DALHOUSIE UNIVERSITY
Inspiring Minds

Department of
Obstetrics and Gynaecology

23rd Annual Resident Research Day

Wednesday, April 29, 2009

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**

and

Canadian Foundation for Women's Health

Resident Research Day
Department of Obstetrics and Gynaecology
Dalhousie University

April 29, 2009

0745 Reception with Coffee/Muffins/Fruit
PARKER RECEPTION ROOM

0815 Welcome – Dr. B.A. Armson
Professor and Head,
Department of Obstetrics and Gynaecology
Dalhousie University

0830 INVITED SPEAKER
Dr. Don Weaver
"Translational Research"

0900 **Session I: Moderator, Dr. Linda Dodds**

0905 Jennifer Walsh, PGY4
Perinatal outcomes in pregnancies complicated by preterm rupture of membranes (ROM) in the presence of a cervical cerclage

0925 Desiree Fofie, PGY2
Stress During In Vitro Fertilization Treatment

0940 Andrew Stewart, PGY 5
Adverse Outcomes Associated with Adolescent Pregnancy

1000 Darrien Rattray, PGY2
School-Based HPV Vaccination Rates Across Nova Scotia: Community-Based Predictors of Participation

1015 Nutrition Break

1045 Anna Coolen, PGY3
Patient and clinician's risk threshold for mode of delivery

1100 Ashley Waddington, PGY3
The effect of folic acid on low birth weight and preterm birth

1120 Miriam Ang, PGY2
Meteorologic predictors of hypertension in pregnancy and prelabour rupture of membranes

1135 Allison Ball, PGY3
Laparoscopy versus Laparotomy in the Surgical Management of Endometrial Cancer: Experience in the Gynecologic Oncology Division in Halifax NS.

1155 **INVITED SPEAKER**
K.S. Joseph, MD PhD
Publication, Validation and Contribution to Science

1230 LUNCH (Classroom B&C)

1330 **INVITED SPEAKER:**
INTRODUCTION: Dr. Alf Bent
Dr. Geoffrey Cundiff
University of British Columbia
Professor, Obstetrics and Gynecology
Overcoming Obstacles to Clinical Investigation

Session II: Moderator Dr. Linda Dodds

1430 Dawn Edgar, PGY 2
A Randomized Comparison of the Double Balloon Device and Prostaglandin E2 in Ripening of the Unfavorable Cervix

1445 Deanna Murphy, Memorial University
Review of Outcomes of Teenage Pregnancies in comparison to their Adult counterparts ages 20-24 on the Avalon Peninsula of Newfoundland and Labrador between 2001-2008

1405 Farrell Nette, PGY5
Antenatal corticosteroid prophylaxis for women delivering at late preterm gestation

1525 Laurina Leyenaar, PGY 4
Repeat administration of Rh immunoglobulin if undelivered at 40 weeks gestation: Effect on alloimmunisation and cost effectiveness

1600 **Awards Presentation**

Earl of Dalhousie Pub (Faculty Club)
Cocktails and Hors d'oeuvres to be served

Abstracts

1.

Perinatal outcomes in pregnancies complicated by preterm rupture of membranes (ROM) in the presence of a cervical cerclage

Walsh, Jennifer, Allen, V., O'Connell, C., Colford, D., Allen, A

Objective: To evaluate maternal, perinatal and neonatal morbidity and mortality with preterm ROM and cerclage removal < 24 hours from ROM compared to preterm ROM with cerclage removal > 24 hours from ROM.

Study Methods: An 18-year population-based study employed data extracted from the Nova Scotia Atlee Perinatal Database (NSAPD). Major congenital abnormalities were excluded. Descriptive characteristics used Chi-square and Student's t-test, where appropriate. Logistic regression accounted for gestational age at delivery.

Result: From 1988 to 2005 the NSAPD identified 89 pregnancies with cerclage in 66 women. 98.9% were cervical cerclages and 60.6% experienced preterm ROM. 48.0% of cerclages placed prophylactically in the 1st trimester had preterm ROM, while 76.3% of those placed emergently had preterm ROM. Of those pregnancies with preterm ROM, 84.6% had cerclage removal < 24 hours after ROM. There was a nonsignificant difference in mean gestational age at delivery (28.6 weeks, range 25.6-33.6, vs 29.4 weeks, range 18.9-36.9, P=.54), use of antibiotics (75.0% vs 75.0%, P=1.0) and steroid administration (50.0% vs 87.5%, P=.06) between the two groups. All cases of postpartum endometritis (3) occurred in pregnancies with cerclage removal with preterm ROM > 24 hours. There were no differences in neonatal outcomes or mortality, all of which were consistent with gestational age at delivery (P>.05 for all).

Conclusion: Existing literature is unclear regarding management of cerclage removal with preterm ruptured membranes. Women with cerclage and ruptured membranes are at significant risk for fetal/neonatal adverse outcomes that can be attributed to complications associated with preterm birth.

2.

Stress During In Vitro Fertilization Treatment

Desiree Fofie – PGY2

Supervisor: Renda Bouzayen, MD

In Vitro Fertilization (IVF) treatment is a source of stress for couples. The purpose of this study is to measure reactions to stress at different stages of treatment and to identify coping strategies utilized by couples to feel less anxious during treatment. The study will include both a quantitative phase and a qualitative phase. In the quantitative phase, study participants will be asked to complete a demographic sheet and a set of four survey questionnaires on four separate occasions; prior to start of medications, at
day 8 to 10 of ovarian stimulation, on the day of embryo transfer and the day of the pregnancy test. In the qualitative phase of the study, participants will be asked to take part in a semi-structured interview.

The questionnaires include: The State-Trait Anxiety Scale, The Beck Depression Inventory II, The Infertility Experiences Questionnaire and the Dyadic Adjustment Scale. All four of these questionnaires are validated tools. 47 women undergoing IVF treatment at the IWK Health Center and AART Clinic will be recruited. We estimate that a period of 5 months will be required to collect data in the quantitative phase.

Consent will be obtained by study investigators and/or clinic staff.

3. Adverse Outcomes Associated with Adolescent Pregnancy

Stewart, Andrew MD , Walsh, J., O'Connell, C., Van Eyk, N.

Adolescent pregnancy may pose many challenges not only to the patient, but also to all members of the interdisciplinary health care team. Many factors influence these pregnancies, which can result in adverse maternal and neonatal outcomes. The current literature provides conflicting outcomes regarding adolescent pregnancies, particularly the associated antenatal risks and mode of delivery. This study reviewed all pregnancies and deliveries in the province of Nova Scotia, Canada between 2000 and 2005 in order to identify perinatal risks and outcomes of pregnant women less than 19 years of age compared to the adult population.

Methods: This study was a retrospective cohort study using the Nova Scotia Atlee Perinatal Database (NSAPDB). Pregnancy complications and outcomes from 2000 to 2006 were compared between women less than 19 years of age (N=918) and all others (N=50,942).

Results: Overall, pregnant adolescents had a statistically significant higher rate of smoking (OR=2.85). They started their pregnancies with a lower pre-pregnancy weight (59.06 kg vs 68.97 kg), however gained more weight throughout their pregnancy (16.85kg vs 16.15kg). Adolescent pregnancies were more likely to be complicated by anemia (p=0.03), preterm birth before 32 weeks (p=0.04) and low infant birth weight (p<0.008). There was no difference in the rate of preterm birth before 37 weeks ((p=0.75). Pregnancies in adolescents had a decreased risk of assisted vaginal delivery (p<0-0007) or caesarean section (p<0-0001) and were less likely to be complicated by mild PIH (P=0.00016)), Gestational Diabetes (p=0.0055) or macrosomic infants (p<0.006). After accounting for anemia and smoking, age < 19 yrs was still strongly associated with birth before 32 weeks gestation (OR 1.65). Smoking was strongly associated with low birth weight infants.

Conclusions: Overall, adolescent patients who are pregnant are at increased risk of certain obstetrical outcomes including anemia, preterm birth, and giving birth to infants that are small for gestational age. Adolescent pregnancies were less likely to be complicated by gestational diabetes or macrosomia, mild pregnancy induced hypertension or operative vaginal delivery. We should be aware of these differences when educating and providing care to this patient population.

4. "School-Based HPV Vaccination Rates Across Nova Scotia: Community-Based Predictors of Participation"

Darrien D Rattray BSc, MD *and Robert N Grimshaw MD, FRCSC*

Background: Human Papilloma Virus (HPV) is now widely recognized as the cause of cervical cancer and genital warts. Until recently, the sole method of reducing the incidence of cervical cancer has been the use of Pap smear screening programs. While effective in certain patient populations, this method of screening has been shown to be less successful in other marginalized groups such as women of low socioeconomic status, rural residency, and Aboriginal or Black heritage. The development of an HPV vaccination has the potential to provide an alternative means of reducing the morbidity and mortality of cervical cancer and other HPV-related disease in these high-risk populations. In June of 2007 the Nova Scotia Department of Health Promotion and Protection authorized a school-based HPV vaccination program whereby all females in Grade 7 across the province will be offered a subsidized quadrivalent HPV vaccine (Gardasil^{TM}). As the vaccine program employs the "opt-out" approach, it is important to determine whether or not the high-risk populations in Nova Scotia are utilizing the school-based program for vaccination. This ecologic study is being designed to compare participation rates in schools with varying community-based characteristics in an attempt to identify groups that are declining vaccination. If certain communities can be identified, it will allow the development of interventional programs directed toward those particular groups to increase vaccination rates and protection against cervical cancer.

Methods: The goal of this study is to determine the vaccination rates of young girls in the school-based HPV vaccination program in Nova Scotia and if there are any community-based characteristics that affect participation. The primary characteristics being evaluated will be ethnicity, socio-economic status, geographical location (rural vs urban), and language. As individual demographical information is not available in many Public Health databases, surrogate markers need to be utilized. Previous studies in Nova Scotia have validated the combining of Maritime Medical Care (MMC) database information, Statistics Canada data, Provincial Cytology Registry (PCR) figures, and Canada Post definitions to create community demographics for the women involved. MMC postal codes can be coupled

to census enumeration areas (EAs), which when linked to Statistics Canada data, create ecological proxies for these community-based characteristics. Aboriginal communities will be defined as ≥50% Aboriginal; Mixed Black communities as ≥10%; and Francophone communities as ≥50% French. Canada Post definitions can classify postal codes as rural or urban. Income data from Statistics Canada census information can be divided into three brackets as a measurement of socio-economic status: ≤$12,500; $12,500-$17,500; and ≥$17,500. Vaccination uptake rates will be available from the Nova Scotia Department of Health Promotion and Protection database. The number of vaccinations will be expressed as a percentage of the total eligible girls in grade 7 in each school across the province. The rates of vaccine uptake will then be analyzed using logistic regression models, comparing schools in the different regions with various community demographics.

Hypothesis:
The working hypothesis for this study is that there will be no difference in vaccine uptake rates between communities of varying ethnicity, socio-economic status, geographical location, and language. If no difference exists, this study will be able to support the use of a school-based HPV vaccination program as an effective intervention in reducing the risk of cervical cancer in high-risk populations. However, if differences are identified, the results will be useful to refine the educational efforts of both the school-based HPV vaccination program, and the cervical cancer prevention program.

5. Patient and clinician's risk threshold for mode of delivery

Resident: Anna Coolen, PGY-3
Supervisors: Jeff Dempster, MD, Victoria Allen, MD

Introduction: Effective risk communication is the basis for informed patient consent for medical treatments and interventions. Few studies have examined the woman's and clinician's perception of acceptable fetal risks associated with vaginal delivery when faced with operative obstetrical delivery due to maternal or fetal reasons.
Purpose: The purpose of the present study is to determine the level of maternal and fetal risks that are acceptable to women, their partners, and clinicians in the Halifax Regional Municipality (HRM) population, and to compare these risk thresholds to the published maternal and fetal risks, and to the observed maternal and fetal risks for this population (based on data derived from the Nova Scotia Atlee Perinatal Database), associated with each method of delivery.
Methods: Women and their partners will be recruited from the Perinatal Center (PNC) at the IWK Health Centre at 36 weeks gestational age and greater. Clinicians will be recruited from the groups of obstetricians and general practitioners who provide obstetrical care at the IWK Health Centre. Subjects (women, their partners, and clinicians) will be provided with written information regarding the potential fetal risks associated with vaginal, operative vaginal and cesarean deliveries, without quantifying the risks. They will also be provided with everyday risks they are exposed to, establishing a conceptual framework. Subjects will first rank the level of maternal and fetal risks associated with method of delivery using a visual analogue scale, and subject preferences will then be determined using standard gamble techniques.
Data Analysis: Mean and SD values and medians and 25^{th} and 75^{th} centiles will be calculated where appropriate. These values will then be compared to the known absolute risk values as calculated from the Atlee Database.
Hypothesis: Women and clinicians will have a lower maternal and fetal risk threshold than actually exists for each mode of delivery. It is hoped that the information gained from this study will aid physicians in counseling and consenting pregnant women.

6.

The Effect Folic Acid on Low Birth Weight and Preterm Birth

Ashley Waddington, Vicky Allen
on behalf of the
CIHR Knowledge Synthesis Group on Determinants of Preterm/LBW births

Background: The incidences of low birth weight (LBW), and preterm birth (PTB) are increasing in Canada and worldwide. LBW and PTB represent a large physical and psychological burden to families, and financial costs to society. Long-term sequelae of LBW include diabetes, obesity, hypertension, and "metabolic syndrome," supporting the theory of fetal developmental origins of adult diseases. Addressing the increasing rates of LBW/PTB is a public health priority worldwide.

Objective: To systematically review the published literature on folic acid intake and it's effect on LBW and PTB, in order to synthesize current knowledge of folic acid as a determinant of LBW and PTB and to inform public policy discussion on interventions for primary prevention of LBW and PTB.

Methods: We will perform a comprehensive up-to-date literature search of electronic databases for all published studies in the English language. Explicit inclusion and exclusion criteria will be applied to determine study eligibility. Critical appraisal of the study quality will be undertaken and data abstraction will be performed. The appropriateness of combining the data using meta-analytic techniques will be determined. Tests of heterogeneity will be applied. If appropriate, summary effects (with 95% confidence intervals) will be calculated using the random effect model. Although part of a larger national group project, each investigator has individual study determinants (such as folic acid) for which they are solely responsible.

Work in progress: The comprehensive literature search is underway.

7. Meteorologic predictors of hypertension in pregnancy and prelabour rupture of membranes

Miriam Ang, Vicky Allen, John Fahey, Alexander Allen

Background: Meteorologic factors such as temperature, humidity and atmospheric pressure are recognized predictors of abdominal aortic aneurysm (AAA) rupture, stroke, and subarachnoid hemorrhage (SAH). Low atmospheric pressure and increased pressure variability have been associated AAA rupture. Increased emergency transport of patients suffering stroke has been related to daily mean ambient temperature and daily mean relative humidity in both men and women. Low temperature, temperature variability, high atmospheric pressure and high mean humidity (especially in women) has been associated with SAH. In literature related to gynaecology, high mean daily temperature and rises in barometric pressure have been shown to be significant predictors of pelvic pain, menorrhagia and/or metrorrhagia and threatened abortion, but not spontaneous abortion. In the obstetrical literature, eclampsia, but not pre-eclampsia, has been shown to be associated with lower temperature, higher humidity and lower atmospheric pressure. The relationship of atmospheric pressure with onset of labour and prelabour rupture of membranes is uncertain, with studies showing contradictory results. Existing studies have small numbers and have been performed in varying geographical areas worldwide, with little attempt at evaluating the implications of these results on maternity care issues such as hospital length of stay and use of tertiary facility resources.
Objectives: To estimate the effect of meteorologic factors such as temperature, humidity and atmospheric pressure on hypertension in pregnancy and prelabour rupture of membranes in term (≥ 37 weeks gestational age) and preterm (<37 weeks gestational age) pregnancies. The association of meteorologic factors on hospital length of stay and rates of transport of women with these pregnancy-related complications to tertiary maternity facilities will also be explored.

Methods: This study will be a population-based cohort study using pregnancy data pertaining to residents of Nova Scotia from 1988 to 2007 (20 years) derived from the Nova Scotia Atlee Perinatal Database. Data on pregnancies complicated by hypertension and prelabour rupture of membranes will be linked to publicly available data on temperature, humidity, and atmospheric pressure from the National Climate Data and Information Archive of Environment Canada. In particular, extremes of low and high values as well as periods of high variability on day/week before and the day of admission to hospital with these complications will be examined in relation to rates of these complications. Poisson regression will likely be used to clarify the influence of meteorological conditions on the incidence of these pregnancy complications.

8. Laparoscopy versus Laparotomy in the Surgical Management of Endometrial Cancer: Experience in the Gynecologic Oncology Division in Halifax, NS.

A Ball1, JR Bentley2, KE Kieser2

BACKGROUND: Endometrial cancer remains the leading cause of gynecologic cancer in North America. The current standard for staging and initial treatment of endometrial cancer involves surgery followed by possible adjuvant radiation and/or chemotherapy. In recent years, significant interest has developed in the use of laparoscopic surgery as an alternative to traditional laparotomy. By examining the factors involved in the choice of surgical approach and the ultimate procedure performed, we hope to optimize patient selection for the laparosopic approach to surgery.
OBJECTIVE: This study aims to identify patient and surgical factors which may be barriers to laparoscopic surgery in endometrial cancer patients undergoing surgery by the gynecologic oncology group at the Capital District Health Authority (CDHA) in Halifax, NS.
METHODS: A retrospective review was performed of cases of preoperative histologically confirmed endometrial cancer and endometrial hyperplasia diagnosed between 2005 to 2007 who received surgery at the CDHA.
RESULTS: There were 428 patients diagnosed with endometrial cancer or hyperplasia, 368 were identified preoperatively, and 291 received surgery at the CDHA. Ninety-nine patients (34.0%) had a planned laparoscopy and 18.2% of these were converted to laparotomy. The rate of attempted laparoscopies increased from 21.9% to 57.1% ($p=0.002$) while there was no significant change in the conversion rate over time ($p=0.98$). The laparoscopy rate was indirectly related to BMI ($p<0.001$), and patients with an abnormal pelvic exam were more likely to have a laparotomy (RR=1.5, CI=1.34-1.68). They were also more likely to have a conversion to laparotomy (RR=3.8, CI=1.7-8.5).

CONCLUSION: Our data assist in identifying patient and surgical factors that affect the choice of initial surgical approach and the final procedure performed in endometrial cancer patients. By doing so, we hope to reduce barriers to laparoscopic surgery and optimize patient selection for this approach

9.

A Randomized Comparison of the Double Balloon Device and Prostaglandin E2 in Ripening of the Unfavorable Cervix

Dawn Edgar PGY2
Supervisor: David Rittenberg, MD

Background
Induction of labor is common practice in obstetrical care. The status of the cervix prior to induction is an important determinant in the success of the procedure. A cervix that is unripe may fail to respond to oxytocin. Several methods are available to ripen the cervix. These include intravaginal prostaglandin gel and mechanical dilation of the cervix with balloon devices.

Objective
The purpose of this study will be to compare the most commonly used method of cervical ripening, prostaglandin E2 gel with a double balloon device for ripening and dilation of the unfavorable cervix.

Methods
The study will recruit patients from the post dates clinic in the obstetrical day unit of the IWK health centre. All women requiring ripening of an unfavorable cervix will be offered participation in this study. Women who agree to participate will be randomized into one of two arms, either cervical ripening balloon or prostaglandin E2 gel. Women will be followed until delivery. Outcome measures will include change in Bishop's score, insertion to delivery interval and mode of delivery. In addition, patient satisfaction with the methods will be assessed by a satisfaction questionnaire. We propose to enroll 100 patients in this study, 50 patients in each arm.

10. Review of Outcomes of Teenage Pregnancies in comparison to their Adult counterparts ages 20-24 on the Avalon Peninsula of Newfoundland and Labrador between 2001-2008

Dr. Deanna Murphy
Dr. Tina Delaney

Introduction
Across the country in tertiary health care centers there are specific clinics designed to meet the needs of the pregnant teenager. The demographics and obstetrical and neontatal outcomes of teenage pregnancies within the Avalon Region have not been reviewed. In Newfoundland and Labrador there are no specific clinics aimed to manage the complex issues of teenage pregnancies.
Objectives In reviewing teenage pregnancy, if we are to confirm increase risk to both mother and child it may lead us to change our management and surveillance of teenage pregnancy. This study would have relevance to child health given that complications have implications for the adolescent patient and the neonate. Both are patients within the child health care system and would benefit from improvement in prenatal care. This study will also give us information on the demographics of the teenage population on the Avalon Peninsula and will help us utilize resources to best meet the medical and social needs of a the pregnant teenager.
Methods Using the Provincial Perinatal Database, information regarding demographic data and obstetrical and neonatal outcomes in both the teenage population (19 years or less) an d the control adult population 20-24 will be collected. The adult population of 20-24 was chosen as the control group because these patients are medically similar to the teenage population in terms of health indices and this population group tends to have the lowest rates of complications during pregnancy. Comparsion will be made between the two groups for both maternal and neonatal complications as well as demographic differences.

Continuous variables will be analyzed by the student t-test and categorical variables by the chi square or Fisher's exact test. A p-value of <0.05 will be considered statistically significant. Outcomes found to be statistically different in univariate analysis will be examined with logistic regression adjusting for potential confounders. The aim would be to indentify variables that are statistically different to give us further information when counseling a teenager regarding pregnancy.

11. Antenatal corticosteroid prophylaxis for women delivering at late preterm gestation

K.S. Joseph,[a] **Farrell Nette**,[b] Heather Scott,[b] Michael J. Vincer[c]

Objective We studied patterns of antenatal corticosteroid use, respiratory distress syndrome and associated mortality in order to assess the congruence between knowledge and clinical practice related to such prophylaxis.

Design Retrospective cohort study.

Setting United States 1989-91, 1995-97 and 2002-04 and Nova Scotia, Canada 1988-2007.

Population All live births in the United States and Nova Scotia.

Methods Gestational age-specific temporal trends in infant death from respiratory distress syndrome were quantified in the United States and gestational age-specific temporal trends in corticosteroid use and morbidity (respiratory distress syndrome and intraventricular hemorrhage) were quantified in Nova Scotia.

Results In the United States, infant deaths following respiratory distress syndrome declined by 48% (95% CI 46-50%) from 1989-91 to 1995-97 and then decreased by 18% (95% CI 15-22%) by 2002-04. The latter mortality reduction was evident at 28-32 weeks but not at 33-36 weeks gestation. Corticosteroid use at 28-32 weeks was high and increased from 30.7% in 1988-89 to 50.0% in 1996-97 and 52.9% in 2006-07, while rates of use at 33-36 weeks were much lower (e.g., 6.7%, 17.0% and 15.7% at 34 weeks in the three periods). Increased corticosteroid use at 33 and 34 weeks was estimated to reduce respiratory distress syndrome by 4.8% and 3.1%, respectively (number needed to treat 11.0 and 17.2, respectively).

Conclusions Addressing the knowledge-practice gap in corticosteroid use at 33-34 weeks will reduce infant morbidity and mortality.

12. Repeat administration of Rh immunoglobulin if undelivered at 40 weeks gestation: effect on alloimmunisation and cost effectiveness

Laurina Leyenaar, Vicky Allen, Heather Robinson, Marg Parsons, Mike Van den Hof, for the Rh Committee

INTRODUCTION: The use of anti-D immune globulin in pregnancy has had a significant impact in reducing the perinatal morbidity and mortality associated with rhesus alloimmunisation. Despite guidelines on the use of anti-D, maternal alloimmunisation continues to occur; this may be related to failure to administer anti-D immune globulin to eligible women, either antenatally or postpartum, or it may be secondary to inadequate dosing schedules. Routine antenatal prophylaxis is administered at 28 weeks gestation. Twelve weeks after injection of anti-D, correlating with 40 weeks gestation, residual levels of anti-D are often very low or even undetectable. With a significant proportion of women delivering beyond 40 weeks gestation further information is required regarding timing of further prophylaxis at term and postpartum.

OBJECTIVE: To evaluate the need for repeat administration of Rh immunoglobulin at 40 weeks if a woman at risk for Rh alloimmunisation remains undelivered.

METHODS: Using data from the Nova Scotia Atlee Perinatal Database (NSAPD) and the Rh Database, Rh negative women in Halifax County delivering infants with a birth weight greater than 500 grams and gestational age greater than 20 weeks, at the IWK Health Centre between 1998 and 2007 were identified. Within this population, women who received both antenatal and postpartum anti-D prophylaxis were identified, and were classified by the duration of time between receiving antepartum prophylaxis (near 28 weeks) and postpartum prophylaxis. Summary maternal and neonatal characteristics were examined and the outcomes of need for excess RhIgG by dose and by Kleihauer-Betke result and postpartum and neonatal lengths of stay were compared between these two groups.

RESULTS: The NSAPD and Rh Databases identified 4319 Rh-negative women from 1998-2007 who received both antepartum and postpartum prophylaxis. Women who delivered less than or equal to 12 weeks from antepartum prophylaxis were more likely to be multiparous, to delivery spontaneously, and to have infants with lower mean birth weight ($P<.001$). As expected, women delivering greater than 12 weeks from antepartum prophylaxis were more likely to deliver greater than 40 weeks gestation($P<.001$). No differences were seen in the rates of fetomaternal hemorrhage greater the 0.2 or 0.5, in the rates of need for additional RhIgG greater than 120 μg or 300 μg or in postpartum maternal or neonatal lengths of stay ($P>.05$).

CONCLUSION: Delivery at gestational ages greater than 40 weeks do not appear to increase the risk of fetomaternal hemorrhage requiring excess RhIgG. Further characterization of risks related to fetaomaternal hemorrhage, such as antepartum or intrapartum bleeding, external cephalic version, or invasive procedures in the third trimester, and evaluation of additional outcomes such as neonatal hyperbilirubinemia and costs associated with additional RhIgG may clarify the effect of long duration from antepartum prophyaxis.
.