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Editorial

The potential of long-acting reversible contraception to decrease unintended pregnancy

1. The problem

The 80 million unintended pregnancies that occur worldwide each year (38% of all pregnancies) can justifiably be deemed an "epidemic." These pregnancies result in 42 million induced abortions and 34 million unintended births — births that contribute substantially to the annual world population growth of 78 million [1,2].

Among developed countries, the US record of family planning is uniquely deficient. Of 6.1 million pregnancies in 2001, half were unintended (as were more than 80% of the 800,000 annual teen pregnancies), resulting in 1.3 million abortions, 4 million births (of which one-third were unintended) and 800,000 miscarriages [3].

As Frost et al. [4] noted in a recent study published by the Guttmacher Institute: "Unintended pregnancy can force women and their families to confront difficult abortion decisions or the potentially negative consequences associated with unplanned childbearing—including child health and development issues, relationship instability, and compromises in education and employment that may exacerbate ongoing poverty." This same study attributes 52% of unintended pregnancies in the USA to nonuse of contraception, 43% to inconsistent or incorrect use, and only 5% to method failure [4].

Leading causes of unintended pregnancy are closely related to contraceptive method choice. In 2002, more than half of contraceptive users relied on methods with high failure rates under typical use: 31% used the pill, 18% the male condom and 5% the 3-month injectable [5]. While with *perfect* use these methods are highly effective, 9% of pill users, 17% of condom users and 5% of injectable users will become pregnant during the first year of *typical* use [5,6]. To make matters worse, about half of condom and injectable contraception users — and almost one-third of pill users — will discontinue within a year [6].

2. The potential of long-acting reversible contraception methods

Long-acting reversible contraception (LARC) methods, including intrauterine contraceptives and implants, have a proven record of very high effectiveness, many years of effectiveness, convenience, cost effectiveness, suitability for a wide variety of women and, in general, high user satisfaction [7–14]. With typical use, the first year failure rate of the copper T 380A (ParaGard®) is 1%, the LNG-IUS (Mirena®) is 0.1% and the implant available in the USA (Implanon®) is 0.1% [5]. One-year continuation rates are also markedly superior to short-acting reversible contraceptives being 78% for the copper T 380A, 80% for the LNG IUS and 84% for Implanon® [6].

Yet, LARC methods make up a very small share of world contraceptive use. For example, implants and IUCs account for only about 2% of contraceptive use in the USA [5].

Figures can be deceiving: while the IUC is used worldwide by 14% of women who are married or in some type of committed relationship, this number is skewed as more than half of the 150 million women in the world using an IUC are in China. A more accurate picture emerges when focusing on regional data: the percentage of women using IUC who are married or in union is 7% in Latin America, 6% in Asia (excluding China) and just 1% in Africa [7]. Use in developing countries is only 6% when China is excluded. There are notable exceptions to this global pattern. IUC has been used extensively in a small number of countries, including Uzbekistan (50%), China (40%), Egypt (37%), Vietnam (36%), Cuba (35%), Tunisia (28%), Jordan (24%), Turkey (20%), France (17%) and Mexico (14%) [7]. Recent events also bode well for increased utilization of LARC worldwide, such as the liberalization of World Health Organization (WHO) medical eligibility criteria for IUC use [8,9] and the introduction of Implanon® in the USA.

Unfortunately, outdated perceptions about appropriate patient candidates for LARC among health care providers continue to negatively impact their use. An emerging body of research has disproved a number of contraindications to IUC use. Specifically, women of any age or parity and those who are postpartum or post first or second trimester abortion are eligible for IUC. The benefits of IUC also outweigh the risks of a wide variety of medical conditions that might contraindicate the use of combined hormonal contraceptives [8,9,11,12,14–18].

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The issue of increased risk or greater severity of infection among IUC users has been a prominent concern. However, the rate of pelvic inflammatory disease (PID) in IUC users is low, with cases concentrated in the first 20 days after insertion [19,20].

Shelton [21] has developed a mathematical model that estimates the risk of PID attributable to IUC. For example, in a client population with a 10% prevalence of STI and no STI screening before insertion, the risk of PID attributable to the IUC would be 0.3% and about half that if clients were screened using a risk-assessment protocol. WHO guidelines allow for use of IUC by those with HIV; however, women with AIDS should be monitored for pelvic infection [8,9].

3. Barriers to increased use of LARC

Use of LARC in both the USA and worldwide will not reach its full potential until a number of barriers are addressed:

- *Providers both lack information and are misinformed*. Providers continue to be concerned about IUC use due to unsubstantiated risk related to STIs, ectopic pregnancy, infertility, use postpartum, use postabortion, use by nulliparous women, use by teens, patient acceptability and legal matters. A study of 816 contraceptive providers serving low-income clients through California's publicly funded Family PACT Program showed that almost 95% consider the IUC to be safe, but fewer than 65% generally discuss the option with patients seeking contraception. Providers also were misinformed about side effects; for example, about one-quarter described hormonal side effects of ParaGard®, a nonhormonal method [22].
- *Providers lack adequate training in IUC and implant insertion*. In the same Family PACT survey, 69% of providers reported that they were trained in IUC insertions, and 61% had IUC available at their practice, but only 60% felt "very comfortable" inserting ParaGard®, and just 40% felt "very comfortable" inserting Mirena®. Although IUCs are reimbursable for Family PACT providers, more than 40% have never dispensed IUC, and just 1.3% of female clients were given IUC in 2005 [22].
- *Patients' fears, misinformation and lack of knowledge have resulted in low demand*. A 1996 survey of reproductive-age US women revealed that 32% had little or no knowledge about IUC; only 21% felt that the term "safe" closely described it; and only 16% had a favorable opinion of it [23]. Negativity towards IUC stems largely from the misconception that it is an abortifacient, and the Dalkon Shield controversy. A more recent 2007 study among adolescent and young women found that most (60%) had never heard of IUC [24]. Manufacturers have invested relatively little to improve perceptions of IUC, particularly compared to the advertising budgets for oral contraceptives [25].
- *LARC is expensive and provider reimbursement low, especially in the USA*. Manufacturers have kept product pricing high in the USA and up-front costs can make these methods unaffordable for many women. While companies have a strong incentive to market pills that might bring in more than $1000 profit over a 10-year period, the one-time sale of a copper IUC yields only about $200 profit for the same time period [25,26]. In the USA, the current public sector price for ParaGard® is $200 (more than 100 times the cost of manufacture), Mirena® is $330 (with the exception of a small number available through the ARCH Foundation) and Implanon® is $436. Private sector pricing is substantially greater. Although IUC is inexpensive when the cost is prorated over 5 years [26], the high copayments of many health insurance plans result in a prohibitive initial cost for women — and women who lack health insurance are least likely to be able to afford IUC.

4. Recommendations for action

Past experience with the successful introduction of new contraceptives, or reintroduction in the case of the IUC, provides guidance to improve provision and use. Recommended activities include the following:

- *Undertake research* to determine why provider practices are not evidence based, to elucidate health system barriers and to inform the design of interventions to encourage provision.
- *Develop information and training materials* to address knowledge gaps and misinformation, as well as evidence-based screening tools and training curricula that incorporate the latest adult learning principles.
- *Provide training and technical assistance*. Training and medical education at the preservice level must include the full health care team of professionals involved in contraceptive counseling and provision. In addition to Ob/Gyn and family practice physicians, advance practice clinicians, nurses, social workers and other counselors need to be knowledgeable about LARC. Provider training must include supervised hands-on experience with LARC methods and mentoring as needed. Ongoing technical assistance must address the health system issues such as intake, counseling, clinic protocols, consent forms, malpractice insurance, record keeping, insurance claims and management of side effects and complications.
- *Address the high cost of LARC methods* through better insurance coverage, lower prices for public sector use and price competition with generic or alternative IUCs and implants.

- *Increase patient awareness* with audience-appropriate educational materials and direct-to-consumer marketing.
- *Fully fund family planning programs for low-income clients*. An annual expenditure of about $3.5 billion is needed to serve the 17 million US women in need of publicly funded contraceptive services [27,28]. This can be compared to public outlays of $1.85 billion in FY2006 — about half of the total needed [29]. Fifteen billion dollars a year is needed for family planning programs in developing countries, yet only 10% of the funds needed from foreign aid donors are now being committed [30–32].

There are many examples of successful introduction of LARC around the world. With adoption of better family planning policies, effective health professional training programs and commitment of the needed resources, these success stories can be replicated on a large scale in an increasing number of countries.

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