

Interpregnancy interval and adverse outcomes: defining optimal intervals for high-risk populations

BACKGROUND

Pregnancies following short interpregnancy intervals (conceived within 12 or 18 months of a prior delivery) are linked with increased risks of adverse pregnancy outcomes, including preterm birth, poor fetal growth leading to small-for-gestational age birth or low birthweight, and infant death. Current North American guidelines recommend that women wait a minimum of 18 months before becoming pregnant again, while the World Health Organization advises waiting at least 24 months. As preventing short interpregnancy intervals may be a strategy to reduce the burden of adverse fetal and infant outcomes, short interpregnancy intervals (<18 months) are monitored as a public health indicator in many countries across the globe, including the US.

Knowledge gaps: are current interpregnancy interval guidelines appropriate for certain high-risk obstetric populations? Current public health guidelines on interpregnancy intervals apply a “one size fits all” recommendation, based on the assumption that a uniform interval optimizes outcomes for all women. Yet, experts have raised concerns that these guidelines may not be appropriate for specific high-risk populations, such as women whose index pregnancy ended in a perinatal loss or preterm birth or those with a history of subfertility. For these women, recommendations to wait 18 months until a subsequent pregnancy could have adverse consequences, such as prolonged post-loss grief or increased risk of infertility with advancing maternal age. However, research to support evidence-based pregnancy spacing guidelines and decision-making for women with complicated obstetric histories, including previous perinatal loss, infertility treatment, or spontaneous preterm birth, is scarce.

In this study, we will identify the optimal interpregnancy interval range for three high-risk obstetric populations that currently lack evidence to inform pregnancy spacing decisions.

STUDY AIMS To establish the interpregnancy interval range associated with lowest risks of adverse pregnancy outcomes among women:

1. with a perinatal loss in the first pregnancy;
2. who conceived the first pregnancy using ovulation stimulation infertility treatment;
3. with a spontaneous preterm birth in the first pregnancy.

RESEARCH APPROACH

Study Population: Our study population was drawn from a population-based cohort of all women with ≥ 2 consecutive pregnancies in British Columbia (BC) between April 1, 2004 and March 31, 2014 previously created by linking the BC Perinatal Data Registry, physician billing records, hospital discharge records, outpatient prescription records, and detailed sociodemographic variables. We calculated interpregnancy interval, the time between delivery of the first (index) pregnancy and beginning of the subsequent pregnancy, as the number of days between delivery dates minus the gestational age at delivery for the subsequent pregnancy. For each study aim, our analysis will be restricted to the specific high-risk population defined by the outcome of the index pregnancy: perinatal loss, conceived using ovulation stimulation therapy for infertility, and spontaneous preterm delivery.

Statistical Analysis: We will examine risks in the subsequent pregnancy of these outcomes: small-for-gestational age (birthweight <10th percentile), an adverse fetal-infant composite outcome (stillbirth, neonatal death, birthweight <3rd percentile, delivery <28 weeks of gestation); and spontaneous and indicated preterm delivery, separately. We will use log binomial regression to estimate propensity score-adjusted risk ratios comparing interpregnancy intervals 6, 6-11, and 12-17-months with a reference 18-23-month group and will use logistic regression to estimate propensity score adjusted absolute risks at each interval length from 2 to 23 months. Within each population, propensity score models included maternal age, smoking, parity, low neighborhood income, and inadequate prenatal care measured, all measured before the index pregnancy.

PUBLIC HEALTH IMPACT The findings of this study will inform pregnancy spacing recommendations to optimize healthy pregnancy and fetal and infant outcomes in these high-risk obstetric populations that most need targeted evidence to support pregnancy spacing decision-making.