



**DALHOUSIE
UNIVERSITY**

Department of
Obstetrics and Gynaecology

32nd Annual Research Day

Friday, April 13, 2018

Parker Reception Room
IWK Health Centre

Program Sponsorship

We gratefully acknowledge financial support for this program
from:

IWK Medical Dental Scientific Staff Office

Canadian Foundation for Women's Health

Thank you to our judges:

Dr. Laura Hopkins

Gynaecology-Oncology
University of Ottawa

Dr. Thomas Marrie

Former Dean of Medicine, Dalhousie and current
VP Research, Innovation & Knowledge Translation, NSHA

Dr. Stephanie Scott

Gynaecology-Oncology
Dalhousie University

Research Day 2018
Department of Obstetrics and Gynaecology
Dalhousie University

- 0800 Reception
- 0830 Welcome – Dr. B.A. Armson
 Professor and Head,
 Department of Obstetrics and Gynaecology
- 0845 **INVITED SPEAKER**
 Dr. Thomas Marrie, Dalhousie University
Title TBD
- SESSION I Moderator, Dr. Robert Grimshaw**
- 0945 Justin P. Dubé, B.Sc.
Emotion Regulation in Couples Affected by Female Sexual Interest/Arousal Disorder
- 1000 Seirin Goldade, PGY5
Predicting the Development of Hypertension with Perinatal Data: A Study of Nova Scotian Women
- 1015 **THREE PROPOSALS:**
Ashley Warias, PGY1
Ovarian Cancer Surveillance in Women With BRCA Mutations: Assessing the Psychological Impact of Two Care Models
Emma Pollard, PGY1
Perineal Outcomes at Subsequent Pregnancy in Nova Scotian Women with Prior Obstetrical Anal Sphincter Injury
Samed Asmer, PGY1
Does the need for extended estrogen supplementation help predict pregnancy outcomes in frozen embryo transfers? A retrospective cohort study.
- 1030 NUTRITION BREAK**

SESSION II

- 1045 Meghan Rossi, MSc Candidate
Pain During Pregnancy: Prevalence and Differential Predictors of Genito-Pelvic Pain and Dyspareunia at 18 to 24 Weeks
- 1100 Jenna MacGregor, MED2
A Retrospective Cohort Analysis of the Association Between the use of Nitrous Oxide in Labour and Delivery and Maternal Outcomes
- 1115 Kathleen Merwin, PhD candidate
Associations between sexual talk and sexual and relationship wellbeing depend on the level of perceived partner responsiveness
- 1130 Mohammad Alyafi, PGY5
Diagnostic accuracy of LuViva® cervical scan in a population of women with low-grade Pap smear abnormalities
- 1145 Gillian MacMullin, PGY4
The Effect of Folic Acid Fortification on Severity of Open Neural Tube Defects in Nova Scotia
- 1200 Shannon Joice, PGY4
Interprofessional Education: obstetrics simulations
- 1215 LUNCH**

SESSION III Moderator: Dr. Jim Bentley

- | | | | |
|------|--|-------------|---|
| 1300 | INVITED SPEAKER
Dr.Laura Hopkins University of Ottawa
<i>"Sugar Fix"</i> | 1515 | Allie Carew, MSc candidate
<i>Is there an association between gestational diabetes mellitus and the future risk of cardiovascular disease?</i> |
| 1400 | Jade Panzarasa, MED2
<i>A retrospective cohort study of the association between the use of nitrous oxide during labour and delivery and neonatal outcomes</i> | 1530 | Kaitlyn Adare, PGY3
<i>Attributions for postpartum sexual concerns during the transition to motherhood</i> |
| 1415 | Lesley Roberts, PGY5
<i>Predictive ability of a blastocyst grading scheme on reproductive outcomes in elective fresh embryo transfer with early blastocysts versus mature blastocysts</i> | 1545 | Michelle Miller, PGY3 MUN
<i>Vulvodynia in Newfoundland & Labrador: Seeking Local Solutions for a Pervasive Pain Condition</i> |
| 1430 | Melanie Simourd, Honours undergrad BSc
<i>The Validation of NMR Spectroscopy for the Analysis of the Follicular Fluid Metabolome</i> | 1600 | Jocelyn Stairs, PGY3
<i>Characteristics of Motivation to use Laparoscopic Skills Training in the Obstetrics and Gynaecology Resident Population: A Pilot Study</i> |
| 1445 | Ian Ferguson, PGY3
<i>Systematic Review of the Feasibility of Mifepristone and Misoprostol for Medical Abortion in Low and Middle Income Countries.</i> | 1630 | Awards Presentation

Refreshments to be served at the home of Dr. Catherine Craig after the awards presentation. Please join us at 951 Marlborough Ave |
| 1500 | BREAK | | |

ABSTRACTS

Emotion Regulation in Couples Affected by Female Sexual Interest/Arousal Disorder

Dubé JP, Corsini-Munt S, Muise A, Rosen NO

Background: Female Sexual Interest/Arousal Disorder (SIAD) is associated with poor psychological, relational, and sexual well-being of affected women, and their romantic partners are also likely to suffer consequences. Prior research suggests that women with clinically low sexual desire and arousal report more difficulties with emotion regulation than controls. Yet, whether emotion regulation is associated with the adjustment of both members of affected couples to SIAD is unknown.

Objective: This study tested the prediction that emotion regulation would be linked to the psychological, relational, and sexual well-being of couples affected by SIAD.

Methods: Seventy-six women diagnosed with SIAD via a clinical interview and their partners completed standardized measures assessing difficulties in emotion regulation, emotional suppression and reappraisal ($n = 58$ couples), depression, anxiety, relationship satisfaction, dyadic conflict, sexual desire, and sexual distress. Analyses were conducted using multilevel modeling guided by the Actor-Partner Interdependence Model.

Results: Women with SIAD who reported greater difficulties regulating negative emotion reported greater depression, anxiety, dyadic conflict, and solitary sexual desire. Partners of women with SIAD who reported greater difficulties regulating negative emotion reported greater depression, anxiety, and sexual distress, but had female partners who reported higher dyadic sexual desire. Women with SIAD's greater use of emotional suppression was associated with their own and their partners' lower relationship satisfaction and with partners' greater dyadic conflict. Women with SIAD who reported greater use of emotional reappraisal reported fewer symptoms of depression and anxiety.

Conclusions: Emotion regulation may be an important target for interventions to help couples cope with SIAD.

Predicting the Development of Hypertension with Perinatal Data: A Study of Nova Scotian Women

Goldade S, Allen VM, Dodds L, Woolcott CG

Background: Hypertension is increasing at disproportionate rates in young adults. Although pregnancy-related conditions are associated with hypertension, they have not been included in risk-prediction tools to date.

Objectives: Our objectives were to develop and assess a model that evaluates pregnancy characteristics and established risk factors identifiable at the time of pregnancy to predict a future diagnosis of hypertension.

Methods: We performed a retrospective cohort study of Nova Scotian women without pre-existing hypertension who had their first deliveries between 1988-2009. Data from the Atlee Perinatal Database were linked to physician billings and hospital discharge data collected through 2014. We considered two physician visits or one hospital discharge to be diagnostic of hypertension. Using Cox regression, we developed and evaluated a prediction model that included factors independently associated with the development of hypertension.

Results: During the study period, 9,453 of 90,312 women developed hypertension. Predictors included in the model were: urban residence, parity, smoking, pre-pregnancy weight, maternal age at delivery, gestational diabetes, gestational hypertension, preeclampsia, breastfeeding, delivery of a small or large for gestational age infant, gestational age at delivery, multiple birth, ischemic heart disease, and type 2 diabetes. Preeclampsia and gestational hypertension were strongly associated with developing hypertension in the first year postpartum (hazard ratios (HR): 39.5 and 49.7, respectively), with HRs falling to 2.2 and 2.3 thereafter. At 20 years post-delivery, the rate of hypertension was 17.1% in the entire cohort, compared with 46.9% in the women our model predicted as being in the highest decile for hypertension risk.

Conclusion: Data collected routinely at the time of pregnancy may be useful in predicting a future diagnosis of hypertension in young women.

Ovarian Cancer Surveillance in Women With *BRCA* Mutations: Assessing the Psychological Impact of Two Care Models

Warias A, Kieser K, Harley I, O'Meara Y

Background: Bilateral salpingo-oophorectomy (BSO) is the primary ovarian cancer risk reduction strategy in women with *BRCA1* and 2 mutations. As premature menopause results, many women defer surgery until they have completed childbearing. Uncertainty surrounds whether this high-risk group should undergo active surveillance during the deferral period, as ovarian cancer screening methods to date have not been shown to improve survival.

Objectives: The purpose of this study is to describe the experience of two cohorts of women with *BRCA* mutations that differ with respect to ovarian cancer surveillance and to quantify the impact of each model of care on anxiety and overall well-being.

Methods: We propose a cross-sectional study of *BRCA1* and 2 carriers who have deferred prophylactic BSO to be carried out at two sites: Halifax, where surveillance is not routinely offered, and Belfast, where quarterly CA-125 levels are performed. Eligible participants will be identified from a genetics database at each site from January 1, 2013 to December 31, 2017. Women, who have been diagnosed with ovarian cancer, another primary non-breast cancer, are non-English speaking or who have refused surveillance will be excluded. Participants will be asked to complete an electronic set of measures, comprising the Generalized Anxiety Disorder-7, Cancer Worry Scale and WHO-5 Well-Being Index, to assess anxiety and overall well-being. Mean scores on each measure will be estimated and compared between groups using a T-test. Stratified analysis will be used to explore if differences between groups are modified by time elapsed from genetic diagnosis, history of breast cancer and abnormal surveillance results.

Anticipated Contribution: This project will contribute further evidence to the discourse surrounding the utility of ovarian cancer surveillance and will aid in identifying existing gaps in the psychosocial care needs of this population.

Perineal Outcomes at Subsequent Pregnancy in Nova Scotian Women with Prior Obstetrical Anal Sphincter Injury

Pollard E, Woolcot, C, Smith A

Introduction: Third and fourth degree perineal lacerations are collectively termed obstetrical anal sphincter injury (OASIS). Women who sustain these injuries are at increased risk of anal and flatal incontinence and recurrence of tear in subsequent delivery. The Healthy Recovery After Childbirth Clinic (HRCC) addresses those women experiencing symptoms and provides counselling regarding mode of delivery at subsequent pregnancy. Recurrence rates in the literature range from 4% to 8%, however there is a paucity of Canadian data assessing local rates and risk factors, posing a barrier to effective counselling.

Objectives: The purpose of this study is to determine the rate and degree of perineal laceration at subsequent vaginal delivery amongst Nova Scotian women with a history of prior OASIS. We will also measure the impact of known risk factors and attendance at the Healthy Recovery after Childbirth Clinic on OASIS recurrence.

Methods: This study will be a retrospective cohort using the Atlee database supplemented with Meditech. The population will include all primiparous women in Nova Scotia who sustained an obstetrical anal sphincter injury following vaginal delivery between 2004 and 2018, and then had a subsequent delivery. Inclusion criteria include term, singleton pregnancies with vertex-lie. The sample size will comprise approximately 2800 women. Variables to be assessed are birth weight >4kg, vacuum, forceps, episiotomy, labour duration <3 hours, and attendance at the HRCC. The final outcome is percent recurrence of third or fourth degree perineal laceration. The impact of risk factors will be assessed with odds ratios using a p-value <0.05.

Anticipated Outcomes: We expect to find a recurrence rate between 4% to 8% and a positive association between birth weight, vacuum, forceps, episiotomy, and short duration of labour with recurrence. We expect to see a negative correlation between attendance at the HRCC and recurrent anal sphincter injury.

Does the need for extended estrogen supplementation help predict pregnancy outcomes in frozen embryo transfers? A retrospective cohort study.

Asmer S, Woolcott C, Kuhle S, Ripley M

Background: Endometrial thickness (EMT) has been identified as an important determinant of outcomes in hormonally supplemented frozen embryo transfers (FETs). An endometrial thickness on ultrasound ≥ 7 mm has been associated with increased pregnancy and live birth rates. However, it remains equivocal whether the duration of endometrial supplementation to achieve this desired thickness will influence the transfer outcome.

Objectives: The purpose of this study is to examine the influence of the duration of estrogen supplementation on the outcome of medicated FETs.

Methods: We propose a retrospective cohort study using the Atlantic Assisted Reproductive Therapies (AART) clinic charts in Halifax, Nova Scotia. Included will be women who underwent their first cycle post-cryopreservation using hormonally supplemented FETs between 2005 and September 2017. We will exclude the following cycles: donor oocyte cycles, fertility preservation prior to cancer therapy, natural cycles, stimulation using GnRH agonists, and cycles in which none of the embryos survived. Patients will be divided into two groups; group A will have received standard duration of estrogen and group B will have received extended duration of estrogen. The clinical pregnancy rates, ongoing pregnancy rates, and live birth rates will be compared between groups using fisher's exact test to provide an odds ratio.

Pain During Pregnancy: Prevalence and Differential Predictors of Genito-Pelvic Pain and Dyspareunia in Women 18 to 24 Weeks

Rossi M, Mooney K, George R, Chorney J, Pukall C, Snelgrove-Clarke E, Binik I, Rosen NO

Background: There is limited understanding of the types of genital and pelvic pain that women experience during pregnancy, and whether there are differences in the predictors of dyspareunia (pain during intercourse) and other types of genito-pelvic pain (GPP). This study aimed to describe the prevalence of GPP and dyspareunia in first time mothers 18-24 weeks pregnant, in addition to examining predictors of these pain types.

Methods: Women completed an online survey assessing dyspareunia, GPP, sexual distress, depressive symptoms, pain catastrophizing, and intensity of non-genito-pelvic pain (non-GPP). A multinomial logistic regression was conducted to assess whether these variables predicted membership to statistically derived pain groups. Linear regressions were performed to test whether the predictors were associated with greater intensity of GPP and dyspareunia.

Results: 7 (1.7%) women reported GPP alone, 244 (60.5%) reported dyspareunia alone, 31 (7.7%) reported both pain types, and 121 (30.1%) reported neither pain. Using the "Neither pain" group as our reference category, we found that greater sexual distress, depressive symptoms, and intensity of non-GPP significantly predicted reporting having both pain types, whereas sexual distress and intensity of non-GPP predicted having dyspareunia only ($\chi^2(6) = 56.28, p < .01$). Greater non-GPP intensity was associated with greater intensity of GPP ($F(4, 64) = 3.23, p < .05$), whereas greater sexual distress and intensity of non-GPP were unique predictors of greater intensity of dyspareunia ($F(4, 242) = 13.94, p < .01$).

Conclusions: This study is the first to assess the prevalence and predictors of dyspareunia and GPP in pregnancy. Findings suggest that a large portion of women experience dyspareunia and exhibit differential predictors compared to those who report only GPP, highlighting the importance of assessing these pain types separately.

A retrospective cohort study of the association between the use of nitrous oxide in labour and delivery and maternal outcomes

MacGregor J, George RB, Allen VM, Panzarasa J, Woolcott CG

Background: The focus of most studies evaluating analgesia in labour and delivery is on the safety of epidural analgesia and opioids. This leaves a sizable gap in the literature regarding safety of inhaled nitrous oxide with respect to maternal outcomes.

Objective: To determine the association between intermittently inhaled 50% nitrous oxide and 50% oxygen during labour and delivery and maternal outcomes.

Methods: This retrospective cohort included deliveries of singleton, term fetuses from 1995-2016 recorded in the Atlee Perinatal Database; planned cesarean deliveries were excluded. Three exposure groups were defined: 1) nitrous oxide only, 2) epidural only, 3) nitrous oxide and epidural combined. Logistic regression was used to estimate odds ratios (OR) with 95% confidence intervals (CI) for the association of nitrous oxide use and maternal outcomes with adjustment for maternal age, weight, neighbourhood-level income, smoking status, pre-existing and/or gestational diabetes or hypertension, pre-eclampsia, opioid use during labour/delivery, and birthweight.

Results: In total, 146,014 women (69,222 primiparous, 76,792 multiparous) met inclusion criteria. In primiparous and multiparous women, the use of nitrous oxide alone was associated with increased odds of postpartum hemorrhage (OR 1.14, CI 1.02-1.28 and OR 1.25, CI 1.14-1.38, respectively), shoulder dystocia (OR 1.25, CI 1.03-1.50 and OR 1.39, CI 1.24-1.55, respectively), and breastfeeding status (OR 1.19, CI 1.11-1.28 and OR 1.19, CI 1.13-1.25, respectively). In primiparous women, nitrous oxide alone was associated with decreased odds of maternal postpartum length of stay >72 hours (OR 0.70, CI 0.65-0.75), caesarean delivery (OR 0.30, CI 0.28-0.34), and prolonged second stage of labour (OR 0.76, CI 0.64-0.89). In multiparous women, the use of nitrous oxide alone was associated with decreased odds of postpartum length of stay >72 hours (OR 0.64, CI 0.59-0.69) and cesarean delivery (OR 0.19, CI 0.16-0.22).

Conclusions: The use of nitrous oxide was associated with reduced odds of some adverse maternal outcomes in this population and increased odds of other outcomes. These mixed results and potential residual confounding by indication demonstrate the need of further research in this area in the form of randomized controlled trials.

Associations between sexual talk and sexual and relationship wellbeing depend on the level of perceived partner responsiveness

Merwin KE, Bergeron S, Rosen NO

Background: Couples in long-term relationships commonly experience declines in their sexual functioning. Prior research on communication during sexual activity found that using more mutualistic talk (i.e., focusing on sharing the experience with one's partner) was associated with higher sexual and relationship satisfaction, whereas more individualistic talk (i.e., focusing on one's own sexual experience) was associated with higher sexual satisfaction only. Researchers have not studied sexual talk in the context of couples' dyadic relationships.

Objective: This cross-sectional study examined the role of sexual talk in the sexual and relationship wellbeing of heterosexual and LGBTQ+ couples in long-term relationships. Discussions about sex provoke feelings of vulnerability, which may be especially salient during sex. We therefore also examined the role of perceived partner responsiveness to sexual talk (interpreting a partner's responses as validating).

Method: Couples ($N = 109$ couples; 52 LGBTQ+) completed standardized online measures assessing relationship and sexual satisfaction, sexual desire, distress, and functioning, sexual talk, and perceived partner responsiveness. Data were analyzed using the Actor Partner Interdependence Model.

Results: When individuals reported more individualistic talk, they reported lower sexual and relationship satisfaction, and their partners reported lower sexual satisfaction and desire, but only when they perceived lower partner responsiveness. Using more mutualistic talk was associated with greater relationship and sexual satisfaction, and sexual functioning when partners were perceived as more responsive, and with one's own and partner's lower sexual desire and partner's lower sexual distress when partners were perceived as less responsive.

Conclusions: Mutualistic talk may enhance intimacy and subsequent wellbeing by focusing on the couple as a whole, especially when partners are responsive. The self-focused nature of individualistic talk may neglect the couple experience, adversely affecting sexual and relationship wellbeing—especially when a partner is unresponsive.

Diagnostic accuracy of LuViva® cervical scan in a population of women with low-grade Pap smear abnormalities

Alyafi M, Bentley J

Background: Cervical cancer remains a global health problem. In 2012, an estimated 528,000 new cervical cancer cases were diagnosed and 266,000 deaths occurred from cervical cancer. In recent years many technologies were developed, primarily using spectroscopy devices, to enhance cervical cancer screening and prevention methods. One of these is the LuViva® scan. The LuViva® scan promises to detect cervical dysplasia and cancer with high sensitivity by measuring the spectroscopic difference in light-tissue interaction.

At our colposcopy unit at the QEII Dickson center, low-grade cytological abnormalities represent an estimated 60% of cervical lesions that require colposcopy. The majority of these will have cervical biopsies taken. To our knowledge, the performance of the LuViva® scan has not been tested in a population with low-grade cytological abnormalities.

Objective: To test the performance of LuViva® scan in a population of women with low-grade cytological abnormalities. If proven reliable in this population, the LuViva® scan can play an instrumental triaging step between cytology testing and colposcopy exam. Many women with low-grade cytological abnormalities could be triaged away from colposcopic examination. This represents a cost-saving opportunity and would possibly decrease unnecessary cervical biopsies.

Methods: Data was collected from a convenience sample of all women referred to colposcopy unit at the QEII Dickson Centre in Halifax, NS, for low-grade cytological abnormalities between Nov. 2014 and March 2016. We analyzed the data using Receiver Operating Characteristic (ROC) curve, sensitivity, specificity, PPV and NPV.

Results: Our sample included 85 women, but only 68 were eligible for analysis. The area under the ROC curve was 0.44 (95% CI: 0.27- 0.61). Sensitivity, specificity, PPV and NPV were 25%, 63%, 8% and 86% respectively.

Conclusion: The LuViva® scan had poor diagnostic accuracy in a population of women with low-grade cytological abnormalities.

Folic Acid Fortification and the Severity of Open Neural Tube Defects in Nova Scotia

MacMullin G, Woolcott C, Fahey J, Filliter C, Van den Hof M

Background: Folic acid fortification of grain products decreases the risk of open neural tube defects. It is unclear is whether folic acid fortification has been associated with a more pronounced reduction in the rate of anencephaly than spina bifida.

Objective: The primary objective of this study was to determine whether folic acid fortification has resulted in a greater relative reduction in the incidence of anencephaly than in spina bifida in Nova Scotia. The secondary objective was to describe the rates by period to confirm ongoing benefit of folic acid fortification on the incidence of open neural tube defects.

Methods: We conducted a retrospective cohort study using the Atlee Perinatal Database and the Fetal Anomalies Database. Live births, stillbirths, and terminations from 1992 to 2014 were included. Subjects were divided by date of conception into pre-fortification (< October 1997), partial fortification (October 1997 to April 2000), and full fortification (> April 2000) periods. Rates of anencephaly and spina bifida were compared with multinomial logistic regression. Multiple logistic regression was performed to control for changes in potentially confounding variables over time.

Results: There were 71549 pregnancies in the pre-fortification period, 23487 in the partial fortification period, and 122904 in the post-fortification period. Among pregnancies that resulted in birth, the incidence per 1000 births in the pre- and the post-fortification period was 1.31 and 0.46, respectively, for spina bifida [percent reduction, 65%; 95% CI, 51-75)] and 0.29 and 0.05 for anencephaly [percent reduction, 83%; 95% CI, 59-93). The percent change was not significantly different between these outcomes ($p=0.14$). Rates of open neural tube defects were 7.4, 6.3, and 2.6 per 1000 births in the pre-, partial-, and post-fortification periods, respectively. With adjustment for smoking, the risk of open neural tube defects in the post-fortification period was 62% lower (95% CI, 56, 67) than in the pre-fortification period.

Conclusion: There was no significant difference between the percentage change in rates of anencephaly and spina bifida. There has been persistent reduction in open neural tube defects since implementation of folic acid fortification.

Interprofessional Education: Obstetrical Simulations

Joice S, Coolen J, Craig C, Slaunwhite J

Introduction: Inter-professional education occurs when two or more professions learn with, from, and about each other to improve the quality of care. The increasing need for inter-professional education has been acknowledged on a national level. Education providers are encouraged to implement curricula that serve to prepare healthcare professionals for inter-professional teamwork.

Objectives: To assess the implementation and evaluation of a new inter-professional undergraduate obstetrics simulation curriculum.

Methods: Three obstetrical emergency simulations were presented to small inter-professional groups comprised of students in medicine (80), nursing (14), respiratory therapy (1), and paramedicine (8) at the IWK Simulation Learning Centre between Sept.19, 2016 and Aug. 8, 2017. Following each scenario, a debrief was led by simulation educators. A paper-based evaluation form was also completed by all participating students immediately after session.

Results: 99% of respondents indicated that the session would benefit their clinical performance. 97.1% found the debriefing exercise helpful. 93% indicated that the session was appropriate to their level of training and there was no difference among students from different programs. 98.1% felt that it provided valuable team skills training, 92.2% indicated that it helped them understand the roles of other health professional in delivering patient-centred care and 87.1% noted that it gave them a better understanding of the unique knowledge or skillset of the other health professionals. All students felt they were in a safe learning environment.

Conclusions: To our knowledge, this is the first Canadian simulation program in obstetrics designed to promote inter-professional education amongst the four learner groups described above. Inter-professional simulation in Ob/Gyn Clerkship is valuable and well received by students from all health professional programs involved. It improves communication, role clarification and teamwork.

A retrospective cohort study of the association between the use of nitrous oxide during labour and delivery and neonatal outcomes

Panzarasa J, George R, Allen V, Mitra S, MacGregor J, Woolcott C

Background: Nitrous oxide (N₂O) for analgesia in labour is perceived to have lower immediate risks and higher maternal satisfaction compared with the use of parenteral opioids, but its association with adverse neonatal outcomes has been infrequently studied.

Objective: To determine the association between the use of inhaled N₂O during labour and delivery and adverse neonatal outcomes.

Methods: After receiving ethics approval, a population-based retrospective cohort study was conducted using the Atlee Perinatal Database from 1995 to 2016. The population included all term, singleton deliveries, excluding those complicated by use of alcohol, illicit drugs or methadone and with planned Cesarean delivery. Three exposure groups were defined 1) N₂O only, 2) epidural only, 3) both N₂O and epidural. Infant outcomes included 5 minute Apgar score, umbilical cord gas and pH levels, need for resuscitation or respiratory depression, prolonged neonatal length of stay, and admission to NICU. Multiple logistic regression was used to estimate odds ratios (OR) with 95% confidence intervals (CI) with adjustment for maternal age, weight, smoking, diabetes, hypertension, pre-eclampsia, opioid use in labour, neighbourhood-level income, and infant birth weight.

Results: Included were 69,222 births to primiparous women and 76,792 births to multiparous women. Among primiparous women, the use of epidural with N₂O reduced the odds of a neonatal 5-minute Apgar score below 7 (OR 0.51, CI 0.35-0.76). Among primiparous women, the use of N₂O alone was associated with a lower odds for neonatal resuscitation (OR 0.74, CI 0.65-0.83); among multiparous women, the use of epidural with N₂O was associated with increased odds of the neonate requiring resuscitation (OR 1.85, CI 1.29- 2.64). Epidural with N₂O was associated with reduced odds of low cord artery pH among primiparous women (OR 0.60, CI 0.48-0.78) but with increased odds among multiparous women (OR 1.54, CI 1.10-2.16). N₂O alone was associated with reduced odds of length of neonatal stay longer than three days among both primiparous and multiparous women (OR 0.69, CI 0.64-0.74 and 0.64, CI 0.59-0.70 respectively).

Conclusion: Associations between N₂O and many neonatal outcomes were heterogeneous between primiparous and multiparous women. More research in the form of randomized control trials is needed to confirm these associations.

Predictive ability of a blastocyst grading scheme on reproductive outcomes in elective fresh embryo transfer with early blastocysts versus mature blastocysts

Roberts L, Murphy S, Ahn D, Bouzayen R

Background: Pregnancy rates with IVF are improved with blastocyst transfer. Selection of blastocysts is based on a morphologic grading scheme evaluating the stage of expansion (SE), inner cell mass (ICM), and trophoctoderm (TE). However, the impact of blastocyst development and morphology on pregnancy and live birth rates remains unclear.

Objectives: The primary objective was to determine if the blastocyst grading system used at AART predicts clinical pregnancy and live birth. The secondary objective was to evaluate the predictive ability of blastocyst morphologic features on reproductive outcomes.

Methods: We conducted a retrospective cohort study using the AART Fertility Clinic Management Software database. Patients who received fresh single embryo transfers on day 5 post-fertilization from January 2005 through June 2014 were included. Live birth and pregnancy rates for each blastocyst stage (early blastocyst, blastocyst, expanded blastocyst) were calculated. Logistic regression was used to model pregnancy and live birth rates as a function of embryo score and to investigate the relationship between morphologic features and pregnancy rate.

Results: 333 fresh single embryo transfers (38 early blastocysts, 71 blastocysts, 224 expanded blastocysts) were evaluated. A significant association between pregnancy rate and increasing embryo score was seen for expanded blastocysts only (OR 1.34; $p = 0.01$). Blastocyst morphologic features were significantly associated with pregnancy rates (SE OR 1.78, TE OR 1.4, ICM OR 1.38) and live birth rates (SE OR 1.81, TE OR 1.39, ICM OR 1.37). When stratified by blastocyst stage, the relationship between morphologic features and pregnancy rate was no longer significant.

Conclusions: The observed pregnancy and live birth rates in this population were highest with expanded blastocyst transfer (58.9%). Blastocyst morphologic features were predictive of pregnancy rates, with the strongest effect for stage of expansion.

The Validation of NMR Spectroscopy for the Analysis of the Follicular Fluid Metabolome

Simourd M, Alamri B, Bouzayen R, Hamilton L, Ripley M, Anini Y

Background: Infertility is defined as the inability to become pregnant after twelve months of unprotected sexual intercourse. In Vitro Fertilization (IVF) can aid couples with conception. IVF works by extracting the female's eggs, fertilizing them with a sperm sample and then implanting the developed embryos back into the woman. The quality of the oocyte (egg) is an important factor that can increase the chances of fertilization. Identification of the best oocytes, would help to limit embryo overproduction and multiple embryo implantation. Follicular fluid (FF) is available during oocyte retrieval and represents an optimal source of non-invasive biochemical predictors of oocyte quality.

Objective: The goal of this project is to validate Nuclear Magnetic Resonance (NMR) spectroscopy as a technique to analyze metabolites present in FF.

Methods: A total of 20 infertile women undergoing IVF treatment at the Atlantic Assisted Reproductive Therapies clinic (AART) were recruited. Ethical approval was obtained from the IWK. Blood and FF were collected and subjected to NMR analysis. The NMR spectra were inputted into an automated NMR metabolite profiling software (Bayesil), which provided a list of the metabolites and their concentrations present in the sample. Bayesil has been validated for serum analysis, but not FF.

Results: From the samples that were collected and analyzed so far, two main results have been obtained. The first is that Bayesil software is able to identify metabolites present in follicular fluid. The second is that 34 metabolites are present in both serum and FF but with varying concentrations. Correlation between metabolite concentrations and IVF outcomes will be analyzed after the collection and analysis of ten more samples.

Conclusion: Current conclusions are that NMR spectroscopy and the Bayesil software can identify metabolites present in FF and their concentrations. Correlation between FF metabolome and IVF outcome might reveal novel biomarkers of IVF success.

Systematic Review of the Feasibility of Mifepristone and Misoprostol for Medical Abortion in Low and Middle Income Countries

Ferguson I, Scott H

Background: Abortion-related complications remain one of the leading causes of maternal morbidity and mortality worldwide. Nearly half of all abortions are unsafe and the vast majority of these occur in developing countries.

Objective: Does mifepristone with misoprostol (mife-miso) improve abortion safety in low and middle income countries?

Methods: A systematic review was performed of studies in the first trimester, use of mife-miso, and low or middle income countries as designated by the WHO. Results for effectiveness, acceptability, and qualitative results were assessed.

Results: The literature search resulted in 181 papers and 98 papers met inclusion criteria. A total of 64 papers reported efficacy data of 43 682 medical abortions. The average efficacy rate with mifepristone and misoprostol was 96%. A sensitivity analysis was performed to assume that all women lost to follow-up failed treatment and the recalculated efficacy rate remained 95%. The average continuing pregnancy rate was 1.7%. A total of 45 papers reported satisfaction data of 29 860 medical abortions. Overall 90% of women were satisfied with their medical abortion, 91% would choose the method again and 95% would recommend it to their friend. In terms of side effects, 89% found them acceptable and 0.7% required presentation to hospital. A total of 17 papers reported qualitative results and the majority of which supported women's positive experiences with medical abortion.

Conclusions: Mifepristone and misoprostol is both highly effective and acceptable to women in low and middle income countries making it a feasible option for reducing maternal morbidity and mortality worldwide.

Is there an association between gestational diabetes mellitus and the future risk of cardiovascular disease?

Carew A, Dodds L, Kuhle S, Kirkland S, Woolcott C

Background: Cardiovascular disease (CVD) is a leading cause of disability and death among women. The development of gestational diabetes mellitus (GDM) during pregnancy may put women at higher risk of CVD in the future. The association between GDM and CVD has been observed in some studies, but many of these studies have not been able to adjust for body mass.

Objective: The primary objective of this study was to quantify the risk of subsequent CVD, including ischaemic heart disease and stroke, associated with GDM.

Methods: This population-based retrospective cohort study included women in Nova Scotia who delivered their first child between 1988 and 2012. Information on GDM and potential confounders (e.g., cigarette smoking, maternal age at first pregnancy, pre-pregnancy weight, parity, pre-existing hypertension, and marital status) were obtained from the Nova Scotia Atlee Perinatal Database, while information on the outcome, CVD, was derived from physician billings and hospital discharge databases. Hazard ratios (HR) with 95% confidence intervals (CI) from Cox regression models were used to estimate the association between GDM and CVD.

Results: A total of 87,828 women were included in this analysis among whom, 4.2% had GDM in at least one pregnancy. Women were followed for a median of 11.5 years and 1.4% developed CVD. Compared with women who did not have GDM, women with GDM had a higher risk of developing CVD, after adjustment for confounders (unadjusted HR= 2.09, 95% CI 1.75-2.49; adjusted HR=1.52, 95% CI 1.24-1.88).

Conclusion: Women with GDM have an elevated risk of developing CVD later in life compared to women without GDM. These findings provide justification to target women who have a history of GDM early with interventions to reduce modifiable CVD risk factors and improve overall cardiovascular health.

Attributions for post partum sexual concerns during the transition to motherhood

Adare KE, Vannier SA, Rosen NO

Background & Objective: Attribution theory describes the way an individual determines the cause of events. The aim of this study was to examine associations between first-time mothers' attributions for postpartum sexual concerns and their sexual and relationship well-being.

Methods: We conducted an online survey of 120 first-time mothers (3-12 months postpartum) recruited from a tertiary care centre. Women described their attributions for common postpartum sexual concerns along 4 dimensions: internal/external (i.e. the problem stems from herself vs. the situation), stable/unstable (i.e. the problem is likely vs. unlikely to recur), global/specific (i.e. the problem extends to all areas of her life vs. is unique to that context), and partner responsibility (i.e. her partner is or is not the cause). Sexual and relationship well-being were evaluated with validated measures. Hierarchical linear regressions assessed whether attributions for postpartum sexual concerns predicted sexual and relationship well-being, after controlling for potential covariates (e.g. depression, relationship status).

Results: The attributions model explained 13.3% of the variance in sexual satisfaction ($p < .001$) and 8.6% of the variance in relationship satisfaction ($p < .05$). Greater stable and partner responsibility attributions were associated with lower sexual satisfaction, and greater partner responsibility attributions were also associated with lower relationship satisfaction. Attributions were not correlated to sexual functioning or sexual distress.

Conclusions: The attributions women make about postpartum sexual concerns, particularly blaming one's partner, were associated with sexual and relationship dissatisfaction. Postpartum sexual and relationship difficulties are common, and these results may help develop treatment strategies that target modifiable, psychosocial risk factors.

Vulvodynia in Newfoundland & Labrador: Seeking Local Solutions for a Pervasive Pain Condition

Miller ME, Webber V, Gustafson DL, Bajzak K

Background: Vulvodynia is a complex pain condition characterized by vulvar pain in the absence of a specific precipitating disorder that can impact up to 1 in 4 women over their lifetime. There are profound impacts on patient well being in terms of quality of life, sexual functioning and mental health. Barriers to treatment include delay to diagnosis and access to appropriate services. Women in Newfoundland & Labrador (NL) may experience further delays due to the fact that our population is spread over a large geographic area with specialized health care services focused in urban centers.

Objectives: Given the known physical and psychological burden on women with vulvodynia, we seek to identify healthcare challenges faced by women with the condition in NL to effectively direct healthcare resources. We additionally seek to explore potential solutions to these challenges that women in NL consider acceptable.

Methods: As this project is hypothesis generating, we are employing a qualitative approach. Through structured group interviews, women with vulvodynia are invited to share the barriers they faced in achieving a diagnosis and receiving subsequent treatment, the role of their geographic location has on these barriers, as well as the impact the condition has on their wellbeing. Women are also asked to identify or imagine interventions and/or resources that they feel would be of benefit to treating or coping with the condition.

Preliminary Results: To date, women have identified several common experiences including lack of primary care and specialist awareness of the condition and being faced with disbelief and misunderstanding of their condition from both healthcare providers and their social supports. Women in our groups suggested several interventions that they feel could be of benefit, some of which are the basis for future research at our center.

Characteristics of Motivation to Use Laparoscopic Skills Training in the Obstetrics and Gynaecology Resident Population: A Pilot Study

Stairs J, Bergey B, Scott S

Background: Competency based medical education (CBME) will require novel approaches to surgical education. Simulation has become an essential tool in surgical residencies to foster skill development prior to patient encounters and facilitate mastery. However, research suggests variable voluntary use of these resources, and little is known about the motivational factors that influence their utilization by residents.

Objectives: Our primary objective is to characterize factors that motivate residents to seek laparoscopic simulation experience outside of the formal curriculum. The purpose of this pilot study was to evaluate a questionnaire designed to assess this.

Methods: We developed a questionnaire grounded in Expectancy Value Theory, an established psychological theory of educational motivation, by adapting existing, validated measures of motivation to this context. We conducted a prospective cohort study to pilot the questionnaire. Fifteen Obstetrics and Gynecology residents at Dalhousie University completed the questionnaire (65% response rate) and four participated in a focus group. Cronbach's alpha were calculated to assess the internal reliability of scales. This was combined with focus group feedback to highlight necessary questionnaire modifications.

Results: Most scales demonstrated strong internal reliability (Cronbach's alpha 0.87-0.93). Information from reliability analyses and focus groups converged to indicate ways to improve scales. Further, focus groups revealed a possible moderating variable: whether residents believed that laparoscopic simulation use led to skill development.

Conclusions: The questionnaire demonstrated internal reliability in assessing motivation, and the focus group identified an important additional variable to be studied. We plan to administer this novel questionnaire to residents across Canada. We hope that characterizing the motivation to use simulation resources could inform curricula development and optimize utilization.

How valuable is long-bone biometry for assessing risk of fetal Down syndrome?

Pearsall J, Filliter J, Van den Hof M

Background: 'Soft markers' are ultrasound findings that may be used to aid in the assessment of risk for fetal Down syndrome. Two such soft markers are shortened femur and humerus length. The most commonly used cut off points rely on a ratio of observed:expected length as determined by the fetal biparietal diameter (BPD). Although femur length is standard biometry on the 16- to 20-week ultrasound, the assessment for relative shortness is not part of the screening evaluation as per the current SOGC guidelines.

Objectives: The objective of our study is to evaluate long-bone biometry, done between 18-24 weeks gestational age, for assessing the risk of fetal Down syndrome

Methods: This is a case control study using data from the ViewPoint database at the Fetal Assessment and Treatment Centre (FATC), IWK Health Centre. The study population are all fetuses between 18-24 weeks who were referred to FATC for a fetal ultrasound between January 2005 and May 2014 and had fetal measurements performed as part of the examination. A total of 97 cases of Down syndrome and 17620 normal controls were included.

Results: The odds of a fetus with a short femur having fetal down syndrome is 6.33 (95% CI 4.11-9.74) times greater than a fetus without a short femur. The positive likelihood ratio was 4.6 and negative likelihood ratio of 0.731. The smallest value of femur length observed to expected ratio to predict all true negatives as negative was 1.09. The odds of a fetus with a short humerus having fetal down syndrome is 10.1 (6.75-15.10) times greater than a fetus without a short humerus. Positive likelihood ratio of 5.9 and negative likelihood ratio of 0.582. The smallest value of humerus length observed to expected ratio to predict all true negatives as negative was 1.06. Using a cut off point of 0.21, lower values of FL/AC were associated with fetal down syndrome with an odds ratio of 2.93 (1.93-4.46). Using a cut off point of 62.3, lower values of OFD were associated with fetal down syndrome with an odds ratio of 2.85 (1.90-4.26). Using a cut off point of 73.7, larger values of CI were associated with fetal down syndrome with an odds ratio of 2.97 (1.20-7.37).

Conclusions: There is a statistically significant association between short long bone length and fetal down syndrome. The association between a short humerus to fetal down syndrome is greater than the association between a short femur and fetal down syndrome. The association appears to be increased with advancing gestational age although our results did not reach statistical significance. Other fetal biometry parameters (FL/AC, OFD, CI) showed a statistically significant association with fetal down syndrome although none performed better than FL or HL in terms of accuracy. In addition, using FL and HL together did not improve the test accuracy compared to using HL alone.