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Medicaid and receipt of interval postpartum long-acting reversible contraception☆,☆☆

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ABSTRACT

Objective: We sought to evaluate the impact of insurance type on receipt of an interval postpartum LARC, controlling for demographic and clinical factors.
Study design: This is a retrospective cohort study of 1072 women with a documented plan of LARC for contraception at time of postpartum discharge. This is a secondary analysis of 8654 women who delivered at 20 weeks or beyond from January 1, 2012, through December 31, 2014, at an urban teaching hospital in Ohio. LARC receipt within 90 days of delivery, time to receipt, and rate of subsequent pregnancy after non-receipt were compared between women with Medicaid and women with private insurance. Postplacental LARC was not available at the time of study completion.
Results: One hundred eighty-seven of 822 Medicaid-insured and 43 of 131 privately insured women received a LARC postpartum (22.7% vs 32.8%, $P=.02$). In multivariable analysis, private insurance status was not significantly associated with LARC receipt (OR 1.29, 95% C.I. 0.83–1.99) though adequate prenatal care was (OR 2.33, 95% C.I. 1.42–4.00). Of women who wanted but did not receive a LARC, 208 of 635 (32.8%) Medicaid patients and 19 of 88 (21.6%) privately insured patients became pregnant within 1 year ($P=.02$).
Conclusion: Differences in receipt of interval postpartum LARC were not significant between women with Medicaid insurance versus private insurance after adjusting for clinical and demographic factors. Adequate prenatal care was associated with LARC receipt. Medicaid patients who did not receive a LARC were more likely to become pregnant within one year of delivery than those with private insurance.
Implications: While insurance-related barriers have been reduced given recent policy changes, access to care remains an important determinant of postpartum LARC provision and subsequent unintended pregnancy.

1. Introduction

Nearly half of pregnancies in the United States are unintended despite the availability of safe and effective forms of birth control [1]. The postpartum period represents a particularly critical time to receive effective contraception because short interval pregnancy is associated with poor maternal and neonatal outcomes, and with social and economic health stressors [2–4]. Long-acting reversible contraception (LARC) is increasingly popular in the United States and decreases the likelihood of short interval pregnancy when employed postpartum [5–8].

Yet LARC usage overall remains low, and access and use are disproportionately low among those with Medicaid insurance, of low socioeconomic status, and in women of color. Among women desiring LARC outside of the context of pregnancy, those with Medicaid insurance are less likely to receive a LARC method than those who are privately insured [9]. Non-Hispanic black women use LARC methods at lower rates than white or Hispanic women, and have increased their use of LARC methods more slowly than white or Hispanic women over the last 15 years [10]. Yet, ambiguity remains regarding insurance-level differences in use of LARC for postpartum contraception. For example, a review of the Pregnancy Risk Assessment

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Monitoring System demonstrated that those with Medicaid insurance used LARC more often than those with private insurance for postpartum contraception [11]. Thus, the degree to which Medicaid insurance itself serves as a barrier or facilitator to LARC receipt is unclear. This is especially true given increased contraceptive coverage without patient cost-sharing under the Affordable Care Act.

Therefore, our goal was to comprehensively assess receipt of interval postpartum LARC requests, timing to receipt, and impact of non-receipt on subsequent pregnancy between those with Medicaid and private insurance within a large urban population. We hypothesized that there would be demographic and clinical differences between the Medicaid and privately-insured populations that would be related to differences in LARC receipt given the complex interplay between insurance, clinical, and social factors impacting contraceptive preferences, access, and counseling. However, we hypothesized that utilization of Medicaid rather than a private insurer would be associated with decreased LARC receipt, even controlling for the above demographic and clinical factors.

2. Materials and methods

2.1. Sample

This was a retrospective cohort study of 1072 women with a documented contraception plan of LARC at time of postpartum discharge at an urban teaching hospital in Ohio where postplacental LARC was not available at the time of study completion. This is a secondary analysis of a subset of all8654 women who delivered at 20 weeks or beyond from January 1, 2012 through December 31, 2014. The primary analysis investigated the subset desiring postpartum sterilization [12]. For the purposes of this secondary analysis, the cohort was restricted to patients who indicated interest in LARC. Full methodological details have been presented previously [12].

Briefly, we reviewed each patient's linked outpatient and inpatient electronic medical record for demographic and clinical characteristics as well as for documentation of contraception in the year after delivery. The contraceptive plan was recorded as that which was documented in the delivery discharge summary or the last inpatient postpartum progress note. All patients had a contraceptive plan documented in one of these two places. For those 17 women with more than one delivery during the study period in which LARC was the documented method of contraception, only the first pregnancy was included. The three women who experienced peripartum mortality were excluded from analysis.

Women with Medicaid due to pregnancy are eligible for Medicaid coverage for up to 6 weeks after delivery in our state of Ohio. This coverage includes comprehensive contraceptive coverage, including long-acting reversible contraception and sterilization. Given the patient population served by our county hospital, most (93.7%) patients retained Medicaid coverage outside of pregnancy as well. Comprehensive contraceptive coverage was also available for our privately-insured patients, though such coverage did not expire postpartum. Inpatient postpartum long-acting reversible contraception was not available at our hospital (or any other hospital in our region) at the time of this study. Approximately 83% of our providers are certified to place subcutaneous implants.

2.2. Outcomes

We defined the primary outcome as LARC placement within 90 days of delivery. We also calculated LARC receipt within 6 weeks of delivery. However, we defined the primary outcome as 90-day receipt to provide a more comprehensive account, allowing additional time for service recovery of those patients who missed their scheduled six-week postpartum visit or patients whose providers routinely require a LARC-specific visit rather than placing LARC at time of the postpartum visit. We calculated time from delivery to LARC receipt in days as a continuous outcome.

We collected reasons for LARC non-receipt from postpartum or subsequent preventive well-woman visit documentation. We categorized the reason based on review of free-text clinical documentation or extrapolation of clinical events. Provider-level barriers in our analysis included: LARC not placed at the time of the postpartum visit in favor of requiring a subsequent procedural visit, the requirement for negative gonorrhea and chlamydia test results before placement, and the unavailability of the requested LARC device at the time of the postpartum visit. Finally, we calculated the rate of subsequent pregnancy within 365 days of delivery based on documentation in our electronic medical record by either positive urine or serum pregnancy test, presentation for prenatal care, or notation of pregnancy care at an outside hospital in our hospital's clinical documentation.

2.3. Key independent factors

We analyzed women whose electronic health record postpartum contraceptive plan was LARC, where the primary factor of interest was insurance status at time of delivery as indicated by billing records.

2.4. Covariates

We recorded maternal age at delivery in years, race, marital status, parity prior to delivery, gestational age at delivery in weeks and delivery type. Adequate prenatal care was binary, defined as six or more prenatal visits.

2.5. Methodology

Four researchers who were trained prior to chart abstraction abstracted records and coded in an iterative process to clarify interpretation of chart documentation. One hundred charts were coded by all four coders in order to calculate a Fleiss' kappa for concordance between coders for the contraceptive plan of LARC (kappa=0.86) and the primary outcome of LARC receipt (kappa=0.70). We obtained insurance status directly from billing data, so concordance statistics for this key independent factor were not calculated.

2.6. Analyses

We calculated tests of difference (*t* tests and χ^2 tests for continuous and proportional outcomes, respectively) of demographic and clinical variables across insurance categories. We compared the proportion of LARC receipt among women who were covered by Medicaid versus private insurance via χ^2, relative risk (RR) with 95% confidence interval (95% CI), and multivariable logistic regression. Multivariable model covariates were all prespecified. Given the low number of patients in the privately insured arm, we performed LASSO (least absolute shrinkage and selection operator) to select predictors for logistic regression using the previously-mentioned covariates as candidate predictors. We assessed collinearity by calculating variance inflation factors for each variable (less than 1.8 for each factor).

For those patients who had LARC receipt, we compared time from delivery to LARC receipt using the Wilcoxon rank-sum test and hazard ratios by multivariable Cox proportional hazards modeling with the same covariates as determined by LASSO above. We performed χ^2 tests to compare reasons for LARC non-receipt between insurance groups. Finally, we compared the rate of subsequent pregnancy following unsuccessful LARC initiation by χ^2 and RR with 95% CI. We calculated differences in non-regression analyses based on type of LARC – intrauterine device (IUD) versus implant. All tests were two-tailed and an α of 0.05 was used to define statistical significance.

We performed all analyses using R Version 3.4.0 [13]. We did not conduct a power analysis because this study was performed as a

secondary analysis from an existing data set, which was powered to compare the difference in completion of sterilization requests between Medicaid and privately insured women [12]. This study was approved by the institutional review board of MetroHealth Medical Center.

3. Results

Of the 8654 deliveries during the study period, 1072 women had the documented plan of LARC (12.4%) at the time of postpartum hospital discharge. After exclusions, 822 (77.8%) were insured by Medicaid and 131 (12.4%) were privately insured (Table 1). The remaining patients were covered by Medicare (69 patients), Tricare (five patients), or were uninsured (29 patients) at time of delivery. Seven hundred sixty women of 822 (92.4%) women with Medicaid desired an IUD and 62 (7.5%) desired an implant. One hundred twenty-six of 131 (96.2%) women with private insurance desired an IUD and five (3.8%) desired an implant.

One hundred eighty-seven of 822 Medicaid-insured and 43 of 131 privately insured women received a LARC postpartum within 90 days of delivery (22.7% vs 32.8%, p=.02, RR 1.44, 95% CI 1.10–1.90). By 6 weeks postpartum, only 11 Medicaid-insured and one privately insured women had received LARC devices. After performing LASSO (least absolute shrinkage and selection operator), insurance, adequacy of prenatal care, parity, Black/African American race, and Other race were selected for the logistic regression model. After adjusting for these covariates by multivariable logistic regression, the association between Medicaid status and LARC non-receipt was no longer significant (Table 2). In multivariable analysis, only adequate prenatal care remained significantly associated with LARC receipt (OR 2.33, 95% CI 1.42–4.00). One hundred ninety-two of 760 Medicaid-insured and 47 of 126 privately insured women desiring an IUD received the IUD within 90 days of delivery (25.3% vs 37.3%, p=.01, RR 0.68, 95% CI 0.52–0.88). Only three of 62 Medicaid-insured and zero of five privately insured desiring an implant received the implant within 90 days of delivery (4.8% vs 0.0%).

Time from delivery until LARC placement was similar between women with Medicaid (median 60 days; Interquartile range [IQR]: 51.0, 70.5) or private insurance (medial 60 days; IQR: 53.5, 72.0) by univariable Wilcoxon rank sum test (p=.51) and multivariable Cox proportional hazards analysis (Table 3). Adequate prenatal care was the only factor significantly associated with time to receipt of LARC in our multivariable Cox model. Time from delivery to IUD receipt between women with Medicaid or private insurance was not different (median 62 vs. 63 days, respectively, p=.60). Time from delivery to implant placement was not analyzed given the small number of patients.

Two hundred eight of 635 (32.8%) Medicaid patients and 19 of 88 (21.6%) privately insured patients who did not receive LARC were diagnosed with subsequent pregnancy in this timeframe (p=.03, RR 1.52, 95% CI 1.00–2.29). One hundred ninety-one of 568 (33.6%%) Medicaid patients and 18 of 79 (22.8%) privately insured patients who did not receive an IUD were diagnosed with subsequent pregnancy in this timeframe (p=.06, RR 1.48, 95% CI 0.97–2.25). Seventeen of 59 (28.8%) Medicaid patients and one of five (20.0%) privately insured patients who did not receive an implant were diagnosed with subsequent pregnancy (p=.68).

Among patients who did not receive LARC after delivery, 32.8% with Medicaid and 40.8% of those with private indicated that they had changed their mind regarding LARC (p=.23). 47.8% of those with Medicaid and 25.4% of privately insured women did not present to their postpartum visit (p<.01). Eighteen and three-tenths percent of those with Medicaid and 22.5% of privately insured women experienced a provider-level barrier that prevented LARC receipt (p=.49).

Table 1
Demographic and clinical characteristics for those patients who were insured either by Medicaid or private insurance and had a documented contraception plan of LARC at time of postpartum discharge.

Insurance	Medicaid	Private	p
Number of patients	822	131	
Maternal age at delivery (years)	24.28 (5.09)	26.62 (5.89)	<.01
Parity			<.01
0	239 (29.1)	67 (51.1)	
1	287 (34.9)	43 (32.8)	
≥2	296 (36.0)	21 (16.0)	
Gestational age at delivery (weeks)	38.27 (2.39)	38.21 (3.15)	.80
Adequate prenatal care*	632 (80.8)	111 (90.2)	.02
Route of Delivery			.05
Spontaneous vaginal delivery	579 (70.4)	82 (62.6)	
Operative vaginal delivery	27 (3.3)	2 (1.5)	
Cesarean section	216 (26.3)	47 (35.9)	
Race			<.01
White	232 (28.2)	57 (43.5)	
Black/African American	419 (51.0)	44 (33.6)	
Hispanic	134 (16.3)	15 (11.5)	
Asian	13 (1.6)	6 (4.6)	
Other	24 (2.9)	9 (6.9)	
Married	100 (12.7)	52 (40.3)	<.01
College education	226 (27.5)	89 (67.9)	<.01

Presented as n(%) or mean (SD).
* Defined as ≥6 prenatal visits.

Table 2
Univariable and multivariable logistic regression analysis of LARC receipt in women desiring postpartum LARC after selection of factors by LASSO.

Variable	Univariable OR (95% CI)	Multivariable OR (95% CI)
Private insurance[a]	1.66 (1.11–2.47)	1.29 (0.83–1.99)
Adequate prenatal care[b]	2.75 (1.66–4.56)	2.33 (1.42–4.00)
Parity ≥2[c]	0.60 (0.43–0.84)	0.77 (0.54–1.10)
Black/African American[d]	0.63 (0.47–0.86)	0.84 (0.60–1.17)
Asian/Hispanic/Other race[d]	2.40 (1.18–4.87)	1.55 (0.72–3.30)

OR = Odds Ratio.
CI = Confidence Interval.
N/A = Not applicable.
LASSO = (least absolute shrinkage and selection operator).
[a] Referent group – Medicaid insurance.
[b] Referent group – Inadequate prenatal care (fewer than 6 prenatal visits).
[c] Referent group – Parity <2.
[d] Referent group – White.

4. Discussion

The difference in receipt of postpartum LARC at the time of discharge after delivery between women with Medicaid (22.7%) and those with private insurance (32.8%) (p=.02) was no longer significant after we adjusted for the listed relevant clinical and demographic characteristics. In multivariable analysis, adequate prenatal care was associated with both LARC receipt and time to receipt. In our cohort, 19.2% of those with Medicaid and 9.8% of those with private insurance had inadequate prenatal care. Lower rates of LARC receipt among women with Medicaid insurance may be attributable to fewer counseling opportunities during the prenatal period. Though, contraceptive counseling was not

Table 3
Univariable and multivariable Cox proportional hazards models of time to receive LARC in women desiring postpartum LARC after selection of factors by LASSO.

Variable	Univariable HR (95% CI)	Multivariable HR (95% CI)
Private insurance[a]	1.53 (1.10–2.13)	1.24 (0.87–1.76)
Adequate prenatal care[b]	2.44 (1.53–3.91)	2.21 (1.38–3.56)
Parity ≥2[c]	0.65 (0.49–0.88)	0.75 (0.55–1.01)
Black/African American[d]	0.68 (0.52–0.88)	0.77 (0.59–1.02)
Asian/Hispanic/Other race[d]	1.89 (1.10–3.25)	1.69 (0.97–2.95)

HR = Hazard Ratio.
CI = Confidence Interval.
LASSO = (least absolute shrinkage and selection operator).
[a] Referent group – Medicaid insurance.
[b] Referent group – Inadequate prenatal care (fewer than 6 prenatal visits).
[c] Referent group – Parity<2.
[d] Referent group – White.

standardized in our retrospective cohort, the same group of providers cared for both the Medicaid- and privately-insured patients. Additionally, inadequate prenatal care may also point to a decreased ability to access outpatient postpartum care and interval LARC placement [14]. Therefore, past reports of differences in contraception receipt by type of insurance alone may overlook such complexities, for which insurance status may simply be a proxy rather than representing an actual insurance-type barrier to receipt. Strategies to improve LARC insertion rates include increased postplacental LARC placement and inserting LARCs at the postpartum visit [9,15,16].

Among women who did not receive their LARC, 32.8% of women insured by Medicaid became pregnant within a year of their delivery, compared with 21.6% of privately insured women ($p=.02$). This high rate of pregnancy in both insurance groups is, if anything, an underdiagnosis of subsequent pregnancy after LARC non-receipt given limitations in chart review methodology such as loss to follow-up.

Women insured by Medicaid were more likely than privately insured women to have missed their routine six-week postpartum appointment (47.8% versus 25.4%), which has been previously shown to negatively impact LARC receipt in some populations [17]. Furthermore, both groups experienced many provider-level barriers. Greater provider education is warranted regarding the importance of antenatal contraceptive counseling and same-day LARC services. Finally, while a number of patients changed their mind regarding postpartum LARC, it is unclear whether the external barriers to LARC receipt (such as lack of postplacental or same-day LARC) prompted this high percentage. In addition to these systems-level changes, further contraceptive counseling such as standardized education materials upon hospital discharge may also influence continued desire.

Our study thus captures the clinical context of individual patients that cannot be studied in state-wide or national database studies [10,18]. However, our retrospective chart review is limited by the inability to thoroughly assess reasons for non-receipt of LARC. Prior studies have identified the most common reasons as need for a separate insertion visit, missed postpartum visit, or unaffordability of LARC [19], which is consistent with our findings. In addition, the retrospective chart review study design limits abstraction of pre-pregnancy factors that may influence LARC receipt, including prior use of contraception, interval between insurance enrollment and initiation of prenatal care, and patient awareness of benefits available of said insurance. We are also limited by the inability to determine the percentage of Medicaid-insured patients in our study that solely qualified due to pregnancy status. Finally, LARC-method specific analyses are limited given the low numbers of implants requested and received and as 17% of our providers are not certified to place implants [20].

In conclusion, while women with Medicaid during pregnancy are less likely to receive an interval postpartum LARC than women who are privately insured, this difference is not significant after adjusting for clinical and demographic factors. Adequate prenatal care was associated with LARC receipt. Medicaid patients who did not receive a LARC were more likely to become pregnant within 1 year of delivery than those with private insurance. Given that insurance-related barriers to postpartum LARC may have been reduced by recent policy changes, further attention to improving access to care remains crucial to increasing postpartum LARC provision and reducing subsequent unintended pregnancy.

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