What Interventions Are Being Used to Prevent Preterm Birth and When?

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Abstract

Objective: This study sought to determine the proportions of women at risk of preterm birth who received progesterone, elective and rescue cerclage, or pessary to prevent preterm birth, by using medical records. The authors also sought to determine whether these proportions differed among primary-, secondary-, and tertiary-level centres.

Methods: The authors conducted a retrospective cohort study and extracted data from consecutive medical charts of women with an estimated date of confinement over 3 months in primary-, secondary-, and tertiary-level centres in Southern Ontario. The study identified women with a previous spontaneous preterm birth or a short cervix and determined whether they were offered and whether they received a preventive intervention for preterm birth. Descriptive statistics and Fisher exact tests were calculated.

Results: The authors reviewed 1024 consecutive charts at primary, secondary, and tertiary centres and identified 31 women with a previous spontaneous preterm birth or a short cervix. Of these women, less than one half (42%) received progesterone or cerclage for prevention of preterm birth, and none received pessary. One in four women (26%) were not referred to an obstetrician or maternal-fetal medicine specialist in time for an intervention, and among those referred before 24 weeks of gestation, an intervention was offered to 57% of the women.

Conclusion: Less than half of women at risk of spontaneous preterm birth received progesterone, cerclage, or pessary, attesting to the importance of improving knowledge translation methods to encourage timely referral and use of progesterone for the prevention of preterm birth.

Key Words: Preterm birth, progesterone, cerclage, prevention, referral

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Résumé

Objectif : Cette étude avait pour but de déterminer, à partir de dossiers médicaux, la proportion de femmes exposées à un risque d'accouchement prématuré qui ont fait l'objet d'interventions visant à prévenir l'accouchement, comme l'administration de progestérone, le cerclage, en urgence ou non, ou la mise en place d'un pessaire. Les auteurs ont également cherché à savoir si cette proportion était différente dans les centres de soins primaires, secondaires et tertiaires.

Méthodologie : Dans le cadre d'une étude de cohorte rétrospective, les auteurs ont recueilli des données provenant des dossiers médicaux consécutifs de femmes dont l'accouchement était prévu plus de trois mois plus tard se trouvant dans des centres de soins primaires, secondaires et tertiaires du sud de l'Ontario. Ils ont recensé les femmes ayant un col de l'utérus court ou des antécédents d'accouchement prématuré spontané, et ont déterminé si elles s'étaient fait proposer et si elles avaient subi des interventions visant à prévenir une naissance prématurée. Des méthodes de statistique descriptive et un test exact de Fisher ont été utilisés pour effectuer les calculs.

Résultats : Les auteurs ont examiné 1 024 dossiers consécutifs provenant de centres de soins primaires, secondaires et tertiaires et ont recensé 31 femmes ayant un col de l'utérus court ou des antécédents d'accouchement prématuré spontané. Moins de la moitié d'entre elles (42 %) avaient reçu de la progestérone ou subi un cerclage visant à prévenir un accouchement prématuré, et aucune n'avait reçu de pessaire. Une femme sur quatre (26 %) n'avait pas été orientée vers un obstétricien ou un spécialiste en médecine fœto-maternelle suffisamment tôt pour subir une intervention, et 57 % des femmes ayant été orientées avant leur 24^{e} semaine de gestation se sont fait proposer une intervention.

Conclusion : Moins de la moitié des femmes exposées à un risque d'accouchement prématuré spontané avaient reçu de la progestérone ou subi un cerclage, ou se s'étaient fait installer un pessaire, attestant de l'importance d'améliorer les méthodes d'application des connaissances seront nécessaires pour favoriser la rapidité d'orientation et l'administration de progestérone afin de prévenir les accouchements prématurés.

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INTRODUCTION

Preterm birth occurs in approximately 8% of births in Canada,[1] and it remains the leading cause of perinatal mortality. Preterm birth significantly contributes to neonatal morbidity,[2–5] with long-term sequelae including neurodevelopmental impairments.[6–8] Among others, two significant risk factors for preterm birth are a previous spontaneous preterm birth and a short cervix (≤25 mm).[9]

Three interventions have been shown in individual Cochrane meta-analyses to reduce the risk of preterm birth in women at risk[10–12]: progesterone,[10] cerclage,[11] and pessary.[12] In addition, a recent network meta-analysis comparing all three interventions with each other concluded that progesterone was the best of the three, with a 56% and 42% reduction in the odds of preterm birth <34 and <37 weeks, respectively, and a 50% reduction in the odds of neonatal demise, among other positive results.[13]

However, although the 2013 SOGC guideline states that cerclage should be considered in singleton pregnancies in women with a history of spontaneous preterm birth or possible cervical insufficiency if the cervical length is ≤25 mm before 24 weeks of gestation,[14] the 2008 guideline on progesterone, which will undergo revision soon (personal email communication, Dr. William Mundle, March 21, 2017), recommended further study of progesterone, rather than advocating its use.[15]

Regarding the actual use of interventions to reduce preterm birth, previous U.S. studies have suggested differences between the number of women counselled about or offered progesterone and the number of women receiving it, according to the medical records.[16,17] To our knowledge, the discrepancy between offering and actually receiving an intervention to prevent preterm birth has not been assessed in Canada, nor has there been recent Canadian assessment of prevention of preterm birth.

Given the important advances that have occurred in the last decade in preterm birth prevention, our primary objective was to examine what interventions pregnant women at risk of preterm birth received to reduce their risk, as well as what interventions they had been offered, according to medical charts. Given the differences between health care providers and patients' characteristics at primary-, secondary-, and tertiary-level hospitals, the rate of women being offered and receiving each treatment was also assessed in each level of care separately. Our secondary objective was to assess whether women at risk of preterm birth were appropriately referred to obstetricians or maternal-fetal medicine specialists and whether these referrals occurred in time to administer an appropriate intervention.

METHODS

We conducted a multicentre retrospective cohort study in primary, secondary, and tertiary prenatal care centres in the Hamilton, Ontario area with ethics board approval from the Hamilton Integrated Research Ethics Board (HiREB, #0108).

Study Sample

We chose primary, secondary, and tertiary prenatal care centres on the basis of the Ontario maternal and newborn level of care designations by the Provincial Council for Maternal and Child Health.[18] We used a convenience sampling strategy, considering for inclusion all women in the local primary and secondary prenatal care centres with an estimated date of confinement in a 3-month period between January 1 and March 31, 2016 and all women in the tertiary prenatal care centre with an estimated date of confinement between January 1 and March 31, 2015 (for personnel reasons).

We included consecutive women with a singleton pregnancy with an estimated date of confinement in the specified 3-month period and who had been at risk of preterm birth. For this study, we defined risk of preterm birth as a history of spontaneous singleton preterm birth and/or cervical shortening (≤25 mm) in the ongoing pregnancy before 24 weeks of gestation, which are the most common inclusion criteria in randomized controlled trials. We excluded pregnancies affected by termination, fetal demise, lethal fetal anomaly, or severe maternal morbidities that could result in termination (e.g., cancer).

Data Collection and Analysis

Two trained abstractors (Y.Y.F., Y.S.) extracted data from all available components of the medical charts, including antenatal record forms, dictated consultations, ultrasound reports, and physicians' notes, by using a piloted data collection form.

The primary outcome was receipt of an intervention for the prevention of preterm birth (progesterone, cerclage, or pessary).

Secondary outcomes included offer of an intervention and the GA and level of care at which interventions were offered and received. We identified the initial health care provider, and, if the woman was referred to an obstetrician or