pregnancy, then highly effective contraception should be continued for 3 months after treatment due to the teratogenic potential of this drug [11].

If a woman has experienced recurrent miscarriage (three or more consecutive pregnancy losses), referral and investigation by specialist services is advised and the use of the combined hormonal contraceptive methods should be avoided until any thrombotic conditions such as antiphospholipid syndrome have been excluded [11].

Following diagnosis of gestational trophoblastic disease (GTD), women are followed-up by specialist services until serum levels of human chorionic gonadotropin (hCG) return to normal after treatment. Women with GTD who are undergoing chemotherapy should use effective contraception, especially if the regime being used has teratogenic effects. Further pregnancy should be avoided until hCG monitoring is complete, and so effective contraception should be commenced as soon as possible. The risk of disease recurrence is related to the degree of GTD and therefore the recommended duration to avoid pregnancy after treatment varies. The UK FSRH advises avoiding pregnancy until 6 months after treatment for complete mole and for 1 year post treatment where chemotherapy is used for GTD [11]. Most contraceptive methods can be started immediately after surgical management for GTD, except for IUD, which should be avoided until hCG levels have returned to normal. Recent evidence shows that use of oral contraceptives immediately after GTD is considered safe and does not have any adverse effect on risk of disease progression [73].

The UK FSRH advises that emergency contraception (EC) is indicated for women having unprotected sex from 5 days after a miscarriage, ectopic pregnancy, or treatment for GTD. Both oral methods of EC (levonorgestrel and ulipristal acetate) are safe to use. The Cu-IUD can also be used but, if used for EC in women following GTD, should be inserted within a specialist setting [11].

## Summary

Addressing the unmet need for contraception has a huge potential to improve health inequalities across the world, giving women a chance to decide how many children to have and when to have them. Meeting the post pregnancy need and hence improving birth spacing has the potential to improve not only the women's health directly but also but that of her future pregnancies and of her existing children. LARCs are far superior in their ability to prevent unwanted pregnancies and the post-partum and post-abortion periods are ideal for insertion of either the IUD or the implant based on the woman's preference. Research has shown however, that the barriers to receiving timely counselling in pregnancy and of the service being available, particularly for insertion of LARCs, are considerable. Barriers range from cultural beliefs and misconceptions, lack of nursing and midwifery involvement, time constraints in busy clinics, structural issues in the health system limiting training, availability of methods, and perceived high costs. Successful implementation studies have demonstrated that change is however possible. Policy makers should put post pregnancy contraception at the top of their agendas to ensure that appropriate services are provided consistently and are of a high standard.

### Practice points

- Family Planning alone can reduce maternal mortality by 30%.
- If not exclusively breastfeeding, a woman will start ovulating and is at risk of pregnancy 21 days after birth. Waiting to discuss contraception at a 6-week appointment is too late and puts the woman at risk of an unwanted pregnancy.
- It is recommended that women wait 24 months between pregnancies in order to reduce morbidity risks to the mother, her subsequent pregnancies, and her children.
- Family planning options should be discussed antenatally, in a culturally appropriate manner on more than one occasion to ensure that immediate PPF methods are a viable method of choice.
- LARCs are the most effective method of reversible contraception and can be inserted immediately post-partum after both vaginal and CS delivery, post abortion, and after miscarriage and ectopic pregnancy.
- All staff involved in looking after pregnant women, including maternity staff should be trained in counselling on family planning and insertion of LARCs in the immediate post pregnancy period.
- If the correct insertion technique is used, the expulsion rate of PPIUD is no greater than at interval insertion.

### Specific Research agenda

- Qualitative research looking at the current trends in terms of women's autonomy and control over their sexual and reproductive health and rights across the globe
- Large studies looking at long term follow up of women using PPIUD and implants and the incidence of anemia and depression in these women compared to non-users
- Cost effectiveness of PPF methods including comparisons between LARCs (implants and IUDs)
- Comparative studies looking at post-partum IUS and IUDs. Are expulsion rates different?
- Uptake of contraception after miscarriage, ectopic, and GTD when contraception provided from the Early Pregnancy Unit
- Effects of quick starting the subcutaneous formulation of the progestogen only injectable at the same time as mifepristone following early medical abortion

## Declaration of Competing interest

Both authors have no conflicts of interest to declare.

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