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Contraception xx (2016) xxx – xxx

Contraception

Original research article

The effect of maternity care coordination services on utilization of postpartum contraceptive services☆

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Received 11 November 2015; revised 3 June 2016; accepted 14 June 2016

Abstract

Objective: To examine whether maternity care coordination (MCC) services are associated with utilization of postpartum contraceptive services.
Methods: Using a random sample of 7120 live births, we analyzed administrative data to assess whether MCC services affected utilization of contraceptive services within 3 months of delivery. Treatment groups were constructed as MCC during the prenatal period only (n=531), MCC in both the prenatal and postpartum periods (n=1723) and a non-MCC control group (n=4866). Inverse probability of treatment weights (IPTWs) were calculated and applied to balance baseline risk factors across groups. We used the IPTW linear probability model to estimate postpartum contraceptive service utilization, controlling for demographic, social, reproductive and medical home enrollment characteristics.
Results: At 3 months postpartum, MCC participation was associated with a 19-percentage point higher level of utilization of postpartum contraceptive services among women who received both prenatal and postpartum care coordination services ($p<.001$), as compared with controls. Women who received only prenatal MCC services showed no difference in utilization of services at 3 months postpartum from non-MCC controls. Sensitivity modeling showed the effect of MCC was independent of postpartum obstetrical care. Additionally, MCC had differential treatment effects across subpopulations based on maternal age, race, ethnicity and education; women who were white and did not have a medical home were more likely to benefit from MCC services in initiating postpartum contraceptives.
Conclusions: MCC programs may be instrumental in increasing timely utilization of postpartum contraceptive services, but continuation of the intervention into the postpartum period is critical.
Implication: MCC offered both prenatally and in the postpartum period appears to complement clinical care by increasing postpartum contraceptive service utilization. Providers should consider the potential added benefits of care coordination services in tandem with traditional obstetric care to increase postpartum contraceptive use and subsequently reduce short birth intervals.

Keywords: Contraception; Postpartum contraception; Maternity care coordination; Prenatal care coordination

1. Introduction

Care coordination programs during the prenatal and postpartum period have the potential to improve maternal health and birth outcomes [1]. Providers employ various methods to provide supportive services to pregnant women and their newborns, including comprehensive medical services partnered with social benefit coordination, case management and home visiting [2,3]. High rates of poor birth outcomes including low birth weight, smoking during pregnancy and infant mortality helped spur the creation of maternity care coordination (MCC) programs. This research examined the North Carolina MCC program aimed at promoting healthy pregnancies and birth outcomes among Medicaid-eligible women and their children through coordinated medical, psychological, nutritional and social services [1]. The needs of women determined the number and content of services used. While most coordination services occurred in local health departments, a number did occur during home visits. Eligibility for MCC participation

☆ Conflicts of interest: None

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http://dx.doi.org/10.1016/j.contraception.2016.06.007
0010-7824/

was open to all pregnant Medicaid-eligible women. MCC staff, composed predominantly of nurses and social workers, provided case management and referral services to women enrolled in the program.

In addition to improving birth outcomes, MCC programs also address postpartum outcomes such as timely provision of contraception services to prevent rapidly occurring repeat pregnancies [4]. Evidence indicates that short birth intervals (less than 18 months between the end of index pregnancy and subsequent conception or 27 months from delivery to next full term delivery) are associated with poor maternal and child outcomes. Poor maternal outcomes associated with short interpregnancy spacing include uterine rupture [5], premature membrane rupture [6], placental previa [7] and maternal death [8–10]. Among infants and children, short birth intervals are known to contribute to miscarriage [9,11], fetal death [10–13], low birth weight, preterm birth [6,9,10,14–17], small size for gestational age [6,10,15–17], low height for age, and neonatal, infant and early childhood mortality [9–12]. Preterm birth, low birth weight and small-for-gestational age are all associated with poor proximal and long-term health outcomes including physiological malformations, respiratory problems, sensory deficits, cognitive development delays and death [18,19]. Based on this evidence, the American Congress of Obstetricians and Gynecologists recommends women in the United States have an interpregnancy period no less than 18 months citing increased risks of preterm birth, low birth weight and small-for-gestational age [20].

Early initiation of postpartum contraceptives has been established as safe by the Centers for Disease Control and Prevention [21] and is key to preventing short birth intervals [22]. Contraceptive counseling should be part of routine maternity care per the American Congress of Obstetricians and Gynecologists (ACOG) clinical guidelines and is recommended to occur during prenatal care, labor and delivery and postpartum care. However, previous research has shown that half of all women leave labor and delivery hospitalizations without postpartum contraceptive plans [22]. Currently, 30% of higher-order pregnancies in the United States occur within 18 months of a previous birth [23]. This research study examined how an intervention of enhanced care coordination via MCC influenced the utilization of postpartum contraceptive services within 3 months of delivery.

2. Methods

This study used linked administrative data from electronic birth certificates matched with Medicaid claims. We drew a random sample of 7987 Medicaid-funded singleton live births delivered between October 1, 2008 and September 30, 2010 in North Carolina. Medicaid coverage included prenatal care, labor and delivery, and postpartum care. We excluded women without full Medicaid or the Medicaid Pregnancy Waiver from analysis (n=863) as they would not have postpartum contraceptive coverage. Additionally, we excluded 4 women who had incomplete ethnicity information, yielding an analytic sample of 7120 women. Fig. 1 demonstrates the derivation of the study sample from the initial random sample.

This study sought to measure the average treatment effect of MCC services on utilization of postpartum contraceptive services controlling for demographic, social and reproductive characteristics. Utilization of postpartum contraceptive services was operationalized as any Medicaid claim for contraceptive services by 3 months postpartum; these services included administration/insertion of an in-office method (subdermal injection/implants, intrauterine devices) as well as records indicating a prescription for an at-home method. Actual use of contraceptive methods cannot be determined from the administrative data source. We constructed a treatment variable as three discrete categories of Medicaid enrollees: women who received MCC during only the prenatal period (n=531), women who received MCC in both the prenatal and postpartum period (n=1723), and women who did not receive any MCC services who served as controls (n=4866). All women who received postpartum MCC services also received services during the prenatal period; therefore, this treatment group is denoted as "prenatal+postpartum MCC."

We calculated descriptive statistics to assess comparability of covariates across treatment groups. We compared demographic, socioeconomic and reproductive characteristics and assessed for significant differences using two-sample t tests with unequal variances and bivariate chi-square tests for categorical variables; the groups differed significantly by race, ethnicity, disability status, bipolar disorder, depression, substance abuse and first pregnancy parity status. To address these differences and possible selection bias into treatment, we generated inverse probability of treatment weights (IPTWs) using multinomial logistic regression on the three treatment categories. Baseline risk factors associated with contraceptive use served as covariates in the propensity model, including maternal age,

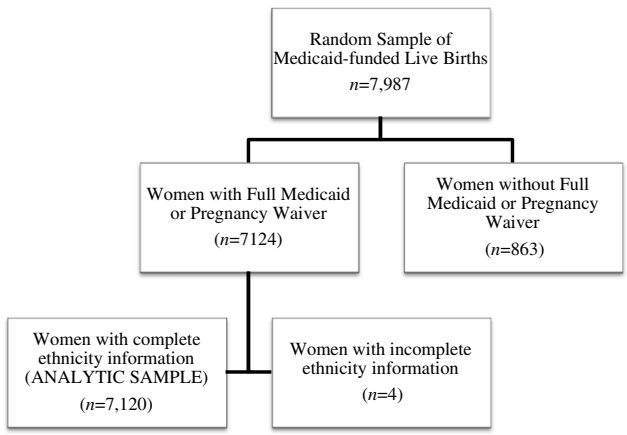

Fig. 1. Sample design.