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Original research article

Immediate postabortion initiation of levonorgestrel implants reduces the incidence of births and abortions at 2 years and beyond

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Abstract

Objectives: The aims of this study were to compare immediate postabortion uptake of recently subsidized (no-cost) levonorgestrel-releasing implants with already available intrauterine and shorter-acting methods and to compare the incidence of subsequent pregnancies (ending in birth or abortion) within 2 years.
Study design: Retrospective chart review of 4698 women attending a New Zealand public hospital abortion clinic over 2 years (2010–2012) to describe postabortion contraceptive choice, with follow-up via clinic and national births records to assess subsequent pregnancies at 12, 24, 36, and 48 months.
Results: Twenty percent of the cohort (934/4698) received an implant, 26% an intrauterine method (927 copper intrauterine device, 301 levonorgestrel-releasing intrauterine system [LNG-IUS]), and 54% chose other shorter-acting methods (2536/4698). Method choice was significantly associated with age, ethnicity, and pregnancy history ($p < .001$). At 24 months, the unadjusted incidence of subsequent abortion for implant users was 3.8% (95% confidence interval [CI] = 2.5–5.0) and 11.6% (95% CI = 10.3–12.8) for those choosing other short-acting methods. By 48 months, 6.6% of implant users had a subsequent abortion (compared with 18.3% for short-acting methods). The incidence of continued pregnancy at 24 months was 6.3% (95% CI = 4.4–8.1) for implant users and 15.7% (95% CI = 14–17.2) for those choosing other short-acting methods. Adjusted hazard ratios (HRs) for subsequent abortion were lowest for women initiating an implant (HR = 0.26, 95% CI = 0.20–0.35) or LNG-IUS (HR = 0.26, 0.16–0.44, reference group: short-acting methods).
Conclusions: Immediate postabortion insertion of an implant significantly reduced rates of subsequent pregnancy for at least 2 years. Abortion service providers should ensure women have barrier-free access to all long-acting reversible contraceptions to delay or prevent pregnancy.
Implications: Initiation of an levonorgestrel implant immediately postabortion was associated with a 74% reduction in subsequent abortion over the next 4 years compared with use of short-acting methods. Implants were popular among adolescents—a group at high-risk of subsequent pregnancy, and who have not historically been considered appropriate candidates for intrauterine contraceptive methods.

Keywords: Copper multiload Cu375 intrauterine device; Levonorgestrel intrauterine system; Levonorgestrel-releasing subdermal implant; Long-acting reversible contraception (LARC); Unintended pregnancy

1. Introduction

Immediate postabortion or postpartum initiation of long-acting reversible contraception (LARC) is the most promising strategy to reduce rates of unintended pregnancy [1–10]. LARC methods are appropriate for all reproductive ages including nulliparous women, are safe for insertion immediately postpartum or postabortion [11,12], and have low failure rates (less than 1%) [13]. LARC uptake is dependent on a range of factors including the provision of quality counselling that presents up-to-date information to suitable candidates (irrespective of age or parity), method availability, staff trained to insert methods, an absence of prohibitive clinic or insurance policies, and timely access to methods at low or no cost to patients [7,12,14–21].

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Cost and availability have historically been key barriers to use of LARC methods in New Zealand [15]. In August 2010, the progesterone-only subdermal implant Jadelle (levonorgestrel [LNG] 2 × 75-mg rods) became fully subsidized and so now incurs only consultation- and insertion-related costs. Once fully subsidized, clinics not previously offering the LNG implant (due to the cost barrier—device costs approximately US$185) ensured that staff received insertion training so they could routinely offer this method [22]. LARC methods that were already available include the (fully subsidized) multiload copper-bearing intrauterine device (CuIUD), the etonogestrel subdermal implant (Implanon—device costs approximately US$215), and the levonorgestrel-releasing intrauterine system (LNG-IUS—device costs approximately US$255 unless prescribed at no charge for the treatment of menorrhagia). A range of shorter-acting methods (selected oral contraceptives, depot medroxyprogesterone acetate/depot medroxyprogesterone acetate [DMPA] and condoms) are also fully or partially subsidized in New Zealand. Consultation and LARC-related insertion costs ranging from US$20–50 apply in most community health care settings even for subsidized methods (these charges do not apply to women receiving abortion care, which is free to New Zealand residents).

The present research was conducted to compare immediate postabortion uptake of the recently subsidized (no-cost) LNG implant with already available intrauterine methods and with all other shorter-acting methods, and to describe the incidence of subsequent pregnancies within 2 years.

2. Materials and methods

This retrospective chart review analyzed demographic, clinical, and contraceptive data for women discharged from a public hospital abortion clinic in New Zealand between August 1, 2010 (when contraceptive implants became available) and July 31, 2012, using record linkage to identify subsequent pregnancies ending in abortion up to July 2014 or birth up to December 2013. Abortion is legal in New Zealand (up to 19 weeks) providing two certifying consultants agree that one of several grounds are met—most commonly "danger to mental health" [23] and is free to New Zealand residents. Ethical approval was granted by the University of Otago Human Ethics Committee (February 12, 2013, REF12-345) and permission to conduct the research obtained from the Capital and Coast District Health Board's (CCDHB) Women's Health Service Clinical Audit and Research Committee (February 11, 2013).

2.1. Data collection

Data were drawn from the CCDHB abortion clinic—the second largest of 21 abortion services throughout New Zealand [23]. The clinic offers surgical abortion (for gestations 6–19 weeks), and medical abortion (up to 63 days). Patient-centered contraceptive counseling is provided by the clinic team, and women are encouraged to have a contraceptive plan in place before discharge. Three long-acting methods were available for immediate postabortion insertion (interval insertion was not offered by this clinic): CuIUD, LNG-IUS, and LNG implants for women having a surgical abortion. Women opting for medical abortion were not eligible for same-day insertion at the time of data collection, but if wishing to initiate same-day LARC could have opted for a surgical abortion (so were included in analyses).

Electronically collected data for clinic attendees included age, date and method of procedure, gestational age and pregnancy history, and National Health Index number (NHI, a unique patient identifier assigned to all New Zealanders at birth that enables health record linkage) [24]. Data were held in password-protected files during collection and analysis phases and were accessed only by the study authors. At no time were patient names, addresses, or contact details obtained. Postabortion contraceptive choice was not recorded electronically so data were obtained by author SG from a paper notebook where clinic staff log LARC insertions against NHI numbers. Patients not listed in the notebook as LARC recipients were deemed to be using "other short-acting methods," including DMPA (administered before discharge), oral contraceptives, and condoms (which are prescribed and incur a small charge when the prescription is collected in the community). Nexplanon, the contraceptive patch, sponge, vaginal ring, and spermicide are not available in New Zealand.

Ethnicity and deprivation (NZDep06) data were obtained from nationally held datasets linked to NHI. Ethnicity refers to the ethnic group with which an individual self-identifies and is collected via self-report using the standardized New Zealand 2001 census question [25]. Ethnicity was recategorized into five broad groups: New Zealand (NZ) European, NZ Maori, Pacific Island, Asian, and MELAA (Middle Eastern, Latin American/Hispanic, African) and used prioritized ethnicity for individuals reporting multiple ethnicities as per Ministry of Health guidelines [26]. NZDep06 is a validated, census-derived, area-based index of deprivation, measured on a decile scale from 1 to 10, where 1 represents least deprived areas and 10 most deprived areas [27].

NHI patient identifiers allowed identification of women returning for a subsequent abortion at the same clinic within 2 years to July 31, 2014 (giving 24–48 months of follow-up). Data on continued pregnancies following the index abortion were retrieved by linking NHI patient identifiers to nationally held datasets holding delivery dates for all births in New Zealand. Delivery data were available to December 31, 2013, allowing us to include women who were at least 8 weeks pregnant by May 21, 2013 (giving 10–34 months of follow-up).

2.2. Analyses

Analyses were conducted in R 3.0.1 (R Institute, Vienna) using the survival package [28].

Contraceptive method choice was described according to patient factors (sociodemographic and clinical characteristics)