



Department of
Obstetrics and Gynaecology

30th Annual Research Day

Friday, April 29, 2016

Parker Reception Room
IWK Health Centre

Program Sponsorship

We gratefully acknowledge financial support for this program from:

Research Services, IWK Health Centre

**Atlantic Society of
Obstetricians and Gynecologists**

Medical, Dental and Scientific Staff at the IWK Health Centre

Canadian Foundation for Women's Health

and

Allergan Canada

Thank you to our Judges:

**Dr. Sony Singh,
E. Jolly Research Chair in Gynecologic Surgery
University of Ottawa**

**Jocelyn Downie
Schulich School of Law (*add a space*)
Dalhousie University**

**Dr. Gillian Graves
Obstetrics and Gynaecology
and
Reproductive Endocrinology and Infertility
Dalhousie University**

Research Day
Department of Obstetrics and Gynaecology
Dalhousie University

April 29, 2016

- 0830 Reception with coffee/muffins/fruit
- 0845 Welcome – Dr. B.A. Armson
Professor and Head,
Department of Obstetrics and Gynaecology
Dalhousie University
- Moderator, Dr. Tony Armson**
- 0900 **INVITED SPEAKER**
Jocelyn Downie, Dalhousie University
“The Olivieri Debacle: Lessons for Physicians in Canada”
- 0945 Dr. Lavanya Ravichandran
“*Predictors and Prognosis of Neonatal Hypoxic Ischemic Encephalopathy*”
- 1000 Kyungsoo Shin, PhD Candidate
“*Characterization of apela and apelin: hormones important for heart development and function*”
- 1015 Dr. Jocelyn Stairs
“*Characteristics of Motivation to Use Laparoscopic Skills Training in the Obstetrics and Gynaecology Resident Population: A Pilot Study*”
- 1030 Martina DeSousa, MED3
“*Gestational Diabetes And Future Hypertension Risk In Women*”
- 1045 Dr. Navi Bal
“*Overcoming Barriers and Facilitators in Accessing Reproductive Care in Street-Involved Women – Their Perspective*”
- 1100 NUTRITION BREAK**
- Moderator: Dr. Robert Grimshaw**
- 1115 Dr. Katie Matheson
“*Meteorologic and clinical predictors of spontaneous rupture of membranes and spontaneous onset of labour*”
- 1130 Dr. Kaitlyn Adare
“*Attributions as predictors of post-partum sexual changes*”
- 1145 Emily Whelan, MED3
“*Gestational weight gain and interpregnancy weight change in adolescent mothers in Nova Scotia*”

- 1200 Dr. Ian Ferguson
“Systematic Review of the Feasibility of Mifepristone and Misoprostol for Medical Abortion in Low and Middle Income Countries.”
- 1215 Kimberley Nix, MED2
“Changes in breastfeeding initiation at hospital discharge between first and second births in Nova Scotia: Rates and predictors”
- 1230 Dr. Krystal van den Heuvel
“Use of microarray to reveal a maternal cryptic translocation after two abnormal pregnancy outcomes with cryptic unbalanced translocations”
- 1245 **LUNCH (Classroom B&C)**

Moderator: Dr. Marianne Pierce
- 1330 **INVITED SPEAKER:**
Dr. Sony Singh, University of Ottawa
Technicity in Gynecology: A Win for Patients, Providers and the Health Care System
- 1430 Dr. Sarah Wozney, MUN
“Post-Partum Follow-up: Improving Screening for Gestational Diabetes”
- 1445 Liz Jeffers, MSc Candidate
“Predicting Macrosomia among Infants Born to Non-diabetic Mothers: A Population-based Cohort Study of Nova Scotia Births”
- 1500 Dr. Seirin Goldade
“Complications In Pregnancies Following Excisional Procedures For Cervical Dysplasia”
- 1515 Dr. Angus Murray
“Cervical Ripening in Nulliparous Women Prior to Induction of Labour: A Clinical Audit of Indications and Outcomes Using A Prostaglandin E2 Vaginal Pessary vs Foley Catheter”
- 1530 Dr. Megan O’Neill
“Abdominal surgery in pregnancy and the use of preoperative tocolytics in rates of preterm delivery, benefit or not?”
- 1545 Dr. Paul Kahlke
“Causes and trends in death of previously-healthy infants in Nova Scotia 1988-2010”
- 1615 **Awards Presentation**
Refreshments to be served in the Parker Reception Room

ABSTRACTS

Predictors and Prognosis of Neonatal Hypoxic Encephalopathy

L Ravichandran, VM Allen, S Kuhle, AC Allen, M Vincer, TF Baskett

Background: Neonatal hypoxic-ischemic encephalopathy (HIE), with an incidence of 1-6 per 1000 live births, is a rare perinatal outcome with severe consequences such as neonatal mortality and neurodevelopmental disabilities. Despite established neonatal interventions to reduce the severity of HIE, such as therapeutic hypothermia, it remains important to optimize obstetrical management through the characterization of hypoxic-ischemic events in labour and delivery and the identification of potentially modifiable risk factors.

Objectives: To describe the:

1. temporal trends in rates of HIE
2. maternal demographic, antepartum, and intrapartum characteristics associated with HIE
3. intrapartum fetal heart rate (FHR) tracings associated with HIE
4. neurodevelopmental outcomes of HIE newborns qualifying for therapeutic hypothermia
5. intrapartum factors independently associated with HIE

Methods: We will derive data from the Nova Scotia Atlee Perinatal Database (NSAPD), the Perinatal Follow-Up Program Database (PFUPD) and IWK Health Centre maternal and infant chart review. We will include all pregnancies from 1988-2015 meeting the inclusion criteria of a live born neonate ≥ 35 weeks gestational age, and exclude those with any major fetal anomaly or those born by planned, pre-labour C-section. Application has been made to the Joint Data Access Committee and the IWK Research Ethics Board. Data on their maternal, antepartum, intrapartum, and infant characteristics will be requested. A chart review of HIE neonates born from 2006-2015 will be done to extract data on FHR tracings. Neurodevelopmental outcomes will be measured by the Bayley-III Scale in the subgroup followed by the PFUPD from 2006-2015. Descriptive and univariate analyses will be conducted. Lastly, multivariate predictive logistic regression analysis will be done to identify independent intrapartum risk factors of HIE using a case-control design: four control pregnancies to each case, stratified by month/year of birth.

Characterization of apela and apelin: hormones important for heart development and function

K Shin, M Sarker, S K. Huang, J K. Rainey and YAnini

Background: Apela (also called ELABELA/Toddler) and apelin are hormones that bind to the same receptor to regulate variety of physiological systems, particularly the cardiovascular system. The latter hormone, apela, has been implicated to be fundamental in heart development during embryogenesis. Interestingly, its levels are largely replaced by apelin after embryogenesis. It is proposed that a hormone must interact with the cell membrane prior to its cell surface receptor. Membrane-hormone association is theorized to enhance the rate of hormone-receptor interaction by increasing local concentration of the hormone; reducing diffusion from a 3D to a 2D process; and, inducing conformational change for receptor recognition. We hypothesized that apelin and apela may differ in their affinity for membrane interaction as a method of regulating its activity.

Methods: Apelin and apela hormones were produced recombinantly in *E. coli*. CD spectropolarimetry and NMR spectroscopy were used to identify differences in their preference for lipid interaction

Results and discussion: Both methods showed that apelin and apela are mostly non-structured. However, significant changes can be noted in CD and NMR spectra in the presence of anionic membrane environments, but not in zwitterionic environments. Such difference suggests preferential membrane interaction. Conversely, apela presented significant changes in both anionic and zwitterionic conditions.

Conclusion:

Since membrane composition can vary between cell types, changes in membrane association and the resulting conformation may modulate apelin or apela activities. Demonstration of membrane-catalyzed differences in any

protein-protein interaction would represent an alternate, highly physiologically and therapeutically relevant means of cellular regulation.

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

There has been a shift towards a minimally invasive approach for many gynecologic procedures, as it is associated with improved patient outcomes. This requires a unique surgical skill set known as laparoscopic skills, which residents must master during their residency training. Laparoscopic simulation resources are available to residents to facilitate acquisition of these skills, but voluntary use of these resources has been shown to be variable.

Objective

The purpose of this study is to determine what factors influence motivation in Obstetrics and Gynaecology residents to use laparoscopic simulation resources to facilitate the acquisition of laparoscopic skills.

Methods

We propose a prospective cohort study that will pilot a questionnaire to characterize motivation that is grounded in Expectancy Value Theory, an established psychological theory of educational motivation, that has been adapted to this context. It will be administered to Dalhousie University Obstetrics and Gynaecology Residents. All residents completing clinical rotations will be eligible to participate. Residents will be contacted regarding their participation in the study through the department list-serv. Attendance data from the Surgical Skills Centre at the Queen Elizabeth II Health Sciences Centre will be collected to track laparoscopic simulation use during the 2016-2017 academic year. Questionnaire data will be compared to prospective attendance data using the Mann Whitney U test to determine whether there is a difference between respondents' perceived importance of components of motivation as outlined by Expectancy Value Theory and laparoscopic simulation use in order to characterize motivation in this population.

Gestational Diabetes And Future Hypertension Risk In Women

M. De Sousa, C Woolcott, L Dodds

Introduction: Gestational diabetes mellitus (GDM) is glucose intolerance of varying severity first detected during pregnancy. It has been suggested that GDM may increase the risk of chronic health conditions later in life, such as hypertension.

Objective: To determine if GDM is associated with increased risk of future hypertension.

Methods: This study included women in Nova Scotia who gave birth between 1980 and 2012 and were in both the Nova Scotia Atlee Perinatal Database (NSAPD) and participated in the Atlantic Partnership for Tomorrow's Health (A.PATH) study. The NSAPD contains information for all deliveries in Nova Scotia hospitals since 1988 (Halifax since 1980) and includes many clinical and socio-demographic variables. Women recruited into A.PATH between 2009-2012 were included. A.PATH data included age and socio-demographic information, weight, height, self-report of a physician diagnosis of hypertension and type II diabetes and the age of diagnosis, measured blood pressure, and current medications. Women with pre-existing hypertension or diabetes at the time of pregnancy, or follow-up time of less than 1 year were excluded. Hypertension was based on self-report of a diagnosis or current use of an antihypertensive medication. Women who developed GDM during either their first pregnancy or any pregnancy were compared with women who did not develop GDM on the outcome of hypertension. Cox-proportional hazard models were used to estimate relative risks (RR) comparing the risk of hypertension in women with, and without, a history of GDM.

Results: There were 2991 participants who met the inclusion criteria and did not have missing data on the outcome measure. After adjusting for confounding variables, women who developed GDM during any pregnancy had a 62% increased risk of developing hypertension later in life (RR=1.62, 95% confidence interval 1.02-2.59) compared to women who did not have GDM in any pregnancy.

Conclusion: A diagnosis of GDM in a pregnancy may signal a population of women who are at increased risk of developing hypertension. These women should be monitored more closely by their physicians for the onset of hypertension and could benefit from lifestyle modification to moderate their risk.

Overcoming Barriers and Facilitators in Accessing Reproductive Care in Street-Involved Women – Their Perspective

Navi Bal, Anne Houston, Annette Rose, Heather Scott

Background: The reasons why women who have a low socioeconomic status do not obtain adequate reproductive health care are complex. In Canada, where health care is universally covered, inequities still exist that prevent access to reproductive health. The purpose of this study is to assess the barriers and facilitators that exist for street-involved women in inner-city Halifax in accessing care regarding their reproductive health. With this information, health care practitioners can find ways in assisting to overcome these barriers.

Methods: The proposed study will be a descriptive explorative qualitative research. With the association of one of the community outreach programs, semi-structured interviews will be conducted with women who are living on the street. Also, key informant interviews will be conducted to discuss what services are already available and what they see are the gaps.

Analysis: The interviews will be taped and transcribed verbatim. NVivo version will be used to assist with data management. Throughout the study, sequential analyzing will occur with each subgroup. This will allow the development of possible conclusions based on information gathered and the development of hypotheses for subsequent investigation. At the end of the study, data will be analyzed collectively. The data analysis will occur using thematic analysis.

Meteorologic and clinical predictors of spontaneous rupture of membranes and spontaneous onset of labour

Katie Matheson, Victoria M. Allen, Miriam Ang, John Fahey, Jo-Ann K. Brock, Alexander C. Allen

Background: Meteorologic factors have been associated with various medical conditions such as rupture of abdominal aortic aneurism, subarachnoid hemorrhage, and stroke. Studies in obstetrics have examined the relationship between meteorologic factors and hypertensive disorders of pregnancy, birth weight, labour onset and rupture of membranes.

Objectives: To estimate the association between meteorologic factors with the onset of spontaneous labour and rupture of membranes.

Methods: This was a population-based cohort linked database study using data from the Nova Scotia Atlee Perinatal Database (1988-2014) as well as meteorologic data from the National Climate Data and Information Archive of Environment Canada. Meteorologic factors such as barometric pressure, temperature, humidity and wind speed were compared with clinical predictors such as age, pre-pregnancy weight, parity, smoking, antepartum bleeding, maternal medical complications and delivery time of day. Multivariate analysis used Cox proportional hazard regression to estimate the predictive value of meteorologic and clinical variables. Data access was approved by the RCP and REB approval was obtained. Statistical analyses were performed using SAS 9.4 and OpenEpi 3.03a.

Results: From a total of 247,786 patients, 65,491 (26.4%) have documented spontaneous rupture of membranes (SRM). Spontaneous onset of labour occurred in 65.7% of births. The top variables identified by forward stepwise sequences were then included in a multivariate regression model with maternal clinical characteristics. Factors predicting timing of ruptured membranes were time of day, maternal age, prepregnancy weight, nulliparity, and antepartum bleeding (APB). Top weather variables included temperature difference at 14h, humidity difference at 15h and wind speed lag at 41h. Time to birth after spontaneous labour was affected by the clinical variables of delivery time of day, maternal age, prepregnancy weight, nulliparity, APB, and smoking, and by the weather variables of temperature differences at 2h and humidity differences at 13h. Maternal medical complications had less effect on study outcomes than the top three weather variables.

Conclusion: Meteorologic factors such as temperature and humidity difference appear to have a statistically significant effect on time to delivery, however the magnitude of this effect is likely not of clinical significance.

Attributions as predictors of post-partum sexual changes

Kaitlyn Adare, Sarah Vannier, Natalie Rosen

Background: In the first year postpartum the majority of women report some degree of sexual dysfunction. There is a wealth of evidence describing biomedical predictors of postpartum sexual function, such as parity, breastfeeding and age, but less addressing the psychological predictors of sexual well-being. One potentially important psychological predictor is the causal attributions women make for changes to their sexuality postpartum. Attribution theory is a psychological model referring to the way an individual determines the cause of events. Attribution theory suggests that individuals explain causality along three dimensions. First, internal/external: the individual feels the problem stems from herself (internal) or the situation (external). Second, global/specific: the problem extends to all areas of one's life (global) or relates only to the given situation (specific). Third, stable/unstable: the cause of the problem will be present in the future (stable) or is unlikely to recur (unstable).

Objective: The aim of this study is to examine associations between sexual attributions and sexual and relationship well-being.

Methods: This study is a cross-sectional online survey of women in the postpartum period (with an infant three months to one-year old). Participants will complete a battery of questionnaires assessing demographic information, characteristics of labour and delivery, postpartum depression, infant health, breastfeeding, sexual functioning, relationship satisfaction, sexual satisfaction, sexual distress and sexual attributions. This study is embedded within a larger study (n=300), however a sample size of 92 will provide statistical power for this analysis. Our hypothesis is that postpartum women with higher internal, global or stable attributions for declines in sexual functioning will report significantly lower sexual functioning, relationship satisfaction, and sexual satisfaction, and higher sexual distress.

Gestational weight gain and interpregnancy weight change in adolescent mothers in Nova Scotia

Whelan E, Woolcott C, Ashley-Martin J, MacSween K, Armson BA

Background: Gestational weight gain (GWG) recommendations have been developed to prevent negative maternal and neonatal consequences associated with inappropriate weight gain including maternal interpregnancy weight change (IPWC). Due to lack of available data, the Institute of Medicine does not have specific GWG recommendations for adolescent women.

Objectives: To examine the association between GWG and IPWC in adolescent mothers (<20 years), and to determine if this association differed from adult women (20-35 years).

Methods: This retrospective cohort study included women with consecutive, singleton pregnancies recorded in the Nova Scotia Atlee Perinatal Database with the subsequent pregnancy occurring between 2003 and 2014. GWG in the first pregnancy was categorized as below, within, or above the current recommendations. IPWC was defined as the difference between the pre-pregnancy weights in the two pregnancies. Multiple linear regression was used to estimate mean differences in IPWC with 95% confidence intervals (CI) between the three GWG categories. Estimates were adjusted for parity, body mass index in the first pregnancy, and time between pregnancies.

Results: The study population comprised 3,055 adolescent and 17,090 adult women.

Relative to adolescents with GWG within the recommendations, adolescents who gained below had a 2.7 kg (95% CI: 1.4, 3.9) lower IPWC while those who gained above had a 4.2 kg (95% CI: 3.3, 5.1) higher IPWC. The association between GWG and IPWC significantly differed between adolescents and adults ($p < 0.0001$); relative to those with GWG within the recommendations, adults who gained below

had a 1.3 kg (95% CI: 0.9, 1.7) lower IPWC and those who gained above had a 2.9 kg (95% CI: 2.6, 3.2) higher IPWC.

Conclusions: Mean IPWC differed across GWG categories and the differences were greater in adolescent than adult women. This difference should be considered when assessing if specific GWG recommendations are needed for adolescent women.

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

Ian Ferguson, Heather Scott

Background: Unsafe abortion continues to remain a significant cause of maternal morbidity and mortality worldwide. There are multiple barriers in access to safe abortion services and many of these center on a predominantly surgical-based approach to pregnancy termination. Medical abortion with mifepristone and misoprostol has been shown to be highly effective, safe, and acceptable to women in the developed world and is becoming the new gold standard. Marginalized countries around the globe are beginning to implement policies allowing access to these medications and are reporting the results of their experiences.

Objective: It is the purpose of this research project to assess the feasibility of mifepristone and misoprostol for medical abortion in low and middle-income countries.

Methods: A systematic review of the literature including the PubMed, Embase, CINAHL, and Cochrane databases will be done with assistance from a medical librarian. The initial list will be screened by title and abstract for relevance and reviewed by an adjudicator. Main results of efficacy, safety, acceptability, and any potentially relevant information including study design and qualitative results will also be recorded. When possible a meta-analysis will be performed, otherwise the results will be summarized and synthesized.

Changes in breastfeeding initiation at hospital discharge between first and second births in Nova Scotia: Rates and predictors

Kimberley Nix, Linda Dodds

Background: Breastfeeding is the ideal method of infant feeding. Many factors have been associated with breastfeeding initiation, however, little research has been conducted to investigate changes in breastfeeding from one pregnancy to another.

Objectives: To describe the rates of breastfeeding initiation at hospital discharge between first (B1) and second (B2) births and factors associated with changes in initiation between B1 and B2.

Methods: A longitudinal, population-based cohort study with data from the Nova Scotia Atlee Perinatal Database was conducted. Women with information from B1 and B2 between 2007-2013, with singleton births, birth weight ≥ 500 g, and surviving ≥ 28 days were included. Separate analyses were conducted among women who breastfed in B1 and among women who did not breastfeed in B1 and associations between factors and breastfeeding in B2 were examined. Factors were modelled according to exposures at both B1 and B2.

Results: Of the 9643 (82.6%) mothers who breastfed in B1, 1153 (12%) did not initiate breastfeeding in B2. Of B1 non-initiators, 526 (26.3%) initiated breastfeeding in B2. Among B1 initiators, remaining unmarried from B1 to B2 (OR 2.56, CI 1.66, 3.94) and not supplementing with folic acid for B1 or B2 (OR 2.31, CI 1.48-3.62) were strongly associated B2 non-initiation. Among B1 non-initiators, infant hyperbilirubinemia in B1 and B2 was strongly associated with B2 initiation (OR 3.98, CI 2.44, 6.18). There were no common factors between these subsets of women.

Conclusions: Factors affecting breastfeeding in B2 varied depending on B1 initiation. Although not necessarily causal, identifying factors associated with change in breastfeeding status from B1 to B2 may help to inform interventions for optimal breastfeeding initiation in B2.

Post-Partum Follow-up: Improving Screening for Gestational Diabetics

Wozney S, Holden C, Mugford G, Yilmaz Y, Kennedy R

Background: All women diagnosed with Gestational Diabetes Mellitus (GDM) during pregnancy should have postpartum screening to determine if they have developed or are at risk of developing Type 2 Diabetes Mellitus (T2DM). The recommended screening test is an oral glucose tolerance test (OGTT) to be completed between six weeks and six months postpartum.

Objective: The purpose of this study is to improve the proportion of women diagnosed with GDM receiving an OGTT in the postpartum period.

Methods: A retrospective cohort study of all patients with GDM who delivered from July 1, 2014 to June 30, 2015 was conducted and compared to data previously collected by Dr. Chris Holden for patients with GDM who delivered between 2002 and 2011. All the women in the second cohort received requisitions for OGTT prior to discharge and information sheets regarding the importance of screening in the postpartum period. The primary outcome sought was the number of women receiving postpartum diabetic testing in both cohorts. The Perinatal Database was used to identify these women.

Results: 711 women were diagnosed with GDM from 2002 to 2011. Of these, 177 went on to have postpartum screening with an OGTT (24.9%). There were 139 women identified as having GDM in the second cohort from July 1, 2014 to June 30, 2015. 71 of these women went on to have an OGTT between six weeks and six months postpartum (51.1%). The difference in the number of women receiving screening between cohorts was 26% (95% confidence intervals 17-35). Women in the first cohort were less likely to receive testing in the postpartum period compared to those women in the second cohort who received requisitions and information sheets prior to discharge (odds ratio= 0.317, 95% confidence interval 0.147-0.682). Using the Z-test this difference was found to be statistically significant (p-value <0.0001).

Conclusion: Providing women diagnosed with GDM information regarding the need for postpartum screening and a requisition for the required testing improves the numbers that go on to complete an OGTT.

Predicting Macrosomia among Infants Born to Non-diabetic Mothers: A Population-based Cohort Study of Nova Scotia Births.

Elizabeth Jeffers, Linda Dodds, Victoria Allen, Christy Woolcott

Introduction: Macrosomia is a term used to describe a neonate born with an excessively high birth weight. Macrosomia can lead to complications during delivery and can also affect the neonate, causing trauma as well as long-term conditions. Diabetes is an established risk factor for macrosomia but a substantial proportion of cases occur in the non-diabetic population.

Objectives: To determine the risk factors associated with macrosomia and develop a risk prediction model based on factors known at mid-pregnancy among a cohort of non-diabetic women.

Methods: A retrospective cohort was conducted using the Nova Scotia Atlee Perinatal Database, and included all singleton, live births, among Nova Scotia residents who received their prenatal diabetes screening at the IWK Centre between 1998 and 2005. Women with gestational diabetes or pre-existing diabetes were excluded. IWK lab data from glucose challenge tests were linked to the Atlee data. Logistic regression analysis was used to identify risk factors significantly associated with having a macrosomic infant (defined as ≥ 4000 g). Risk scoring systems were developed for nulliparous and multiparous women separately and evaluated by the c-statistic.

Results: Of the 23,857 mother-infant pairs included in the study, 17% of the infants were macrosomic. In nulliparous women, the largest number of points was assigned for women with a pre-pregnancy weight ≥ 90 kg, which had a corresponding OR of 4.8 (95% CI 3.9-6.0). Other factors contributing points were increasing rate of weight gain and glucose challenge test results, male fetal sex, married or common-law and absence of a psychiatric illness, smoking during pregnancy and asthma. The resulting risk score corresponded to a range of estimated risk of 0.18% to 47%, depending on the factors present. The c-statistic for the model was 0.70.

Conclusions: A clinically relevant model to predict macrosomia in mid-pregnancy was developed. The model provides a reasonable estimate of the risk of macrosomia by entering a particular woman's mid-pregnancy risk factor profile.

Complications In Pregnancies Following Excisional Procedures For Cervical Dysplasia

Seirin Goldade, Christy Woolcott, Jill Hayden, James Bentley

Introduction: While previous meta-analyses have reported that cervical excisional procedures result in an increased risk of preterm birth, individual studies continue to be publish inconsistent results.

Objective: Our primary objective was to estimate the association between a history of excisional procedures for cervical dysplasia and subsequent preterm birth or miscarriage.

Methods: A systematic review of the literature identified citations published through to April 2015. Studies were included if women with a history of excision of the transformation zone prior to pregnancy were compared to an untreated group or a group receiving treatment with a different treatment-to-pregnancy interval. An estimate of the effect of excisional procedures was produced by meta-analysis with random effects modeling in Stata.

Results: Of the 5316 studies identified by our literature search, 95 were included in our meta-analysis. Excisional procedures were associated with preterm birth (pooled OR 1.80, 95% CI 1.58-2.05). There was substantial heterogeneity (clinical and statistical) between studies. The strength of the association between excisional procedures and preterm birth was attenuated when the untreated group was limited to women with a history of dysplasia (pooled OR 1.42, 1.27-1.58). Women with a history of dysplasia had a significantly higher risk of preterm birth than women with no history of dysplasia, even in the absence of excisional treatments (OR 1.22, 1.10-1.36). Women with an excision-to-pregnancy interval less than 12 months had an increased risk of miscarriage compared to women with a longer interval (OR 3.09, CI 1.95-4.88), but not of preterm birth. Excisional procedures were associated with both early and late miscarriage in studies that distinguished between the two, but were not associated with miscarriage overall when all studies reporting that outcome were pooled.

Conclusion: An excisional procedure of the cervical transformation zone was associated with increased risk of preterm birth in a subsequent pregnancy, however pooled estimates of the strength of this association were limited by significant inter-study heterogeneity. A treatment-to-pregnancy interval less than 12 months is associated with an increased risk of early and late miscarriages, but not of preterm birth

Cervical Ripening in Nulliparous Women Prior to Induction of Labour: A Clinical Audit of Indications and Outcomes Using A Prostaglandin E2 Vaginal Pessary vs Foley Catheter.

Angus Murray, Justin White, David Rittenberg, and Jillian Coolen

Induction of labour (IOL) has several indications including maternal disease, fetal compromise, or the pregnancy is postdates. Prior to IOL, a patient is assessed for adequate cervical change using the BISHOP score. This is a validated clinical tool that considers cervical dilation, effacement, position, consistency, and station to determine whether IOL is likely to succeed. The cervix is considered unfavourable if the BISHOP score is 6 or less, and cervical ripening is recommended.

Prior to June 1st 2015, Prostin gel was utilized for outpatients, while the Cervidil vaginal pessary was restricted to inpatients. Mechanical dilation rarely was employed for cervical ripening in nulliparous women. After a careful review of literature, a significant amendment to the IWK policy was introduced such that both the Cervidil pessary and mechanical cervical ripening would be performed on both an outpatient and inpatient basis.

Additionally, a medical grade freezer was purchased on August 5th to store the Cervidil medication. This is important because the efficacy of our Cervidil medication was significantly lower than would be expected from the literature. It was postulated that the activity of the Cervidil medication was reduced because of suboptimal storage conditions.

A retrospective chart review was performed for 320 nulliparous patients that received cervical ripening at the IWK. The results of this clinical audit will address the following questions:

- Has the new storage freezer improved the effectiveness of Cervidil?

- Did the indications for using Cervidil change significantly with implementation of the new IWK cervical ripening policy?
- How quickly was mechanical ripening with a Foley catheter adopted by physicians with new cervical ripening policy.
- Is cervical ripening more effective when performed with Cervidil or a Foley catheter?
Is there a lower Cesarean section when cervical ripening is performed with Cervidil or a Foley catheter?

Abdominal surgery in pregnancy and the use of preoperative tocolytics in rates of preterm delivery, benefit or not?

O'Neill M, Armson A

Background: Non-obstetrical abdominal surgery in pregnancy has been associated with preterm delivery. The benefits of early surgical intervention with acute abdomen in pregnancy are well established. Literature on the optimal management of these women and the factors related to preterm delivery are conflicting.

Objective: The purpose of this study is to identify the determinants of preterm delivery, specifically the use of prophylactic tocolytics in women undergoing non-obstetrical abdominal surgery in pregnancy.

Methods: We propose a retrospective cohort study using the Nova Scotia Atlee Perinatal Database (NSAPD). Data will be obtained from all pregnant women who delivered at the IWK Health Center and underwent abdominal surgery during their pregnancy. Operations for obstetrical indications will be excluded. The primary outcome of interest will be preterm delivery. Chart reviews will be conducted to obtain data on patient characteristics, surgical indications, operative techniques, and preoperative management including the use of prophylactic tocolytics. Descriptive analyses will be performed to address the determinants of preterm delivery in this population. Rates of preterm delivery in pregnancy women who underwent abdominal surgery and received prophylactic tocolytics versus not will be compared using a Chi-Squared test.

Use of microarray to reveal a maternal cryptic translocation after two abnormal pregnancy outcomes with cryptic unbalanced translocations.

van den Heuvel K, Harrison KJ, Riddell DC, Penney L, Smith A, Brock JK

Background: Microarray analysis is used to assess for genetic imbalances at a significantly higher resolution than can be obtained by standard karyotype. We describe a case in which an abnormal microarray result in a newborn was instrumental in detecting a maternal cryptic balanced reciprocal translocation.

Case: A woman was assessed for a fetal sacrococcygeal teratoma, with subsequent fetal demise secondary to cardiac failure and hydrops. Karyotype could not be obtained due to culture failure from the products of conception. Ultrasound assessment of the subsequent pregnancy was normal aside a single umbilical artery. Shortly after a term delivery however, there was neonatal deterioration, with a diagnosis of laryngomalacia, coarctation of the aorta and renal/ureteric obstruction. Microarray analysis on the newborn detected a partial deletion of the short arm of chromosome 9 involving 9p24.1-pter and a partial duplication of the X chromosome involving Xq28-qter. Although karyotype analysis was performed, the unbalanced translocation could only be detected by microarray and FISH. FISH analysis confirmed a cryptic unbalanced derivative chromosome 9 [der(9)t(X;9)(q28;p24.1)]. Parental studies showed a maternal balanced cryptic translocation [t(X;9)(q28;p24.1)], giving rise to the unbalanced translocation in the newborn. Microarray testing of stored fetal DNA from the first pregnancy also demonstrated an imbalance of genetic material consistent with inheritance of the derivative maternal chromosome 9.

Conclusion: This case illustrates the benefit of microarray analysis in detecting an unbalanced cryptic translocation in a newborn with congenital anomalies that would not have been detected by routine karyotype. This consequently resulted in the detection of a cryptic balanced translocation in the mother, providing an explanation for both of her pregnancy outcomes, and allowing appropriate genetic counselling regarding recurrence risks for subsequent pregnancies.

Causes and trends in death of previously-healthy infants in Nova Scotia 1988-2010

Kahlke P, Ornstein A, Dodds L

Objectives:

Prevention and early detection of potentially fatal conditions are chief aims of infant primary care. However, very little research has been done on the epidemiology of death for well babies. We sought to describe the causes of death among infants, apparently healthy, discharged from normal newborn care in Nova Scotia between the years 1988-2010, and the risk factors for death.

Methods:

Infants who were in apparent good health when discharged from perinatal care were identified in the ATLEE database, a population-based database of pregnancies and infants in Nova Scotia. Causes of death within 12 months were determined from linked death certificate data and were categorized independently by two members of the research team, with disagreements settled by a third member.

Results:

The overall rate of infant death between 1988 and 2010 among previously-well infants was 74.7/100,000 live births and did not change significantly during the study period. SIDS deaths were the most common cause of death overall but appeared to decline 12-fold between 1988 and 2010, especially between 2000 and 2004. However, when combining SIDS deaths with other conditions potentially confused with SIDS, a non-significant trend of -3.7% per year was apparent. Non-SIDS deaths occurred most often due to apparent infection and rarely due to other acquired diseases or congenital diseases not diagnosed during the perinatal period. On multivariate analysis important maternal risk factors for death were young age, maternal smoking, unmarried status, and rural residency.

Conclusions:

Death rates in Nova Scotia of previously-well infants have changed little since 1988. A substantial apparent decrease in SIDS deaths could mostly be attributed to changes in coding practice. These findings support a continued focus on SIDS-prevention as a means to protect babies.