

OBSTETRICS

Current practices in the prediction and prevention of preterm birth in patients with higher-order multiple gestations

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OBJECTIVE: We sought to determine the interventions utilized by maternal-fetal medicine specialists in the prediction and prevention of preterm labor in higher-order multiple (HOM) gestations.

STUDY DESIGN: Online questionnaires and email surveys were sent to all the maternal-fetal medicine specialists in Canada ($n = 122$). Questionnaire items included interventions physicians routinely recommended for HOM gestations including: (1) bed rest; (2) cervical length measurement on transvaginal ultrasound; (3) corticosteroids use; (4) cerclage; and (5) tocolytic therapy.

RESULTS: Response rate was 66% (81/122), with 68% of respondents in practice for >10 years. Of physicians, 91% did not routinely recommend bed rest (95% confidence interval [CI], 84.7–97.2). In all, 82% (95% CI, 73.63–90.4%) recommended routine cervical length assessment with 32.3% (95% CI, 20.7–43.2) and 37.1% (95% CI, 25.3–48.6) of this group suggesting assessment at 16–18 and 19–21 weeks, respectively. Frequency of assessment varied from biweekly (53.3%; 95% CI, 40.9–65.0), to monthly (23.3%; 95% CI,

12.8–33.1), to a single measurement repeated only if abnormal (12.5%; 95% CI, 4.5–20.8). In all, 28% (95% CI, 18.2–37.8) recommended routine administration of corticosteroids for lung maturation. Timing of administration varied, with 24% initiating steroids between 24–26 weeks, 59% between 27–28 weeks, and 17% after 28 weeks. None reported routine cerclage placement. However, 71% (95% CI, 61.1–80.8) would perform cerclage based on history or ultrasound. Of respondents, 81% (95% CI, 72.4–89.5) would consider using tocolytic agents for threatened preterm labor including calcium channel blockers (94%), nonsteroidal antiinflammatory drugs (5%), and nitroglycerin transdermal patch (24%).

CONCLUSION: The variable practice guidelines and paucity of data for management of HOM pregnancy places the onus on individual practitioners to develop their own management schemes. This results in heterogeneous management, which is based on conflicting international guidelines, studies, expert opinion, or past experience.

Key words: bed rest, cerclage, cervical length, tocolysis

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The term “higher-order multiple” (HOM) pregnancy refers to gestations involving ≥ 3 fetuses (eg, triplets, quadruplets, quintuplets). In Canada, from 1991 through 1998, the rate of triplet live births increased significantly (86% increase). From 1998 through 2003, no consistent change was observed in the

rate; however, this was followed by a significant decline by about 33/100,000 from 2003 through 2007 (from 111.1/100,000 live births to 77.6/100,000). Similar to the United States, the Canadian rate of triplet live births increased nonsignificantly from 2007 through 2009.^{1,2}

HOM gestations have been demonstrated to be at increased risk of neonatal mortality³ and morbidity associated with incompetent cervix, preterm premature rupture of membranes, and preterm delivery <29 weeks.⁴ The health care costs of HOM are also increased.⁵ Physicians are faced with the challenge of making management decisions with a view to mitigate these risks. Over 75% of HOM gestations result from the use of assisted reproductive technology⁶ with the average age of women seeking assisted reproductive technology for infertility being >35 years.⁷

Multiple births represent a steadily increasing proportion of the preterm birth infant population, representing 22% of all preterm births. Of HOMs, 98% are born preterm (<37 weeks),⁸ with the average length of gestation being 33, 31, and 29 weeks for triplets, quadruplets, and quintuplets, respectively.^{9,10} Offspring of multiple gestations are also at increased risk of cerebral palsy and long-term respiratory complications.^{11,12}

To address the unique and complex challenges of caring for HOM pregnancies, obstetrical authoritative bodies have developed guidelines, which aid in caring for these patients. Such guidelines on the management of HOM gestations include the American Congress of Obstetricians and Gynecologists (ACOG) practice bulletin in 2004,¹³ National Institute for Health and Clinical Excellence (now the National Institute for

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Health and Care Excellence [NICE]) guidelines in 2011,¹⁴ and the Hong Kong College of Obstetricians and Gynecologists in 2006.¹⁵ The most recent guidelines were published in 2011 by NICE. The Society of Obstetricians and Gynecologists of Canada (SOGC) had no specific guidelines on this subject. The proximity between Canada and the United States created similar medical education systems resulting in individual care of patients that is quite similar. Furthermore, about a half of the maternal-fetal medicine (MFM) specialists in Canada trained in the United States creating good knowledge and generally acceptance of standards in obstetrics created by ACOG and the Society for MFM. Therefore, Canadian obstetric and MFM specialists are likely to choose to practice based on ACOG guidelines although they do not have to do so. We decided to explore which guidelines or evidence gleaned from specific papers guide practice in Canada.

We sought to survey the group of MFM specialists in Canada to identify if there is a consensus or if there is variability in managing HOM gestations.

MATERIALS AND METHODS

We developed a survey (18 questions) and pooled the responses to determine how most Canadian MFMs utilized specific interventions. Email contact information from the population surveyed was obtained from the MFM Committee of the SOGC. The original survey was created using Survey Monkey, with individual responses being anonymous. The survey was sent by email to all the MFM specialists across Canada (n = 122). Survey Monkey (Survey Monkey Inc., Palo Alto, CA) is an online survey that provides free, customizable surveys and access to data analysis, sample selection, bias elimination, and data representation tools.¹⁶

The specific interventions that were surveyed include: recommendations for bed rest and the timing of commencing this, routine assessment of cervical length including the appropriate gestational age of initiation and frequency of assessment, routine administration of corticosteroids and the appropriate

gestational age, routine placement of prophylactic cerclage and the timing of placement, and routine use of tocolytic agents for threatened preterm labor (TPTL) as well as the choice of agent.

The responses of individual participants were kept confidential. Non-responders received a reminder email 2 weeks after the initial survey was sent. Physicians who did not respond within 2 weeks of the second attempt received a short form-version of the survey, using in-line text, rather than Survey Monkey. The short-form survey contained 5 questions, with space for comments and elaboration, and was not anonymous.

The short form of the survey primarily addressed the specific questions we sought to answer concerning the practices and in the prediction and prevention of preterm labor with the intention of making the survey less time-consuming for the respondents. These include steroid use, bed rest, use of tocolytic agents, and cervical length assessment and were mainly yes or no answers (see short form of questionnaire

attached). These data were added to the corresponding data (main question) on the respective subject in the main questionnaire. This provided no bias to the results as the questions were the same.

RESULTS

The overall response rate was 66% (81 of 122 physicians surveyed). The decision to opt out of the survey was exercised by 2 of 122 physicians. There were 67 responses to the original survey, and an additional 14 to the short-form version.

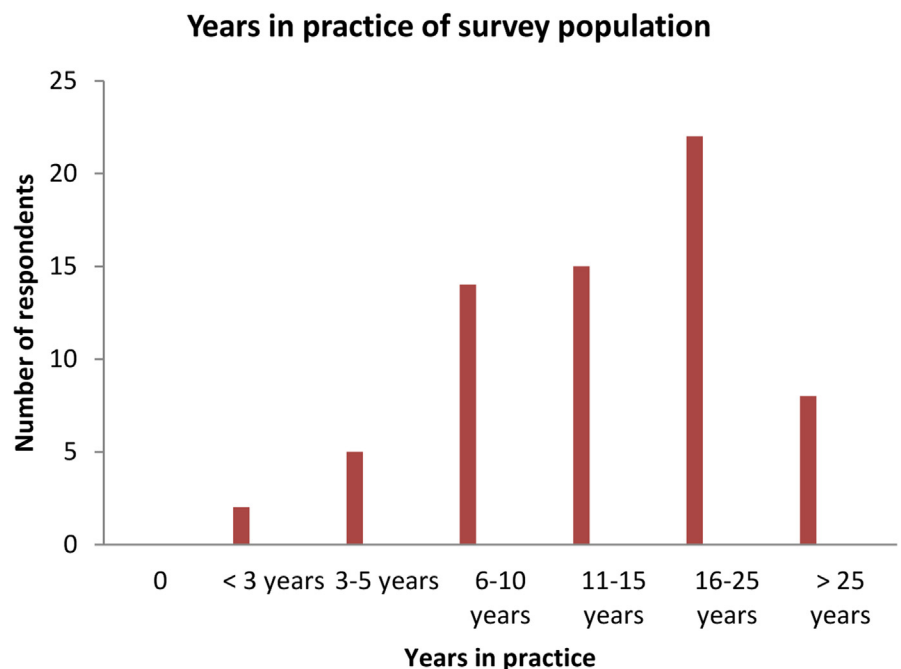
In all, 68% of physicians surveyed have been in practice for >10 years (Figure 1), with 95% working in academic centers affiliated with a Canadian university. Of the respondents, 3% worked in community hospitals in a large city (population of >500,000) while 1.5% of the population worked in a community hospitals in a small city (population of >100,000).

Bed rest

In all, 91% of physicians surveyed did not routinely recommend bed rest (95%

FIGURE 1

Survey population duration of independent practice in field of maternal-fetal medicine



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