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Incidence of new outpatient long-acting reversible contraceptive insertions among a commercially insured, US population from 2010 to 2020

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ABSTRACT

Objectives: Characterize new use of long-acting reversible contraceptives (LARCs), highly effective contraceptive methods, in a broad population over time.
Study Design: We constructed a retrospective cohort of commercially insured individuals aged 15 to 54 years from 2010 to 2020 and estimated monthly incidence of new LARC insertions.
Results: The monthly standardized incidence increased from 6.0 insertions per 10,000 individuals in January 2010 to 14.1 in December 2020, with a dip in insertions after March 2020. Hormonal intrauterine devices were consistently the most inserted LARC; implants were increasingly favored over time.
Conclusions: LARCs are increasingly popular forms of contraception among commercially insured individuals.
Implications: Given the increasing popularity, ensuring access to LARCs is critical.

1. Introduction

Long-acting reversible contraceptives (LARC; intrauterine devices [IUDs] and implants) are contraceptive methods that are (1) highly effective at preventing pregnancy and (2) can remain in place for years with minimal continued effort by the user [1]. Understanding new LARC use among patients in the United States is vital for characterizing patient desires and provider counseling practices, as these might differ between new and current LARC users. Many estimates of LARC rely on the National Survey of Family Growth (NSFG), which measures prevalent contraceptive use, thus estimating all current users of LARC [2,3]. Other studies have used insurance claims data, but these also have limitations, such as only describing postpartum LARC insertions or focusing on a narrow date range [4,5]. We describe incidence of new outpatient LARC insertions in a population with employer-

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sponsored private insurance from 2010 through 2020, filling a critical gap in our understanding of LARC use trends.

2. Methods

We constructed a cohort of individuals aged 15 to 54 years who were classified as female in the Merative MarketScan Commercial Claims and Encounters Database (hereafter "MarketScan") between January 1, 2010, and December 31, 2020. We use the term "individuals" to include all genders. We required individuals to be continuously enrolled in MarketScan for ≥180 days (Supplement Methods 1; Supplement Fig. 1). We aimed to identify individuals who had not used LARC before, that is, new users of LARC, defined as those with (1) a Current Procedural Terminology (CPT) code indicating the insertion, (2) a Healthcare Common Procedure Coding System code classifying the type of LARC within ≤180 days, and (3) no CPT removal code ≤180 days prior (Supplement Table 1) using outpatient claims.

We calculated the monthly incidence of new LARC insertions as the number of new insertions divided by the number of individuals with a qualifying continuous enrollment period within that calendar month. Once an individual was identified as experiencing a new insertion, they were censored (Supplement Fig. 2). We standardized the monthly estimates to the age and geographic distribution of January 2010 using direct standardization (Supplement Methods 2) [6]. We further calculated the average monthly incidence and the percentage of insertions attributed to implants, hormonal IUDs, and nonhormonal IUDs annually. We stratified monthly incidence estimates by age. In a sensitivity analysis, we assessed LARC insertions defined with CPT codes only. Analyses were approved by the University of North Carolina at Chapel Hill's Institutional Review Board.

3. Results

We identified 1,372,594 new LARC insertions from 2010 to 2020. In 2010, an average of 12,434,100 individuals per month met our inclusion criteria, which decreased to 6,092,023 in 2020 (Fig. 1, Supplement Table 2). Most insertions occurred substantially after the start of a continuous enrollment period (90% after ≥113 days), and most of the continuous enrollment periods were much longer than 180 days (median: 1307 days; Supplement Table 3).

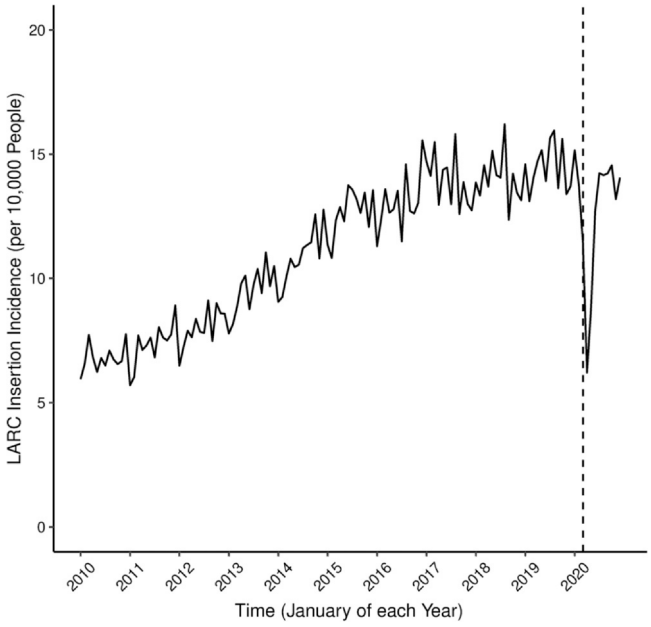
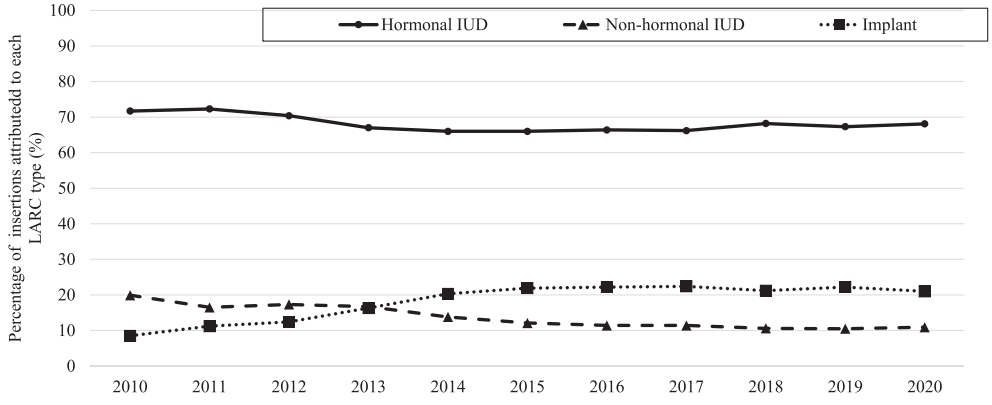


Fig. 2. Monthly long-acting reversible contraceptive (LARC) incidence among individuals aged 15 to 54 y with qualifying continuous enrollment in the MarketScan Database from January 2010 through December 2020. Note: Estimates are standardized to the joint age and territory distribution in January 2010. The dashed line represents March 2020, the first month when mitigation measures were promoted to limit the spread of the severe acute respiratory syndrome coronavirus 2 in the United States.

Monthly standardized incidence increased from 6.0 insertions per 10,000 individuals in January 2010 to 14.1 in December 2020 (Fig. 2). LARC insertions increased steadily over time, with some monthly variation, until March 2020, the start of the coronavirus disease 2019 (COVID-19) pandemic. Incidence from March to May 2020 (range: 6.2–11.4/10,000) was lower than that of any other month of 2020, with the lowest incidence in April. Incidence during these months was also lower than in the same months in 2016–2019 (e.g., March to May 2018 average: 14.5/10,000), suggesting this "dip" in incidence was not the result of monthly variation. Notably, the number of eligible individuals was stable across this period: we



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Average Eligible Individuals/Month	12434100	14078713	14206298	11775074	12441514	7661152	7567651	7096695	7178214	6530504	6092023
Average Monthly Standardized Incidence per 10,000 Individuals	6.8	7.4	8.0	9.5	10.9	12.7	13.0	13.9	14.0	14.5	12.7
Average Monthly Crude Incidence per 10,000 Individuals	6.8	7.4	8.1	9.6	11.1	13.1	13.5	14.4	14.6	15.1	13.4

Fig. 1. Annual long-acting reversible contraceptive (LARC) incidence summary statistics among individuals aged 15 to 54 y with qualifying continuous enrollment in the MarketScan Database from January 2010 through December 2020. Lines illustrate the percentage of insertions attributed to hormonal intrauterine devices (IUDs), nonhormonal IUDs, and implants within each calendar year. The table underneath indicates the annual average number of eligible individuals per month within that year as well as the standardized and crude new LARC insertion incidence per 10,000 individuals each year.

identified 6,187,599 in January and 6,236,592 in April 2020. Insertion incidence recovered by July 2020 (14.2/10,000), similar to January (15.2/10,000) and February (13.8/10,000) 2020. However, the average annual incidence was lower in 2020 (12.7/10,000) compared to 2016–2019 (range 13.0–14.5/10,000; Fig. 1).

The percentage of LARC that were hormonal IUDs was stable across the study period (average: 68.1% of new insertions). In contrast, the percentage of LARC that were implants increased from 8.5% in 2010 to 21.0% in 2020, and the percentage that were nonhormonal IUDs decreased from 19.9% in 2010 to 10.9% in 2020 (Fig. 1).

Time trends in age-stratified incidence mirrored those in the overall population; individuals aged 20 to 29 years had the highest incidence (Supplement Fig. 3). Trends were similar when LARC insertions were identified via CPT codes only (Supplement Fig. 4).

4. Discussion

LARC insertion incidence more than doubled from January 2010 to December 2020. There was a substantial decrease in insertion incidence during the early months of the COVID-19 pandemic, which was due to a decrease in the number of insertions themselves, independent of changes in the MarketScan population. This is an important context given pervasive job loss and business closures associated with COVID-19 mitigation measures [7]. Incidence subsequently rebounded to pre-COVID-19 levels. However, the 2020 average monthly incidence was low relative to prior years, suggesting that there was not a compensatory increase in insertions to make up for those expected without COVID-19.

NSFG estimates from 2011 to 2019 found a more modest increase in current IUD use than our study (6.8% in 2011 to 8.4% in 2019 among females aged 15–44 years) [8]. These differences could be explained by NSFG's reporting of LARC prevalence compared to our focus on LARC incidence or differences in our populations (e.g., all payers vs privately insured). However, the "dip" in insertions associated with COVID-19 aligns with prior claims-based analyses [9].

This study examines novel facets of LARC use by focusing on new use; reporting trends by LARC type; and considering a 10-year period, including the first year of the COVID-19 pandemic in the United States. A limitation is our lookback period: without lifetime data, we cannot ensure that an individual has never had a prior LARC insertion. Our results are therefore an approximation, although we expect that overall trends are not affected. Further, our findings are restricted to a privately insured population with ≥180 days of continuous enrollment.

Overall, our results demonstrate the increasing popularity of LARC among privately insured individuals aged 15 to 54 years. This aligns with prior work, finding that LARCs are increasingly prevalent among reproductive-aged, including postpartum, people [3,4]. Given this increasing popularity, it is paramount that providers center patient desires during contraceptive counseling and that all stakeholders ensure access to LARC [10].

Declaration of Competing Interest

Conflicts of interest: C.D.L. reports financial support was provided by Target RWE. C.D.L. reports financial support was provided by Amgen Inc. A.C.K. reports financial support was provided by Genentech Inc. M.E.W. is faculty in the Center for Pharmacoepidemiology (CPE) at University of North Carolina, Chapel Hill, which is funded by unrestricted donations from industry partners (AbbVie, Boehringer Ingleheim, GSK, Takeda, UCB, Sarepta, Astellas). CPE funds are used to support student stipends and related costs. M.E.W. provides occasional, limited methods consulting to CPE members on projects unrelated to the current work.

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Data statement

These data can be obtained through a data use agreement with Merative. Copyright ©2022 Merative. All Rights Reserved. All code used for these analyses are available on GitHub (https://github.com/chasedlatour/LARC_Incidence_MScan).

Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.conx.2023.100101.

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