SPECIAL ISSUE | RESEARCH PAPER
https://doi.org/10.1071/PY22265

Australian Journal of Primary Health

Pathways to IUD and implant insertion in general practice: a secondary analysis of the ACCORd study

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Received: 4 December 2022
Accepted: 4 April 2023
Published: 1 May 2023

Cite this:
Mazza D *et al.* (2023)
Australian Journal of Primary Health, **29**(3), 222–228.
doi:10.1071/PY22265

ABSTRACT

Background. Despite recommendations, long-acting reversible contraceptives (LARC) are not always offered as first-line contraceptives in general practice. This study aimed to describe pathways used by women for insertion of LARC. **Methods.** This is a secondary analysis of data from the Australian Contraceptives ChOice pRoject (ACCORd), a cluster randomised controlled trial set in 57 general practices in Melbourne, Australia. We investigated whether an educational intervention for general practitioners (GPs) and a rapid LARC insertion clinic increased LARC uptake. The main outcome measures were the type of health service, location/provider of intrauterine device (IUD) insertion; time to insertion; and distance travelled for IUD insertion. **Results.** During ACCORd, 149 women had LARC insertion. IUD training was reported by 37% of GPs, but only 12% inserted them. In contrast, 70% of GPs inserted implants and 95% of women accessed implant insertion through their own general practice. LARC rapid referral clinics were used by 52% (13/25) of intervention GPs, where 71% (41/56) of IUD insertions occurred in these clinics (but no implants). There was no difference in the mean time from referral to IUD insertion between women attending intervention and control GPs (mean days 37.6 vs 32.7; $P = 0.61$). GPs (including IUD inserters) used a variety of referral pathways for IUD insertion, including public and private clinics, and other GPs. Women travelled up to 90 km for IUD insertion. **Conclusions.** Although implant insertion has been integrated into general practice, few GPs insert IUDs. Where the option exists for GPs to refer to a LARC rapid referral clinic, the majority of IUD insertions will take place there. Establishing a network of such clinics Australia wide may both increase IUD uptake and address the extensive need for GP training in IUD insertion.

Keywords: contraceptive implants, general practice, GPs, intrauterine device, IUD, LARC, pathways.

Introduction

International evidence demonstrates that long-acting reversible contraceptives (LARC), including intrauterine devices (IUDs) and implants, reduce unplanned pregnancy and abortion (Winner *et al.* 2012; Gyllenberg *et al.* 2018). Despite this, rates of LARC use remain low compared with less-effective forms of contraceptives (Richters *et al.* 2016; Kavanaugh and Jerman 2018). Key barriers to LARC uptake have been well described, and include lack of patient awareness of LARC; provider barriers, such as lack of knowledge and skills in LARC insertion; and system barriers, such as poor remuneration for LARC insertion (Mazza *et al.* 2017).

Responding to national and international calls for increased availability and access to LARC (Mavranezouli 2008; FPAA 2014; American College of Obstetricians and Gynecologists (ACOG) 2018), we undertook a cluster randomised controlled trial aimed at increasing LARC uptake through general practice, the Australian Contraceptive ChOice pRoject (ACCORd). ACCORd involved a complex intervention targeting two major barriers to LARC uptake in the Australian setting: lack of general practitioner (GP) awareness of LARC as first-line contraception for all women regardless of reproductive age and stage

(including teenagers and nulliparous women), and the lack of access to GPs trained in LARC insertion (Mazza *et al.* 2017). The complex intervention consisted of online training for GPs on effectiveness-based contraceptive counselling and the capacity for GPs to be able to rapidly refer to LARC insertion clinics. ACCORd resulted in a significantly higher rate of LARC uptake, particularly IUDs, in the intervention group compared with control (Mazza *et al.* 2020).

To ascertain the impact of having rapid referral to LARC insertion clinics available to GPs, we sought to describe the pathways to LARC insertion for women participants in the ACCORd study.

Methods

We undertook a secondary analysis of data from the ACCORd study, a cluster randomised controlled trial conducted in metropolitan Melbourne between April 2016 and July 2017. Methods have been described elsewhere (Mazza *et al.* 2016). The intervention consisted of two parts: online GP training on effectiveness-based contraceptive counselling, and GP access to rapid referral to LARC insertion clinics for either implant or IUD insertion. The 6-h online educational package consisted of materials from the training site of the Contraceptive CHOICE project (Madden *et al.* 2013) adapted to the Australian context. The LARC insertion clinics were provided by two local gynaecologists, a male gynaecologist who provided bulk-billing for patients (no out-of-pocket charges for the consultation), and a female gynaecologist who charged her usual private fees (resulting in approximately A$224 out-of-pocket). Intervention GPs were aware of billing and sex differences. In ACCORd, intervention GPs undertook the online training and could book the insertion appointments for their patients directly through an online booking system. Control GPs provided usual care and did not have access to the LARC rapid referral clinics or the educational intervention (the latter until the end of the study).

At baseline, prior to randomisation, GPs recorded whether they were trained to insert LARC, both IUDs and implants. The trial statistician generated a randomisation sequence with permuted blocks (block sizes of 4, 6 and 8), stratified by whether the GP performed LARC insertion or not (Piantadosi 2005). This sequence was then held by a research assistant who was not involved in the ACCORd trial.

LARC insertion provider and location suburb, time from initial contraceptive consultation to insertion, and referral to insertion were collected from data sheets completed by GPs and ACCORd LARC clinic gynaecologists each time a woman presented for an appointment that included contraceptive counselling, regardless of whether they were prescribed contraceptives. Where LARC insertion provider and location were unclear (i.e. missing data/forms), we obtained this information from the woman's 6- or 12-month survey or by contacting the GP practice to obtain this information. Free text comments provided by women participants in their 12-month survey were also used for qualitative aspects of this study.

Descriptive statistics were used to calculate the distance women travelled and the number of days from initial ACCORd contraceptive appointment to LARC insertion during the first 6 months for the intervention and control groups. We used 6 months as a cut-off for this measure, because we were looking at insertions in relation to initial consult and referral, and postulated that insertion 6 months after initial referral (except in the ACCORd LARC rapid referral clinic) may have been the result of another consultation/referral from a different practitioner. Testing for differences in the mean time from initial consultation to LARC insertion in intervention and control groups (including comparison with those using and those not using LARC clinics), and differences in distance travelled for LARC insertion, was performed using regression analysis, allowing for clustering of GPs and for whether the GP inserted IUDs.

Ethics approval

ACCORd was approved by the Monash University Human Research Ethics Committee: CF 14/3990-2014002066 and CF 16/188-2016000080, and conformed to CONSORT guidelines (Campbell *et al.* 2012).

Results

Type, provider and location of LARC insertion

There were 25 intervention GPs who recruited 307 women and 32 control GPs who recruited 433 women. Of the total 149 new LARC inserted, implants were more often inserted in the control group compared with intervention (55% (39/71 vs 21% 22/78). Information regarding provider and insertion location were available for all but one LARC. Of the LARCs inserted, all were inserted by medical practitioners, with the exception of one implant, which was inserted by a nurse (Table 1).

Although just over one-third of GPs (37%, $n = 21$) had been trained in IUD insertion prior to the ACCORd study, only 14% ($n = 8$) reported routinely inserting them. Of those who reported routinely inserting them, seven (12%) inserted at least one IUD during the ACCORd study. In contrast, most GPs reported routinely inserting implants (72% of intervention GPs, ($n = 18/25$) and 68.8% of control GPs ($n = 22/32$)), and most (57/60) implants were inserted by the GPs themselves or by another GP or nurse in their practice. None of the intervention GPs used the ACCORd LARC rapid referral clinic for implant insertion.

GPs used a variety of pathways to achieve IUD insertion, including private gynaecologists, public hospital and Marie Stopes (private) clinics. In the control group, 24 of the 32 IUDs (75%) were inserted by the GP themselves or another GP in the practice. Although there was a greater number of

Table 1. Provider and location of LARC insertion (by LARC type and group allocation).

	Group	GP, *n* (%)	LARC clinic, *n* (%)	Gynaecologist, *n* (%)	Other GP at GP's practice *n* (%)	Marie Stopes clinic, *n* (%)	Public hospital clinic, *n* (%)	Nurse, *n* (%)
Hormone IUS	Intervention *n* = 51	10 (19.61)	38 (74.51)	2 (3.92)	0 (0.00)	0 (0.00)	1 (1.96)	0 (0.00)
	Control *n* = 25	16 (64.00)	0 (0.00)	4 (16.00)	3 (12.00)	2 (8.00)	0 (0.00)	0 (0.00)
Copper IUD	Intervention *n* = 5	0 (0.00)	3 (60.00)	1 (20.00)	0 (0.00)	1 (20.00)	0 (0.00)	0 (0.00)
	Control *n* = 7	3 (42.86)	0 (0.00)	2 (28.57)	2 (28.57)	0 (0.00)	0 (0.00)	0 (0.00)
Hormone implant	Intervention *n* = 22	19 (86.36)	0 (0.00)	0 (0.00)	1 (4.55)	0 (0.00)	1 (4.55)	1 (4.55)
	Control *n* = 38[A]	32 (84.21)	0 (0.00)	2 (5.26)	4 (10.53)	0 (0.00)	0 (0.00)	0 (0.00)
Total	148							

LARC, long-acting reversible contraception; GP, general practitioner; IUS, intrauterine system; IUD, intrauterine device.
[A]Missing *n*=1.

IUDs inserted in the intervention group compared with controls (56 vs 32), only 10 of the 56 IUDs inserted in the intervention group (18%) were inserted by the GP themselves or another GP in the practice. A total of 71% (41/56) of the IUD insertions in the intervention group occurred in ACCORd LARC rapid referral clinics. These were referred to by 52% of the intervention GPs ($n = 13/25$). One GP used the ACCORd LARC clinics for 13 IUD insertions, but the majority of GPs ($n = 11$) used them for between one and four insertions.

Most women (90%) utilising the ACCORd LARC rapid referral clinic attended the one provided by the bulk-billing, male gynaecologist. No statistical difference was demonstrated in socioeconomic status between women attending LARC insertion clinics and those having LARC inserted elsewhere; 79.1% of LARC clinic attenders reported a median income at or above the median in Victoria, compared with 75.5% of those not attending LARC clinics ($P = 0.52$).

Time to LARC insertion

Data for the time from GP referral to LARC insertion were available for 137 women and are shown in Table 2. A total of 40% (22/55) had their implant inserted on the same day of consultation, compared with only 14.5% of IUDs (12/83). A significantly higher proportion of contraceptive implants were also inserted in the first 2 weeks following referral (76%; 42/55; vs 40%; 33/83, $P < 0.001$). In contrast, 60% (50/83) of women had their IUD inserted by 4 weeks, and 88% by 12 weeks from the time of referral.

Participants reported various reasons for the delay from referral to insertion of their IUDs, including co-ordinating the provider's availability with timing of their menstrual cycle; organising the insertion around work and/or family commitments; availability of suitable appointment times; and attending alternative clinics or practitioners for LARC insertion (if the initial choice was unavailable or inconvenient).

After adjusting for clustering and for whether the GP inserts LARC, there was no significant difference between intervention and control groups regarding the mean number of days between referral and LARC insertion (mean difference 3.2 days, 95% CI −13.1–19.6, $P = 0.69$) or between referral and IUD insertion (excluding implants), although the mean time to insertion was longer for the women in the intervention group (37.6 vs 32.7 days mean difference 4.9 days, 95% CI 27.5 to −47.6, $P = 0.61$). In the intervention group, the mean time to insertion of the hormonal IUS was 37 days compared with 39 days in the control group (mean difference 2 days, 95% CI −21–26; $P = 0.86$), but longer for copper IUDs (mean difference 41 days, 95% CI 9–53; $P = 0.04$).

The availability of the ACCORd LARC insertion clinics had no significant effect on time to IUD insertion. For hormonal IUS insertions undertaken in the ACCORd rapid referral clinics, the mean time from referral to insertion was 37.44 days (median 26.5 days) compared with a mean of 38.41 days in those undertaken elsewhere (median 18 days). The mean time to insertion of the copper IUD for ACCORd rapid referral clinics was 26.67 days (median 36 days) compared with 19.67 days (median 3 days) for those undertaken elsewhere. When looking at time from referral to insertion of the hormonal IUS and the copper IUD combined, there was no overall mean difference between those attending ACCORd rapid referral clinics and those having IUDs inserted elsewhere (mean difference 18 days, 95% CI 13–51, $P = 0.252$).

Distance travelled for LARC insertion

Although the furthest distance travelled from the patient's home to access LARC insertion was 90 km, the mean distance

Table 2. Time from referral to LARC insertion.

	Group	*n*	Mean (days)	2 weeks, *n* (%)	4 weeks, *n* (%)	12 weeks, *n* (%)	>12 weeks, *n* (%)
Hormone IUS	Intervention	49*	37.26	18 (36.73)	12 (24.49)	14 (28.57)	5 (10.20)
	Control	22**	39.36	9 (40.91)	5 (22.73)	5 (22.73)	3 (13.64)
Copper IUD	Intervention	5***	41.50	1 (20.00)	0	3 (60.00)	1 (20.00)
	Control	7***	8.16	5 (71.43)	0	1 (14.29)	0
Hormone implant	Intervention	20*	10.65	16 (80.00)	2 (10.00)	2 (10.00)	0
	Control	35****	27.26	26 (74.29)	0	6 (17.14)	3 (8.57)
Total		137					

Total missing $n = 12$; *$n = 2$, **$n = 3$, ***$n = 1$, ****$n = 4$.
IUD, intrauterine device; IUS, intrauterine system.

Table 3. Distance women travelled for LARC insertion.

	Group	*n*	0–10 km	11–30 km	≥30 km
Hormone IUS	Intervention	51	32 (62.75)	13 (25.49)	6 (11.76)
	Control	25	18 (72.00)	5 (20.00)	2 (8.00)
Copper IUD	Intervention	5	2 (40.00)	2 (40.00)	1 (20.00)
	Control	7	5 (71.43)	1 (14.29)	1 (14.29)
Hormone implant	Intervention	22	13 (59.09)	9 (40.90)	0 (0.00)
	Control	39	32 (82.05)	2 (5.13)	4 (10.26)
Total		149			

IUD, intrauterine device; IUS, intrauterine system.

was 11.7 km (median 8 km; Table 3). The distance travelled for LARC insertion was lower for those whose GPs inserted IUDs, with a mean difference of 5.9 km (95% CI 0.60–11.20, $P = 0.03$). There was no difference between type of LARC inserted and distance travelled ($P = 0.64$).

Discussion

Our study documents for the first time the pathways used for LARC insertion by GPs in Australia. Proportionally more women in the intervention group chose LARC as contraception compared with those in the control group (25.4% vs 16.2%). With more than two-thirds of GPs in our study having previously trained to insert implants, the vast majority of women were able to access implants through their own general practice. In contrast, only one-third of the 37% of GPs previously trained in IUD insertion actually inserted an IUD during our study, and women took longer to have their IUD inserted. The LARC rapid referral clinics established to mitigate this issue in ACCORd were well utilised, with just over half of the GPs in the intervention group referring to them, and more than two-thirds of IUDs in the intervention group being inserted in these clinics. They did not, however, result in a significant difference in time to insertion.

It was interesting that fewer IUDs were inserted by GPs themselves (or by another practitioner in their practice) when they had the option of a rapid referral service. This may reflect the demands on GPs, who may be unable to perform same-day insertions of IUDs due to time and facility constraints. Unlike implant procedures, assistance is often required during IUD insertion.

These findings have several important practice and policy implications for LARC uptake in relation to workforce, practice protocols and the future implementation of LARC insertion clinics.

A major barrier to IUD uptake is the lack of availability of trained IUD inserters (Mazza *et al.* 2017). Of concern is the low numbers of GPs we found trained to insert IUDs (37%), and the even lower number actually inserting them in general practice (12%). Furthermore, when an alternate option for rapid referral was made available, a number of GPs preferenced this pathway. These findings are consistent with international studies, with less than one-quarter of family physicians in the US reporting providing any form of LARC insertions (Chelvakumar *et al.* 2019), and in Australia, previous reports of low levels of discussion of LARC during contraceptive consultations, low rates of insertion/removal of contraceptive devices in Australian general practice (Mazza *et al.* 2012) and low rates of prescription of these devices (Bingham *et al.* 2018). Opportunities for training in IUD insertion are limited, as these services are divested from hospitals into the community setting. In the Australian setting, GP trainees may not be exposed to IUD insertion, or may not learn this procedure if their supervisors are not providing this service. IUD insertion training courses are difficult to access, and incur costs both in terms of course fees and time away from work. Additionally, some GPs may not insert IUDs because of system barriers in primary care, including insufficient remuneration, lack of peer support and the additional resources required, such as equipment and an assistant for the procedure. One study has reported difficulty sustaining insertion practice following training (Stewart *et al.* 2016), with only 32% of GPs achieving the recommended number of IUD insertions required to maintain skills (at least one per month) in the 12 months following IUD insertion training (Stewart *et al.* 2016).

To overcome such issues and increase access, the World Health Organization (WHO 2017) recommend task sharing with trained nurses and midwives delivering implant and IUD insertion and removal. In our study, however, only one implant was inserted by a nurse, and no IUDs. This is despite high levels of acceptability among Australian GPs and practice nurses regarding the provision of contraceptive counselling and implant insertion by practice nurses (Garrett *et al.* 2016), and favourable attitudes by nurses towards incorporating IUD insertion into their scope of practice (Fleming *et al.* 2019). Although family planning organisations have begun to train nurses to undertake IUD insertions (Kemeny *et al.* 2016), this has not yet become widespread. In addition, there exists no financial reimbursement under Medicare for practice nurses to deliver these services.

That only 14.5% of women in our study had same-day IUD insertion may reflect the low numbers of GPs inserting IUDs or lack of implementation of same-day LARC insertion protocols (as recommended by the American College of Obstetrics and Gynaecology; American College of Obstetricians and Gynecologists (ACOG) 2009, 2011). The clinical recommendations specifically state that with the aim of reducing barriers and increasing LARC use, LARC can be inserted at any time during the menstrual cycle if pregnancy is reasonably excluded, and that routine sexually transmitted infection screening is not required unless the patient is at high risk of sexually transmitted infections, in which case screening and insertion can occur on the same day or when the test results are available. Clinic protocols or practitioner approaches that mandate more than one visit prior or IUD insertion can result in women not following up or unintended pregnancy (Bergin *et al.* 2012). Our rates of same day IUD insertion are, however, double that reported in a 2006 survey of >1000 family planning providers in California (which found that only 7% offered an IUD in one visit), perhaps reflecting the general practice context where the GP is more familiar with the patient, her history and her circumstances (Harper *et al.* 2012).

Very few copper IUDs were inserted compared with hormonal IUDs (Table 1). Lack of familiarity with, or caution regarding side-effects from the copper IUD (Mazza *et al.* 2012), could have accounted for this, or that copper IUDs were not recommended by GPs or chosen as 'first line,' as the hormonal IUD has additional benefits for women, including reduced or absent menstrual flow (Kemeny *et al.* 2016). Women experienced a considerable delay between their initial contraceptive consultation and insertion of the copper IUD (mean of 41 days), possibly because copper IUDs are not available on the pharmaceutical benefits scheme in Australia, resulting in additional difficulty sourcing them and out-of-pocket costs (Mazza *et al.* 2020).

International studies reported the variability of individual practices (and even specialised family planning services) providing IUD insertion (Stewart *et al.* 2016). Our study demonstrated a variety of referral pathways used by GPs to achieve IUD insertion for their patients. There is a concern, however, that if a particular GP does not insert IUDs and their preferred referral pathway is to private gynaecologists only, uptake of IUDs can be affected, especially where cost is an issue for women (WHO 2017). The fact that 71% of IUDs in the intervention group were inserted in the ACCORd LARC rapid referral clinics and that 52% of eligible GPs utilised them is a strong endorsement of their utility, and possibly also reflects (variable) out-of-pocket costs for women accessing IUD insertion with their GPs. Additionally, our findings of (1) higher implant uptake in the control group compared with the intervention (55% vs 21%), and (2) 86% of all LARC (60/70) in the control arm being inserted by either the ACCORd GP or by other GPs in the practice may indicate that without the option of the LARC rapid referral clinic, women in the control group choosing a LARC may have been recommended the implant rather than an IUD because of costs and/or convenience (Mazza *et al.* 2020). The ACCORd LARC rapid referral clinics did not appear to impact uptake for the implant, with most GPs inserting the contraceptive implant themselves or referring women to GPs in their own practice. This may be an indication that implant insertion is much better integrated into Australian general practice, as reflected by the much larger proportion of GPs trained in and providing this procedure.

In considering these outcomes, it is important to consider that the number of LARC insertions achieved in our study ($n = 149$) is small and may have not provided us with enough power to detect significant differences. As our sample was drawn from metropolitan locations, the study findings may not be generalisable to rural settings. Also worth noting is that the GPs involved in the ACCORd study are likely to have had an interest in women's health and contraception. The proportion of GPs who had previously trained in LARC insertions and who were currently providing this service is likely to be over inflated in comparison with the broader GP population. This could mean that were LARC rapid referral clinics to become more widely available, they might indeed be more extensively utilised, filling an even larger gap. Although we were aware of the out-of-pocket costs incurred by women attending the ACCORd LARC clinic serviced by the female gynaecologist, we did not collect data about costs incurred by women having LARC inserted at other locations. Hence, we are unable to comment about the impact of cost on a woman's decision to have a LARC inserted, or where to have this performed.

Conclusion

When LARC insertion clinics are made available to GPs, particularly where these are bulk billed, they are well utilised for IUD insertion, but appear to be unnecessary in the current context for implant insertion, which are, in the vast majority, undertaken within general practice. The ACCORd study

demonstrates that the scaling up of this intervention through a policy to implement a network of IUD insertion clinics Australia wide may not only lead to increased uptake of IUDs by Australian women, but also provide an opportunity to address the glaring need for increased GP training and training of nurses in IUD insertion.

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Data availability. Data sharing is not applicable, as no new data were generated or analysed during this study.

Conflicts of interest. DM has received research funding, sponsorship to attend conferences, and been involved in training and education activities, and advisory boards outside this submitted work related to Bayer Australia and MSD. CW reports no conflict of interest. AT reports no conflict of interest. JL has been Chief Investigator on an ARC Linkage Grant that involves cash and in-kind support from Family Planning New South Wales and Bayer Australia. JL is the Director of The Australian Research Centre in Sex, Health and Society, which receives funding from diverse sources listed in the annual report available from the website: http://www.latrobe.edu.au/arcshs. KMG reports no conflict of interest. MH reports no conflict of interest. KMc reports training and education activities outside this submitted work related to Bayer Australia and MSD. JP has received research funding and support from CooperSurgical, Bayer and Merck, and serves on Advisory Boards for CooperSurgical and Bayer Healthcare Pharmaceuticals. KB has attended one international advisory board meeting for Bayer Australia for which no personal fees were received.

Declaration of funding. This trial was funded by the National Health and Medical Research Council, (APP1081743). This fund had no part in the conduct of the research and/or preparation of the article, nor any part of the study design; in the collection, analysis and interpretation of data; nor in the writing of the report; nor in the decision to submit the article for publication.

Acknowledgements. We thank the doctors and women who participated in this study. We thank our clinical trial coordinators, Catriona Rowe, Catherine Savage and Jennifer Raymond, for recruitment and conduct of the trial, and Maria de Leon-Santiago for administrative assistance in trial set-up.

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