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Implementation of Group Prenatal Care for Pregnant Women on Opioid-agonist Therapy at a Community-based Substance Use Treatment Clinic

Elizabeth Zadzielski, MD, MBA FACOG;[1] Michelle Drew, CNM;[2] Stephanie Rogers, RN;[3] & Yukiko Washio, PhD[4]

1. Faculty, Department of Obstetrics and Gynecology, Christiana Care Health System

2. Midwife, Christiana Care Health System; Adjunct Professor, Graduate School of Nursing, Texas Woman's University

3. Manager, Delaware Healthy Mothers Healthy Babies, Christiana Care Health System; Manager, WIC Breastfeeding Peer Counselors

4. Maternal and Infant Health Researcher, Department of Obstetrics and Gynecology, Christiana Care Health System; Maternal and Infant Health Researcher, College of Health Sciences, University of Delaware

Introduction

The epidemic of opioid use among women of childbearing age in the U.S. has contributed to increase of opioid use among pregnant women.[1] Opioid prescription claims have been significantly higher among Medicaid-eligible women, compared to privately insured women, in which over 21% of pregnant women were prescribed for an opioid, and 2.5% were receiving chronic opioid prescriptions for more than a month.[2] The proportion of pregnant women on medication- assisted opioid therapy has significantly increased from 8.1% to 14.2% between 1992-2012 according to the Treatment Episode Data Set – Admissions.[3] Many patients on prescription opioids switched to heroin because it is inexpensive, better availability, and easier to use intravenously.[4] This is also reflected among pregnant women with over 66% on medication-assisted treatment who report a history of heroin use.[5]

Increase in prenatal opioid use has led to an increase in adverse neonatal outcomes including neonatal abstinence syndrome (NAS).[6] NAS is a set of withdrawal symptoms that opioid-exposed neonates may experience shortly after birth.[6] The number of NAS diagnoses has increased nearly fivefold between 2000 and 2012.[7,8] Neonates diagnosed with NAS were more likely to have low birth weight, have respiratory complications, and be covered by Medicaid.[8] The cost for treating neonates with NAS has increased from $39,400 in 2000 to $53,400 in 2009,[8] although rooming-in practice to promote family-centered care for neonates with NAS resulted in significant decreases in the cost of NAS care as well as the proportion of neonates with NAS treated with morphine.[9]

Over 35% of pregnant women on opioid-agonist therapy screen positive for other illicit drugs including marijuana, cocaine, and benzodiazepines,[10] and cigarette smoking rates can be as high as 95%.[11,12] Psychiatric co-morbidities including depression, anxiety, bipolar affective disorder, personality disorders, and PTSDs are prevalent among pregnant women on opioid agonist therapy.[13–15] Intimate partners often play a major role in women's substance use, and intimate partner violence can be prevalent among women who misuse substances.[16,17]

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Group-based peer support among pregnant women with health risks has been acceptable and effective in improving pregnancy outcomes such as decreased risks for small for induced labor, gestational age, low birth weight, NICU admission, short intervals between pregnancies, lack of condom use, and unprotected sex[18,19] and improvements in breastfeeding initiation and maintenance and adherence to postpartum checkup.[19] Social support including individual peer support has been helpful for individuals with substance use disorders.[20–22] Thus, group-based peer support among pregnant women who misuse substances may help to provide a protected environment to receive prenatal care while addressing prenatal substance use. The current report describes implementation of group prenatal care for pregnant women on opioid-agonist therapy at a community-based substance use treatment clinic.

Process

Setting

A community-based clinic that provides methadone substitution therapy and comprehensive psychosocial support provided dedicated space for bi-weekly sessions of group prenatal care, in which pregnant women on opioid-agonist therapy were encouraged to attend as many sessions as possible for receiving prenatal care, attending educational sessions regarding prenatal and postnatal maternal and infant care, and learning and providing support around prenatal substance, alcohol, and tobacco use. A midwife, midwife assistant, and nurse have attended each session to provide prenatal care and guide the group support and discussion. Christiana Care currently implements CenteringPregnancy for all pregnant patients. The general format of group prenatal care for pregnant women on opioid-agonist therapy was adapted from the ongoing service; however, the session content focused on providing prenatal care by midwife and group sessions tailored to the target population (see below). Christiana Care Institutional Review Board has approved the protocol.

Session content

A patient attending a 2-hour session received prenatal care on the first come first serve basis. Prenatal care included taking vital signs, measuring weight, answering pregnancy-related questions, and listening to infants' heartbeat. If she was due for an ultrasound visit, a provider made an appointment at a nearby affiliated community hospital. Light refreshments were provided.

After the initial half an hour, the lead midwife started a group session in which she covered 10 major topics that are specifically tailored for pregnant populations on opioid-agonist therapy. The topics were: (1) nutrition; (2) common discomfort/oral health; (3) stress/relaxation technique; (4) breastfeeding; (5) contraception; (6) what to expect with NAS infants; (7) prenatal substance and tobacco use; (8) process in labor; (9) postpartum depression; (10) infant care and safety. The session was made interactive, and the midwife made sure to ask and answer all questions the attendees had. The midwife also facilitated conversations among attending patients so they can provide peer support to each other. The midwife used national holidays and celebration days to make sure that a session was enjoyable. A patient who passed 37 gestational weeks received a baby-shower by the provider team. The provider team also had brief meetings with the community clinic providers so the team is aware of patients' substance use and other psychosocial conditions.

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Data collection and analysis

Pregnancy and birth outcomes were collected as part of the electronic medical record. Outcome data were extracted from the electronic medical record at Christiana Care and compared to those who did not participate in group prenatal care but were on opioid-agonist therapy during pregnancy. Continuous and categorical variables were reported as mean ± standard deviation or percentages, and analyzed by Pearson Chi-square test for categorical variables and the Wilcoxon rank-sum tests for continuous variables.

Fisher's exact test was used when a cell count was below five. All analyses were performed using R version 3.2.1 (R Foundation for Statistical Computing Platform).

Outcomes

Since the beginning of 2016 to date, a total of 36 methadone-maintained pregnant patients gave birth at a large-scale community hospital in a Mid-Atlantic region. Twenty-three of them attended group prenatal care at least once at the community-based substance use treatment clinic. Table 1 shows basic demographic characteristics between the group prenatal care attendees (n = 23) and historic counterparts (n = 13). A majority of participants were White, single, and on Medicaid, and older than 30 years old on average. No significant differences were detected.

Table 1. Participant demographic characteristics

	Historic control (n = 13)	**Group prenatal care (n = 23)**	***P* value**
Maternal age (M/SD)	30.77(5.53)	31.13(4.94)	.86
Race			.44 a
White	84.6%	69.6%	
Black	15.4%	30.4%	
Medicaid insurance	92.3%	81.0%	.63 a
Marital status	0.0%	13.0%	.29 a

[a]Fisher exact test for a cell count of <5

Table 2 shows comparisons between the two groups. Reasons of not attending group prenatal care included logistic availability issues or receiving substance use treatment at other clinics.

Table 2. Birth outcomes by status of group prenatal care participation

	Historic control (n = 13)	**Group prenatal care (n = 23)**	***P* value**
Cesarean birth	38.5%	13.0%	.11a
Gestational age at birth (M/SD)	37.91(1.77)	36.81(3.3)	.51
Birth weight (M/SD)	3005(468.65)	2592.39(692.04)	.09
NICU admission	41.7%	13.0%	.09a
Breastfeeding	46.2%	43.5%	.88
LARC	69.2%	43.5%	.14

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[a]Fisher exact test for a cell count of <5

All participants delivered at the large-scale community hospital, where the provider team had access to prenatal and birth records. Birth outcomes included the average gestational age at birth and birth weight as well as the rates of Cesarean birth, NICU admission, breastfeeding, and long-acting reversible contraceptives (LARC). No statistically significant differences were identified for any of the outcomes; however, decreases in the rates of Cesarean birth and NICU admission in the group prenatal care group (GPC) were observed compared to the historic control. On the other hand, birth weight was heavier, and gestational age at birth was longer in the historic control compared to the GPC group. Use of LARC was also higher with patients in the historic control compared to the GPC group.

Discussion

The current report described the implementation effort to improve the quality of care for pregnant women on opioid-agonist therapy by providing group prenatal care. The implementation is ongoing, and promising pregnancy and birth outcomes have been observed compared to historic control.

The large-scale community hospital has already been emphasizing room-in care, skin-to-skin contact, and breastfeeding for infants with neonatal abstinence syndrome and LARC implantation at birth or immediately postpartum. The content of group prenatal care sessions can be improved by emphasizing the importance of LARC and promoting healthy lifestyle during pregnancy among group prenatal care patients.

The major barrier of bi-weekly group prenatal care at the substance use treatment clinic in the community was that patients already had a set daily schedule of when to pick up a methadone dosage, which was not always compatible with the group prenatal care schedule. Not all pregnant patients had reliable transportation, many had multiple children, and work and other appointments made it not feasible for them to come back to the clinic for group prenatal care sessions. The large-scale community hospital that the provider team is affiliated with has been in the process of certifying all providers so as to be able to administer buprenorphine to patients on opioid-agonist therapy who come into emergency rooms for opioid withdrawal. The community outreach efforts, including phone-based support by nurses and community-based peer support for pregnant patients on opioid-agonist therapy, have been in development.

Future development of implementing group prenatal care for patients on opioid-agonist therapy is to increase the number of venues and opportunities to provide group prenatal care sessions both at a substance use treatment clinic and community hospital as well as provide more comprehensive services including childcare and ultrasound examinations, in coordination with other ongoing outreach efforts to increase access to care for this population.

The current report to improve the quality of care for pregnant women on opioid-agonist therapy has a few limitations. The number of participants is relatively small, warranting further implementation and monitoring of outcomes with this initiative for pregnant women on opioid-agonist therapy. We did not have access to biochemical results of substance use during the reported period, although Christiana Care recently implemented biochemical screenings of substance use at labor admission for all pregnant patients.

The current report contributes to the existing body of literature by the implementation effort of group prenatal care to improve the quality of care for pregnant women on opioid-agonist therapy. The implementation effort is innovative in that group prenatal care was tailored to pregnant women on opioid-agonist therapy and was implemented in a community-based substance use treatment clinic.

References

1. Krans, E. E., & Patrick, S. W. (2016, July). Opioid use disorder in pregnancy: Health policy and practice in the midst of an epidemic. *Obstetrics and Gynecology*, *128*(1), 4–10. PubMed https://doi.org/10.1097/AOG.0000000000001446
2. Ailes, E. C., Dawson, A. L., Lind, J. N., Gilboa, S. M., Frey, M. T., Broussard, C. S., & Honein, M. A., & the Centers for Disease Control and Prevention (CDC). (2015, January 23). Opioid prescription claims among women of reproductive age—United States, 2008-2012. *MMWR. Morbidity and Mortality Weekly Report*, *64*(2), 37–41. PubMed
3. SAMHSA. (2018). Treatment episode data set — Admissions (TEDS-A) — Concatenated, 1992 to 2012 (ICPSR 25221).
4. Cicero, T. J., Ellis, M. S., Surratt, H. L., & Kurtz, S. P. (2014, July 1). The changing face of heroin use in the United States: A retrospective analysis of the past 50 years. *JAMA Psychiatry*, *71*(7), 821–826. PubMed https://doi.org/10.1001/jamapsychiatry.2014.366
5. Krans, E. E., Zickmund, S. L., Rustgi, V. K., Park, S. Y., Dunn, S. L., & Schwarz, E. B. (2016). Screening and evaluation of hepatitis C virus infection in pregnant women on opioid maintenance therapy: A retrospective cohort study. *Substance Abuse*, *37*(1), 88–95. https://doi.org/10.1080/08897077.2015.1118720 PubMed
6. Finnegan, L. P., Connaughton, J. F., Jr., Kron, R. E., & Emich, J. P. (1975). Neonatal abstinence syndrome: Assessment and management. *Addictive Diseases*, *2*(1-2), 141–158. PubMed
7. Patrick, S. W., Davis, M. M., Lehman, C. U., & Cooper, W. O. (2015, August). Increasing incidence and geographic distribution of neonatal abstinence syndrome: United States 2009 to 2012. *J Perinatol*, *35*(8), 667. PubMed https://doi.org/10.1038/jp.2015.63
8. Patrick, S. W., Schumacher, R. E., Benneyworth, B. D., Krans, E. E., McAllister, J. M., & Davis, M. M. (2012, May 9). Neonatal abstinence syndrome and associated health care expenditures: United States, 2000-2009. *JAMA*, *307*(18), 1934–1940. PubMed https://doi.org/10.1001/jama.2012.3951
9. Holmes, A. V., Atwood, E. C., Whalen, B., Beliveau, J., Jarvis, J. D., Matulis, J. C., & Ralston, S. L. (2016, June). Rooming-in to treat neonatal abstinence syndrome: Improved family-centered care at lower cost. *Pediatrics*, *137*(6), e20152929. PubMed https://doi.org/10.1542/peds.2015-2929
10. Keegan, J., Parva, M., Finnegan, M., Gerson, A., & Belden, M. (2010, April). Addiction in pregnancy. *Journal of Addictive Diseases*, *29*(2), 175–191. PubMed https://doi.org/10.1080/10550881003684723
11. Jones, H. E., Heil, S. H., O'Grady, K. E., Martin, P. R., Kaltenbach, K., Coyle, M. G., . . . Fischer, G. (2009). Smoking in pregnant women screened for an opioid agonist medication

study compared to related pregnant and non-pregnant patient samples. *The American Journal of Drug and Alcohol Abuse*, *35*(5), 375–380. PubMed https://doi.org/10.1080/00952990903125235

12. Jones, H. E., Heil, S. H., Tuten, M., Chisolm, M. S., Foster, J. M., O'Grady, K. E., & Kaltenbach, K. (2013, August 1). Cigarette smoking in opioid-dependent pregnant women: Neonatal and maternal outcomes. *Drug and Alcohol Dependence*, *131*(3), 271–277. PubMed https://doi.org/10.1016/j.drugalcdep.2012.11.019
13. Chisolm, M. S., Tuten, M., Brigham, E. C., Strain, E. C., & Jones, H. E. (2009, September-October). Relationship between cigarette use and mood/anxiety disorders among pregnant methadone-maintained patients. *The American Journal on Addictions*, *18*(5), 422–429. PubMed https://doi.org/10.3109/10550490903077721
14. Feske, U., Tarter, R. E., Kirisci, L., & Pilkonis, P. A. (2006, March-April). Borderline personality and substance use in women. *The American Journal on Addictions*, *15*(2), 131–137. PubMed https://doi.org/10.1080/10550490500528357
15. Tuten, M., Heil, S. H., O'Grady, K. E., Fitzsimons, H., Chisolm, M. S., & Jones, H. E. (2009). The impact of mood disorders on the delivery and neonatal outcomes of methadone-maintained pregnant patients. *The American Journal of Drug and Alcohol Abuse*, *35*(5), 358–363. PubMed https://doi.org/10.1080/00952990903108231
16. Krans, E. E., Cochran, G., & Bogen, D. L. (2015, June). Caring for opioid-dependent pregnant women: Prenatal and postpartum care considerations. *Clinical Obstetrics and Gynecology*, *58*(2), 370–379. PubMed https://doi.org/10.1097/GRF.0000000000000098
17. Meyer, J. P., Springer, S. A., & Altice, F. L. (2011, July). Substance abuse, violence, and HIV in women: A literature review of the syndemic. *J Womens Health*, *20*(7), 991–1006. PubMed https://doi.org/10.1089/jwh.2010.2328
18. Ickovics, J. R., Earnshaw, V., Lewis, J. B., Kershaw, T. S., Magriples, U., Stasko, E., . . . Tobin, J. N. (2016, February). Cluster randomized controlled trial of group prenatal care: Perinatal outcomes among adolescents in New York City health centers. *American Journal of Public Health*, *106*(2), 359–365. PubMed https://doi.org/10.2105/AJPH.2015.302960
19. Schellinger, M. M., Abernathy, M. P., Amerman, B., May, C., Foxlow, L. A., Carter, A. L., . . . Haas, D. M. (2017, February). Improved outcomes for Hispanic women with gestational diabetes using the Centering Pregnancy(©) group prenatal care model. *Maternal and Child Health Journal*, *21*(2), 297–305. PubMed https://doi.org/10.1007/s10995-016-2114-x
20. Bassuk, E. L., Hanson, J., Greene, R. N., Richard, M., & Laudet, A. (2016, April). Peer-delivered recovery support services for addictions in the United States: A systematic review. *Journal of Substance Abuse Treatment*, *63*(1), 1–9. PubMed https://doi.org/10.1016/j.jsat.2016.01.003
21. HelpGuide.org. (2018). Self-help groups for drug addiction. Retrieved from http://www.helpguide.org
22. Hershberger, A., Zapolski, T., & Aalsma, M. C. (2016, August). Social support as a buffer between discrimination and cigarette use in juvenile offenders. *Addictive Behaviors*, *59*(1), 7–11. PubMed https://doi.org/10.1016/j.addbeh.2016.03.003

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