

Comprehensive treatment program for pregnant substance users in a family medicine clinic

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Abstract

Problem being addressed Substance use during pregnancy is a substantial public health problem and a risk factor for poor neonatal outcomes. Prenatal care is often provided in high-risk pregnancy units, separate from addiction treatment.

Objective of program To provide comprehensive prenatal care and addiction treatment in a family medicine setting.

Description of program The Toronto Centre for Substance Use in Pregnancy (T-CUP) is a family medicine-based program in a large urban city in Ontario. The T-CUP program comprises an interdisciplinary team using a one-stop access model to provide comprehensive services for pregnant women with a history of alcohol or drug abuse, including prenatal and postnatal medical care, addiction counseling, and assistance with complex psychosocial needs.

Evaluation A retrospective chart review was performed, including charts for 121 women who received care at T-CUP from August 2000 to January 2006. Women demonstrated a high compliance rate with prenatal care attendance. Most women reported reduction in a variety of drug use categories. Significant differences were found especially among women who presented earlier in their pregnancies ($P < .05$). As a result, neonatal outcomes were satisfactory and approximately 75% of newborns were discharged home in the care of their mothers.

Conclusion Pregnant substance-using women have positive maternal and infant health outcomes when they receive comprehensive care in a family medicine setting.

Programme de traitement complet offert dans une clinique de médecine familiale aux femmes enceintes qui consomment de l'alcool et des drogues

Résumé

Problème à l'étude L'utilisation de substances durant la grossesse est un important problème de santé publique qui prédispose à des issues néonatales défavorables. Les soins prénataux de ces femmes sont souvent dispensés dans des unités qui traitent les grossesses à haut risque et ne comportent pas de traitements de la toxicomanie.

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EDITOR'S KEY POINTS

- Approximately 11% of women consume alcohol and 13% smoke during pregnancy; 5% also report illicit drug use. Prenatal exposure to alcohol, tobacco, and illicit drugs has been associated with adverse outcomes such as congenital malformations, miscarriage, prematurity, low birth weight, neonatal mortality, and developmental problems.
- This paper describes the Toronto Centre for Substance Use in Pregnancy (T-CUP) program and associated outcomes for women attending for care. On average, women were followed for a mean of 139 days, which represents an earlier onset of care and longer treatment retention than reported by other programs.
- Overall, there was a decrease in maternal drug use during pregnancy, with statistically significant differences noted for women who came to T-CUP early in their pregnancies ($P < .05$). Decreases were noted in benzodiazepine, cocaine, and marijuana use, regardless of the timing of presentation.
- Most infants (74.4%) were discharged home with their mothers; 19.8% were taken into child protection custody, 4.1% were adopted, and 1.7% were sent home with family members. The longer a woman received care at T-CUP, the more likely she was to have custody of her child when she was discharged.

POINTS DE REPÈRE DU RÉDACTEUR

- Durant la grossesse, environ 11 % des femmes consomment de l'alcool, 13 % fument et 5 % avouent faire aussi usage de drogues illicites. On a associé l'exposition à l'alcool, au tabac et aux drogues illicites à des issues défavorables telles que des malformations congénitales, des avortements ou des accouchements prématurés, un faible poids à la naissance, une mortalité néonatale et des problèmes développementaux.
- Cet article décrit le programme du Toronto Centre for Substance Use in Pregnancy (T-CUP) et les issues observées chez les femmes qui y ont été traitées. En moyenne, les femmes ont été suivies pendant 139 jours, ce qui représente des soins plus précoces et une durée de traitement plus longue que ce que rapportent d'autres programmes.
- Globalement, il y a eu une diminution de l'usage maternel de drogues durant la grossesse, la diminution étant significativement plus forte pour les femmes venues au T-CUP tôt dans la grossesse ($P < .05$). Des diminutions de la consommation ont été observées pour les benzodiazépines, la cocaïne et la marihuana, quel que soit le moment d'entrée dans le programme.
- La plupart des nourrissons (74,4 %) ont pu quitter l'hôpital pour la maison avec leur mère; 19,8 % ont été placés dans un service de protection de l'enfance; 4,1 % ont été adoptés; et 1,7 % ont été confiés à des membres de la famille. Les femmes qui avaient été traitées plus longtemps au T-CUP étaient plus susceptibles de conserver la garde de leur enfant au moment du congé.

Objectif du programme Assurer des soins prénataux complets, incluant un traitement de la toxicomanie, dans un contexte de médecine familiale.

Description du programme Le Toronto Centre for Substance Use in Pregnancy (T-CUP) est un programme relevant de la médecine familiale qui est exécuté dans une grande ville de l'Ontario. Ce programme comporte une équipe multidisciplinaire qui utilise un modèle de guichet unique permettant aux femmes enceintes qui ont une histoire d'abus d'alcool ou de drogues d'accéder à des services complets comprenant des soins médicaux pré- et postnataux, des conseils sur la toxicomanie et une assistance en cas de problèmes psychologiques complexes.

Évaluation On a effectué une revue rétrospective de dossiers, incluant ceux de 121 femmes traitées au T-CUP entre août 2000 et janvier 2006. Les femmes ont été très fidèles aux rencontres pour les soins prénataux. La plupart d'entre elles ont déclaré avoir diminué leur utilisation de divers types de drogues. Celles qui avaient débuté le programme plus tôt durant la grossesse ont généralement obtenu les différences les plus significatives ($P < ,05$). En conséquence, les issues néonatales étaient satisfaisantes, et environ 75% des nouveau-nés ont quitté l'hôpital pour la maison, confiés aux soins de leur mère.

Conclusion Lorsqu'elles reçoivent des soins complets dans un contexte de médecine familiale, les femmes enceintes consommatrices de substances ont des issues de santé favorables pour elles-mêmes et pour leurs enfants.

Substance use during pregnancy remains a public health concern. According to the 2008 *Canadian Perinatal Health Report*, national cohort studies have demonstrated that approximately 11% of women consume alcohol and 13% smoke cigarettes during pregnancy.¹ An additional 5% also reported illicit drug use during the past month in their pregnancy.² However, as a result of systematic under-reporting of substance use, actual prevalence rates are probably higher than those reported.¹ Prenatal exposure to alcohol, tobacco, and illicit drugs has been associated with adverse outcomes such as congenital malformations, miscarriage, prematurity, low birth weight, neonatal mortality, and developmental problems.³

Pregnant women with substance use disorders are challenging to engage in prenatal care and substance abuse treatment. Several barriers impede access to treatment: fear of losing custody of the child, stigma attached to mothers misusing substances, lack of access to specific treatment programs for addiction in

pregnancy, and lack of support from partners or families.^{4,5} Family physicians are optimally positioned to intervene during pregnancy, as most women will see family physicians for health care once they are aware of being pregnant. Therefore, family physicians have a window of opportunity to assist substance-using pregnant women.

The Toronto Centre for Substance Use in Pregnancy (T-CUP) was developed to address the barriers that women faced in accessing care. Previously, women received specialized services fragmented among different sites requiring multiple visits. Compliance with appointments was poor, owing to limited financial and social support, and the different sites did not communicate with one another. These factors frequently led to substance-using women presenting late for prenatal care and failing to attend prenatal visits, resulting in poor maternal and neonatal outcomes.

Research suggests that comprehensive treatment programs are able to overcome these systemic and individual barriers and can produce improved outcomes.⁶⁻¹¹ This approach to care has been shown to have consistently positive effects in terms of reducing alcohol and drug use, as well as in decreasing morbidity for pregnant substance-dependent women and their neonates by prolonging gestation and increasing birth weight. Attendance at these programs was also associated with a trend toward discharge of infants in the care of their mothers.

The objective of this article is to describe the T-CUP program and associated outcomes for women attending for care.

Program description

The Toronto Centre for Substance Use in Pregnancy originated in 1995 in response to fragmented services provided to pregnant women with substance use disorders. As physicians introduced drug treatment services into the family medicine clinic at St Joseph's Health Centre in Toronto, Ont, the first pregnancy centre in Ontario for mothers with addiction problems was initiated.

The T-CUP program continues to be based in the academic family medicine clinic at St Joseph's Health Centre, which is a community teaching hospital partially affiliated with the University of Toronto. This physician-led program has incorporated a one-stop model of care, providing coordinated and individualized care within one primary care setting. A harm-reduction and woman-centred philosophy of care has been adopted in order to engage and to retain women in care. A central component of being woman-centred is providing women choice in and control over health care and other services. Harm reduction focuses on decreasing the harmful consequences of drug use instead of focusing on complete cessation of drug use. For example, methadone

stabilization during pregnancy leads to a net reduction of harm to both mother and fetus and represents a safer alternative to ongoing illicit opioid use.

Comprehensive treatment, combining obstetric and addiction care with case management, is provided at T-CUP. Medical services include prenatal, intrapartum, and postpartum care provided by the lead physician, with on-call and urgent care provided by staff physicians and residents in the family health team. Management of addiction disorders includes medical treatment of withdrawal syndromes, maintenance pharmacotherapy to promote abstinence, and relapse-prevention counseling. The nurse clinician assists in various aspects of women's prenatal and addiction care. Women also collaborate closely with the team social worker to address child protection concerns and are encouraged to view this involvement as a positive experience through self-referral and prenatal discharge planning. Access to consultations with specialists in obstetrics, pediatrics, anesthesia, and psychiatry is available within the hospital. Monthly team care planning meetings are used to review women's progress and to develop institutional policies relevant to caring for pregnant substance-using women.

Community links to women-only addiction treatment programs such as Breaking the Cycle, the Pathways program at Jean Tweed Centre, and Women's Own Withdrawal Management Centre have also been developed. An on-site addiction group is offered once weekly by Breaking the Cycle. The T-CUP program can also assist women with links to other community services and resources, depending on their individual psychosocial needs (eg, housing, social assistance).

This unique treatment program adopted a coordinated and comprehensive framework to deliver medical and substance use care within a single visit. By receiving multiple services at one location, women are more likely to continue attending for care and to develop trusting relationships with health care providers.¹²

Evaluation

Design. A retrospective cohort study was performed as part of a T-CUP program evaluation. Ethics approval was received from the Research Ethics Board at St Joseph's Health Centre.

Statistical analysis. A database was designed to collect data, and information was extracted from maternal and neonatal charts by a research assistant. Data analysis was performed using SPSS statistical software. Paired *t* tests and χ^2 tests were used to identify differences in patient characteristics or outcomes from baseline to the third trimester or delivery.

Subjects. From August 2000 to January 2006, women who met criteria for substance dependence and received

prenatal and intrapartum care at T-CUP were included in the evaluation. In total, 121 women were included in this analysis. An additional 83 women were excluded for the following reasons: seen for a one-time consultation only (*n*=29), pregnancy was terminated or spontaneously aborted (*n*=9), pregnancy resulted in fetal or neonatal death (*n*=3), or prenatal care was transferred to another physician (*n*=28) or the baby was delivered at another hospital and no outcome data were available (*n*=14). Because T-CUP is a provincial resource, many women were referred for a one-time consultation with no plans for ongoing follow-up care. Many women lived outside the greater Toronto area; therefore, many patients returned to their original communities and delivered closer to home owing to proximity and lack of transportation. Many women who failed to return for ongoing care feared intervention by child protection services and attempted to avoid this involvement by seeking care with other obstetric care providers and delivering at other hospitals.

Maternal demographics. Women had a mean age of 29.4 years and mean parity of 3.7 (Table 1). Overall, the prevalence of hepatitis C was 26.4%. No women tested positive for HIV infection. The rate of sexually transmitted infections was low, with 5 (4.1%) women diagnosed with chlamydia and 3 (2.5%) with genital herpes. These rates are lower than those reported in comparable programs.¹⁰

Table 1. Patient demographic characteristics: N = 121.

CHARACTERISTIC	PATIENTS
Mean (SD) age, y	29.4 (5.5)
Age range, y	18-41
Mean (SD) no. of pregnancies	3.7 (2.2)
Range of no. of pregnancies	1-11
Race, n (%)	
• White	95 (78.5)
• Asian	9 (7.4)
• Other (eg, aboriginal)	17 (14.0)
Marital status, n (%)	
• Single	60 (49.6)
• Married or common law	49 (40.5)
• Divorced or separated	12 (9.9)
Education level, n (%)	
• Grade school	14 (11.6)
• High school	65 (53.7)
• Postsecondary education	37 (30.6)
• Unknown	5 (4.1)

Prenatal care. The average gestational age at the first visit was 19.6 weeks. Approximately half (48.7%) of these women presented during the second trimester and almost equal numbers (28.1% and 23.1%) presented during the first and third trimesters, respectively. Women attended 88.3% of booked prenatal visits. On average, women were followed for a mean of 139 days (range 16 to 245 days). These findings demonstrate an earlier onset of care and longer treatment retention than described by other programs that reported a mean gestational age of 24 to 26 weeks at first visit and an average of 8 visits attended for prenatal care.^{10,11}

Social outcomes. Before attending T-CUP, 81.8% of the women had stable housing, 9.9% were living in shelters, and 8.3% had no fixed address. By the time of delivery, more women were living in stable housing (84.3%) and fewer had no fixed address (3.3%). In addition, the number of women who were living with substance-using household members decreased from 33.9% in the first trimester to 22.3% by delivery.

Thirteen women (10.7%) reported some abuse during pregnancy (eg, physical, sexual, or emotional).

Changes in drug use. Substance use was identified through self-report and urine drug screening (UDS). On average, 24.5% of UDS results were positive for an illicit substance during the pregnancy.

Changes in drug use were determined by comparing drug use at baseline (ie, at the first T-CUP visit) to drug use at the end of pregnancy (Tables 2 to 4). Overall, there was a decrease in maternal drug use during pregnancy with statistically significant differences noted for women who came to T-CUP early in their pregnancies ($P < .05$). Decreases were noted in benzodiazepine, cocaine, and marijuana use regardless of trimester at first visit.

Table 2. Change in maternal drug use from baseline to delivery for 34 women presenting in the first trimester

DRUG	NO. OF WOMEN USING IN TRIMESTER 1	NO. OF WOMEN USING IN TRIMESTER 3
Heroin	1	1
Prescription opioids	8	3*
Cocaine	10	4*
Marijuana	12	5*
Benzodiazepines	7	2*
Alcohol	16	3*
Nicotine	30	25

*Significant decrease; $P < .05$.

Table 3. Change in maternal drug use from baseline to delivery for 59 women presenting in the second trimester

DRUG	NO. OF WOMEN USING IN TRIMESTER 2	NO. OF WOMEN USING IN TRIMESTER 3
Heroin	9	5
Prescription opioids	11	12
Cocaine	30	22*
Marijuana	25	19
Benzodiazepines	13	10
Alcohol	13	6*
Nicotine	48	46

*Significant decrease; $P < .05$.

Table 4. Change in maternal drug use from baseline to delivery for 28 women presenting in the third trimester

DRUG	NO. OF WOMEN USING IN TRIMESTER 3	NO. OF WOMEN USING AT DELIVERY
Heroin or prescription opioids	12	5
Cocaine	11	3
Marijuana	10	2
Benzodiazepines	5	3
Alcohol	7	NA
Nicotine	19	NA

NA—data not available.

In addition to receiving counseling by T-CUP staff members, women were also connected to other addiction treatment programs. Of the 121 women, 39 commenced formal treatment programs; 26 completed the treatment, 9 dropped out, and 4 were on waiting lists. Twenty-three women also joined self-help groups during pregnancy.

Obstetric and neonatal outcomes. Out of 121 women, 88 (72.7%) had vaginal deliveries and 33 (27.3%) required cesarean sections. Obstetric complications were as follows: premature rupture of membranes (6.6%), antepartum hemorrhage (13.2%), and postpartum hemorrhage (2.5%). Birth parameters are presented in Table 5. In other programs, up to 65% of women had obstetric complications and vaginal delivery occurred in 87% of cases.^{8,10}

The most common complication was neonatal withdrawal, also known as *neonatal abstinence syndrome*. In our population, only neonates exposed to opiates in utero experienced neonatal abstinence syndrome,

Table 5. Birth parameters: N = 121.

CHARACTERISTIC	OUTCOME
Mean gestational age, wk	38.8
Mean (SD) birth weight, g	3063.3 (601.1)
Mean (SD) birth length, cm	49.6 (3.5)
Mean (SD) birth head circumference, cm	33.9 (1.9)
Mean Apgar score at 1 min	8.4
Mean Apgar score at 5 min	8.8
Prematurity* rate, n (%)	15 (12.4)
Low birth weight rate, [†] n (%)	20 (16.5)

*Prematurity was defined as delivery at less than 37 weeks' gestational age.
[†]Low birth weight rate was defined as less than 2500 g.

and 31.1% required treatment for this condition. The Fir Square treatment program in Vancouver reported the presence of neonatal withdrawal in 27% of infants, similar to our evaluation.¹³

At the time of discharge, 52.9% of women were breastfeeding. Higher rates of breastfeeding were found among women who presented earlier for care: 64.7% of women presenting in the first trimester versus 39.3% of women presenting in the third trimester. A similar relationship was noted for average length of stay (LOS) for the neonate in the hospital. A shorter LOS was documented for those first presenting early in their pregnancies: mean 6.6 days for first-trimester presentation compared with 11.5 days for third-trimester presentation. These outcomes were also similar to data reported from British Columbia, where breastfeeding rates ranged from 45% to 64%, and newborns had an average LOS between 10.7 and 20.7 days.¹³

Most infants (74.4%) were discharged home with their mothers, while another 19.8% were taken into child protective custody, 4.1% were adopted, and 1.7% were sent home with family members. A significant relationship was found between duration of care with T-CUP and custody at the time of discharge. Ninety-four percent of women who started care in the first trimester had custody of their children at discharge, whereas 67.8% and 64.3% who came in the second and third trimesters, respectively, retained custody. The longer a woman received care at T-CUP, the more likely she was to retain custody of her child. Rates of custody status at discharge were similar for substance-exposed neonates in British Columbia.¹³

Discussion

This program evaluation has documented numerous benefits associated with attendance at T-CUP, including

high compliance rates with prenatal visits, enhanced maternal and neonatal outcomes, decreased substance use, and high discharge rates of infants in the care of their mothers.

Similar outcomes have been documented by other comprehensive treatment programs that provide a range of services for pregnant women with addictions. The Sheway program located in the downtown east-side of Vancouver, BC, and the New Choices Program in Hamilton, Ont, have both reported decreased substance use, improved maternal health, and increased access to other resources.^{14,15}

The T-CUP program remains unique by being integrated within a family medicine clinic. There are several key differences between T-CUP and other North American programs for pregnant substance users. The population served by T-CUP has a range of socio-economic backgrounds ranging from those who are homeless to women with professional careers. The location of T-CUP within a family medicine clinic reduces the stigma associated with seeking addiction treatment for pregnant women and assists with increasing attendance for appointments. Focus groups with T-CUP patients found that women felt less marginalized and more “like normal moms” by sitting in the waiting room in the family medicine clinic, rather than being surrounded by other patients with drug-dependency problems.¹² Instead of a large multidisciplinary group of specialized services, T-CUP uses a defined interdisciplinary team within a family medicine setting to provide patients one-stop access for all their multiple medical and psychosocial needs. The T-CUP program also advocates for antenatal self-referral to child protective services instead of waiting for the postpartum period. This alternative approach to family preservation has helped many women to maintain custody of their children and to have positive collaborations with child protective services. These features are unique to our program compared with the other pregnancy outreach programs mentioned above.

Future program expansion should focus on the following areas: peer support groups, mentoring from former clients, and an on-site parenting group to promote maternal bonding and infant development. These efforts might be limited owing to funding constraints, but might be achieved through interagency collaborations.


Limitations

There were several challenges in conducting this program evaluation. Outcome data were gathered from several charts, including the T-CUP chart and the hospital charts for both mother and infant. Substance use information was obtained from clinical notes and any available UDS results. Abstinence from substance use was selected as an end point, as reduction in drug use

was difficult to quantify; most women were unable to report exact amounts used over time.

There were several confounding factors in our data analysis, including baseline severity of addiction and level of functioning, which might have affected the relationship between the length of time in T-CUP and several outcome variables such as change in drug use, retention of custody, and breastfeeding rates.

Conclusion

The T-CUP program represents an innovative service delivery model for pregnant women with addictions. Our program evaluation suggests that primary care networks might be better able to overcome treatment barriers than specialized services by integrating medical with addiction treatment. This effective model of care can be easily adopted in any community through collaboration and cooperation among family physicians and addiction professionals. 

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Contributors

Both authors contributed to the concept and design of the program; data gathering, analysis, and interpretation; and preparing the manuscript for submission.

Competing interests

None declared

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References

- Public Health Agency of Canada. *Canadian perinatal health report*. 2008 ed. Ottawa, ON: Public Health Agency of Canada; 2008.
- Canadian Institute for Health Information. *Women's health surveillance report*. Ottawa, ON: Canadian Institute for Health Information; 2003.
- Health Canada. *Best practices: fetal alcohol syndrome/fetal alcohol effects and the effects of other substance use during pregnancy*. Ottawa, ON: Minister of Public Works and Government Services Canada; 2000.
- Health Canada. *Best practices: treatment and rehabilitation for women with substance use problems*. Ottawa, ON: Minister of Public Works and Government Services Canada; 2001.
- Creamer S, McMurtrie C. Special needs of pregnant and parenting women in recovery: a move towards more woman-centred approach. *Womens Health Issues* 1998;8(4):239-45.
- Corse SJ, Smith M. Reducing substance abuse during pregnancy. Discriminating among levels of response in a prenatal setting. *J Subst Abuse Treat* 1998;15(5):457-67.
- Chang G, Carroll KM, Behr HM, Kosten TR. Improving treatment outcome in pregnant opiate-dependent women. *J Subst Abuse Treat* 1992;9(4):327-30.
- Ellwood DA, Sutherland P, Kent C, O'Connor M. Maternal narcotic addiction: pregnancy outcome in patients managed by specialized drug-dependency antenatal clinic. *Aust N Z J Obstet Gynaecol* 1987;27(2):92-8.
- Fiocchi FF, Kingree JB. Treatment retention and birth outcomes of crack users enrolled in a substance abuse treatment program for pregnant women. *J Subst Abuse Treat* 2001;20(2):137-42.
- Jansson LM, Svikis D, Lee J, Paluzzi P, Rutigliano P, Hackerman F. Pregnancy and addiction. A comprehensive care model. *J Subst Abuse Treat* 1996;13(4):321-9.
- Whiteside-Mansell L, Crone CC, Connors NA. The development and evaluation of an alcohol and drug prevention and treatment program for women and children. The AR-CARES Program. *J Subst Abuse Treat* 1999;16(3):265-75.
- Lefebvre L, Midmer D, Boyd JA, Ordean A, Graves L, Kahan M, et al. Participant perception of an integrated program for substance abuse in pregnancy. *J Obstet Gynecol Neonatal Nurs* 2010;39(1):46-52.
- Abrahams RR, MacKay-Dunn MH, Nevmerjitskaia V, McRae GS, Payne SP, Hodgson ZG. An evaluation of rooming-in among substance-exposed newborns in British Columbia. *J Obstet Gynaecol Can* 2010;32(9):866-71.
- Garm A. The Sheway project. *Can Nurse* 1999;95(10):22-5.
- Sword W, Niccols A, Fan A. "New Choices" for women with addictions: perceptions of program participants. *BMC Public Health* 2004;4:10.

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