



CHIARA ZARMATTI

Set and forget

Long-acting reversible contraceptives are the most effective method of birth control on the market. So why do so few women use them? **By Bianca Nogrady**

The oral contraceptive pill is one of the most popular forms of birth control but, like many other methods, it has one important flaw: it only works if people take it as directed. The pill can be more than 99% effective at preventing pregnancy, but with typical use this falls below 95%.

User error is not a problem for long-acting reversible contraceptives (LARCs), however. These include intra-uterine devices (IUDs) that release either hormones or copper into the womb, as well as hormone-releasing implants that are inserted under the skin. Such devices are more than 99% effective without requiring the person using them to do anything at all once they are in place. “They are set-and-forget contraception,” says Danielle Mazza, a women’s-health specialist who heads the

Department of General Practice at Monash University in Melbourne, Australia.

As well as being the most effective reversible method of reducing unwanted pregnancies and subsequent abortions, LARCs can also reduce or even eliminate monthly periods, manage the symptoms of endometriosis, and can even be used as a form of emergency contraception.

But despite all their benefits, LARCs are less popular than other forms of contraception – something that many women’s-health organizations around the world are trying to change. Cost, availability and lack of awareness are all barriers to the uptake of LARCs that must be overcome, as is their dark history as a tool for reproductive coercion.

The idea of a long-term, reversible method

of inhibiting pregnancy was first explored in the early 1900s. Devices made from silk, glass buttons, silver rings, gelatine capsules and plastic that were placed and remained in the cervix and uterus were trialled with varying degrees of success. Eventually, a winning configuration emerged, and today the most-common form of IUD consists of a T-shaped, flexible plastic frame wound with copper wire that sits inside the uterus. Strangely for a device that is now so widely used, the precise mechanisms by which these intra-uterine devices prevent pregnancy are not well understood.

Disruptive devices

The general principle of IUDs is that they trigger inflammation or the production of mucus in the cervix, at the entrance to the uterus, and that the thick mucus prevents sperm from travelling into the uterus and fallopian tubes. Inside the uterus, copper can also create chemical changes that make the environment less hospitable for both sperm and fertilized eggs. The IUD works both to prevent pregnancy in the first place and also, if it is inserted within five days of unprotected sex, as a form of emergency contraception.

In the 1970s, a high-profile IUD called the Dalkon Shield was released. But the hype soon

turned to horror as the number of women reporting pelvic infections, sepsis and even infertility from using the device soared. That failure cast a long shadow over IUDs and it took several decades for sales of the devices to recover from the mistrust and suspicion created by the Dalkon Shield saga.

A 2015–17 survey by the US Centers for Disease Control and Prevention found that 19% of women of reproductive age had used an IUD, and 8% were using one at the time of the interview. In Australia, 6% of women surveyed in 2012–13 were using IUDs, and in the United Kingdom, 10% of women of reproductive age were using IUDs in 2018. But IUDs are most popular in China, where around one-third of married women use them, representing 70% of all global users.

Newer models, such as Mirena, Kyleena and, most recently, Liletta, have replaced the copper with slow-release, low-dose hormones that thicken the mucus that lines the cervix. This mucus prevents sperm from reaching the uterus, stops fertilized eggs from implanting in the lining of the uterus, and suppresses ovulation. The addition of the hormone to the IUD brings a range of other benefits, such as reducing heavy bleeding.

“For women who struggle with heavy periods that put them out of action for a couple of days each month, for women who suffer from endometriosis and have very painful periods, and for women who don’t like having periods and are very happy not to bleed every month, the Mirena is fantastic because it thins down the lining of the uterus,” says Mazza.

Liletta is the longest-lasting hormonal IUD, with a six-year lifespan. But not everyone can use hormonal IUDs – some women react adversely to the hormones and they cannot be used in those who have a history of breast cancer. To address this problem, a copper-based, non-hormonal IUD with a flexible nickel and titanium frame is being developed that uses a smaller amount of copper. But because the T-shape is associated with cramping in women who have a small uterus, a frameless IUD consisting of plastic thread with copper beads is being developed. Other studies are exploring safer ways of inserting the IUD to reduce the rare but potentially serious complication of perforating the uterus. But the IUDs currently on the market are largely safe and effective, so the focus is on expanding the use and availability of existing options.

Although IUDs were once considered only for women who had already had children, there is now increasing emphasis on their use by adolescent and young women, says sexual-health physician Sarah Borg, senior adviser at Marie Stopes International, a London-based

organization that provides family-planning services.

Borg says that IUDs should be considered as a first-line option for adolescents, because young people are more likely to make mistakes when using other contraceptives. “They’re not that likely to want to start a family soon so it’s great to give them this method that lasts for a long time, to tide them over to when they are ready to start a family.”

But not everyone is comfortable with the idea of a device sitting inside their uterus for years at a time. So, although IUDs have long dominated the LARC market, the use of hormone-releasing implants embedded in the arm is starting to rise, particularly among young women aged 15–19 years, says Megan Kavanaugh, principal research scientist at the Guttmacher Institute, a research and policy organization in New York City that focuses on sexual and reproductive health.

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Implants such as Nexplanon, Jadelle and Sino-implant (II) consist of a flexible plastic rod that is inserted just under the skin of the upper arm, where it can stay for several years. There has been long-standing interest in developing biodegradable implants, which would avoid the need for removal. But using these could complicate the reversibility of implants, and there are no such products on the market.

The proportion of contraceptive users in the United States who rely on subcutaneous implants rose from just 0.5% of women in 2008 to 4.3% in 2016. This higher uptake of implants accounted for much of the increase in the use of LARCs during that period, which coincided with a decline in the use of relatively short-term contraceptives, such as the oral contraceptive pill. One possible reason for this switch is that doctors are offering LARCs more often and to a broader range of users.

Implants in the arm are also a less-daunting prospect than having an IUD inserted. “If you have never put your feet in the stirrups at a gynaecologist’s office, that’s a larger hurdle to get over to get to the IUD,” Kavanaugh says.

Paying for protection

In the six weeks after Donald Trump’s election as US president in November 2016, the daily rate of LARC insertions among privately insured women in the United States increased by more than 20%. Sarah Christopherson, policy advocacy director for the National

Women’s Health Network in Washington DC, speculates that this rush was driven by concern that Trump would repeal the Affordable Care Act, which had significantly reduced the cost of LARC insertion. “There was this feeling for some people of ‘this might be my last chance to get an IUD,’” she says.

Cost is a significant barrier to the widespread use of LARCs. Whereas the cost of oral contraceptives is spread over time, almost the full cost of LARCs must be paid up-front when it is inserted, and it can run to thousands of dollars. The issue of cost is so important that when the New Zealand government introduced a subsidy for the subcutaneous implant in 2010, there was not only a significant rise in the use of implants, but also an acceleration in a longer-term trend of falling abortion rates.

LARCs have “very low failure rates” compared with short-acting contraceptives, says public-health researcher Catherine Whitley, from the University of Otago in Wellington, New Zealand. It therefore makes sense, she says, that greater use of LARCs would result in fewer unintended pregnancies.

Another barrier to the widespread use of LARCs is mistrust. The unethical practice of forced sterilizations inflicted around the world – particularly on women of colour, the poor, immigrant women, and women with disabilities – is also playing out in a less overt way with LARCs. These devices require a clinician to both insert and remove them, which imposes a barrier on women having a LARC removed if she wishes to get pregnant. Christopherson says that some US states have had Medicaid policies that paid for the insertion but not the removal of a LARC – and some have required medical justification for removal.

“It could be that you’ve come across a provider who has a particular bias, thinks you’re too young, thinks Black women are irresponsible,” Christopherson says. “It could be that your provider is working in a reimbursement environment where they’re paid really well for insertions and they don’t get paid at all for removal if it comes too early.”

Reproductive-health specialists want to see greater uptake of LARCs because of their effectiveness and safety. But they are also keenly aware of the need to make sure that women are able to make an informed choice about their contraceptive method, free from pressure or influence. “We want to be moving towards policies that support the broad range of methods being available,” Kavanaugh says, “so that individuals can choose the best method that’s right for them in their life circumstances.”

Bianca Nogrady is a freelance science journalist in Sydney, Australia.