

Conference Program

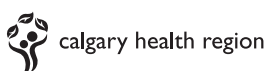
A Consensus Development Conference on **Healthy Mothers — Healthy Babies:** **How to Prevent Low Birth Weight**

May 23 to 25, 2007

Sheraton Suites Calgary Eau Claire

Calgary / Alberta / Canada

Hosted By:



A Consensus Development Conference on Healthy Mothers – Healthy Babies: How to Prevent Low Birth Weight

Conference Objective

The short and long term impact of low birth weight babies on families, the health care system and the community is profound and of growing public health concern. Low birth weight babies are more likely to experience respiratory, vision, hearing and cognitive difficulties, are more likely to require hospital readmission and have a higher rate of mortality than babies weighing greater than 2500 grams.

Low birth weight results from a number of complex interactions that are not clearly understood. Advanced technology and medical interventions aimed at enhancing the likelihood of conception and pregnancy, and decreasing fetal mortality and morbidity may be contributing to low birth weight rates. Despite sophisticated programming, a high standard of living, availability of clinical and community resources, and many thoughtful discussions, the rate of low birth weight in Alberta has been resistant to reduction and continues to increase at a steady rate.

Promoting maternal health, optimal birth outcomes, reducing premature death and the burden of illness resulting from low birth weight are worthy public health goals. This conference will provide an opportunity to consult the experts, to

learn about factors contributing to the low birth weight rate in Alberta, to develop consensus on the most relevant factors, and to tailor interventions to address the contributing factors.

The Consensus Conference Format

The purpose of a Consensus Development Conference is to evaluate available scientific evidence on a health issue and develop a statement that answers a number of predetermined questions. A group of experts presents the evidence to a panel, or “jury,” which is an independent, broad-based, non-government, non-advocacy group. The panel listens to and questions the experts. The audience is also given the opportunity to pose questions to the experts. The panel convenes and develops the consensus statement, which is read to the experts and the audience on the morning of the final day. This statement will be distributed widely in the Canadian health care system.

Program Accreditation

The program has been submitted to various professional agencies for accreditation. Please visit the registration desk for more details.

**To develop
a consensus
statement
on how to
prevent low
birth weight.**

1 What is Low Birth Weight and how frequently does it occur?

2 What are the implications of Low Birth Weight?

3 What are the factors that contribute to Low Birth Weight?

4 What can we do to reduce Low Birth Weight?

5 What are the most effective service delivery models to reduce Low Birth Weight?

6 What further research is needed (clinical and policy)?

Steering Committee

Dr. Anthony Armson, University of Toronto
Ms. Laurie Blahitka, Calgary Health Region
Ms. Brenda Fischer, Calgary Health Region
Ms. Corine Frick, Alberta Perinatal Health Program
Dr. William Hnydyk, Alberta Medical Association
Ms. Selikke Janes-Kelley, Capital Health
Dr. Egon Jonsson, Institute of Health Economics
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Dr. Jacques Magnan, Alberta Heritage Foundation for Medical Research

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Dr. Fu-Lin Wang, Alberta Health and Wellness
Ms. Jeannie Yee, Alberta Perinatal Health Program
Dr. Wendy Yee, Calgary Health Region
Ms. Sharon Zhang, Alberta Perinatal Health Program

Panel

PANEL CHAIR

Dr. Shoo Lee, Scientific Director, Integrated Centre for Care Advancement through Research (iCARE), Capital Health, Edmonton

PANEL MEMBERS

Ms. Tracy Bailey, Health Law, University of Alberta, Edmonton
Dr. Rhada Chari, Perinatologist, Capital Health; University of Alberta, Edmonton
Dr. Gillian Currie, Assistant Professor, Health Economics, University of Calgary, Calgary
Dr. Don Davis, Obstetrician, Medicine Hat; President, Society of Obstetricians and Gynaecologists of Canada
Dr. Sandra de la Ronde, Calgary Urban Project Society Maternal Child Clinic, Calgary
Ms. Catherine Ford, University of Calgary, Calgary
Dr. Maureen Heaman, Professor and Associate Dean, Research, Faculty of Nursing, University of Manitoba, Winnipeg
Dr. Thierry Lacaze, Neonatologist, Capital Health; University of Alberta, Edmonton
Ms. Taunya Madge, Parent, Preterm Quads, Calgary
Mr. Rory North, Parent, Chief Operating Officer and Portfolio Manager, North Growth Management, Vancouver
Ms. Lesley Paulette, Practicing Midwife, Fort Smith, NWT
Dr. Jim Ruiter, Family Physician, Bonnyville
Dr. Richard Stanwick, Chief Medical Health Officer, Victoria

Program

A Consensus Development Conference on **Healthy Mothers – Healthy Babies:** How to Prevent Low Birth Weight

All sessions will take place in the *Wildrose Ballroom* unless otherwise noted.

Wednesday, May 23, 2007

7:00 – 8:00 am

Breakfast and Registration

Wildrose Ballroom Foyer

8:00 – 9:00 am

Introduction

■ **Welcome and introduction of speakers**

Conference Moderator: Dr. Ian Lange, Regional Clinical Department Head, Department of Obstetrics and Gynaecology, University of Calgary, Calgary

■ **Assessing the economic, social and ethical implications of prenatal care**

Lorne Tyrrell, Chair, Institute of Health Economics

■ **Effective care during pregnancy and child birth – a research priority for AHFMR**

Dr. Kevin Keough, President and CEO, Alberta Heritage Foundation for Medical Research, Edmonton

■ **Healthy Mothers, Healthy Babies: a priority for Calgary Health Region and Capital Health**

Jack Davis, President and CEO, Calgary Health Region, Calgary

Sheila Weatherill, President and CEO, Capital Health, Edmonton

■ **A vision for the Alberta Perinatal Health Program**

Corine Frick, Program Director, Alberta Perinatal Health Program

■ **The Government of Alberta's commitment to Healthy Mothers – Healthy Babies**

Paddy Meade, Deputy Minister, Alberta Health and Wellness

■ **Low birth weight: a complex issue**

Dr. Anthony Armson, Expert Chair, University of Toronto, Toronto

9:00 – 9:40 am

What is Low Birth Weight (LBW) and how frequently does it occur?

■ **What is the definition of low birth weight, preterm birth, and small for gestational age?**

How frequently does low birth weight occur in Canada and the world?

Dr. K.S. Joseph, Associate Professor, Department of Obstetrics & Gynaecology and Paediatrics, Dalhousie University, IWK Health Centre, Halifax

■ **How frequent is low birth weight in Alberta?**

Dr. Suzanne Tough, Associate Professor, Departments of Community Health Sciences and Paediatrics, University of Calgary

9:40 – 10:20 am

What are the implications of Low Birth Weight?

■ *The Parent's Perspective*

Videotape: the parent's experience of having a preterm, low birth weight baby

■ *What are the health effects of low birth weight?*

Dr. Reg Sauve, Professor, Departments of Community Health Sciences and Paediatrics, University of Calgary

10:20 – 10:50 am

Refreshment Break

Wildrose Ballroom Foyer

10:50 – 11:10 am

■ *What are the economic implications of low birth weight to the family and to society?*

Dr. Donald Schopflocher, Director of Research, Institute of Health Economics; Senior Biostatistician, Alberta Health and Wellness, Edmonton

11:10 am – 12:00 pm

Questions and Discussion

12:00 – 1:00 pm

Lunch

1:00 – 3:00 pm

What are the factors that contribute to Low Birth Weight?

■ *What factors contribute to low birth weight?*

Dr. Prakeshkumar Shah, Assistant Professor, Departments of Paediatrics and Health Policy, Management and Evaluation, University of Toronto; Staff Neonatologist, Department of Paediatrics, Mount Sinai Hospital, Toronto

■ *How does the health of the mother affect low birth weight rates?*

Dr. Paul Gibson, Assistant Professor, Departments of Medicine and Obstetrics and Gynaecology, University of Calgary

■ *How do age and factors that influence the age of conception affect low birth weight rates?*

Dr. K.S. Joseph, Associate Professor, Department of Obstetrics & Gynaecology and Paediatrics, Dalhousie University, IWK Health Centre, Halifax

Dr. Suzanne Tough, Associate Professor, Departments of Community Health Sciences and Paediatrics, University of Calgary

■ *How do poverty, substance use, smoking, alcohol, violence, and alternative medicines affect low birth weight rates?*

Nancy Poole, Research Associate, British Columbia Centre of Excellence for Womens Health; Research Consultant, Women & Substance Use Issues, BC Women's Hospital, Vancouver

■ *What is the association between socioeconomic factors, i.e. neighbourhoods and low birth weight?*

Dr. Patricia O'Campo, Director, Centre for Research in Inner City Health, St. Michael's Hospital; Professor, Public Health Sciences, University of Toronto

3:00 – 3:30 pm

Refreshment Break

Wildrose Ballroom Foyer

3:30 – 4:35 pm

■ *Can public policy affect low birth weight?*

Dr. Gérard Breart, Professor, Public Health, University Pierre et Marie Curie; Director, INSERM Epidemiological Research on Perinatal and Women's Health, Paris, France

continued

WEDNESDAY MAY 23, 2007 CONTINUED

■ *What screening tests and obstetrical interventions, including elective caesarean section and inductions, affect low birth weight?*

Dr. Anthony Armson, Expert Chair, University of Toronto, Toronto

Dr. Jo-Ann Johnson, Professor, Department of Obstetrics and Gynaecology, University of Calgary

■ *How does having multiples (twins, triplets etc) affect low birth weight?*

Dr. John Collins, Professor Emeritus, McMaster University, Adjunct Professor, Dalhousie University, Halifax

4:35 – 4:50 pm

What can we do to reduce Low Birth Weight?

■ *What evidence is available to guide policy on assisted reproductive technology in order to reduce low birth weight?*

Dr. John Collins, Professor Emeritus, McMaster University, Adjunct Professor, Dalhousie University, Halifax

4:50 – 5:30 pm

Questions and Discussion

Thursday, May 24, 2007

7:00 – 8:00 am

Breakfast and Registration

Wildrose Ballroom Foyer

8:00 – 10:00 am

What can we do to reduce Low Birth Weight?

■ *What strategies are known to work to reduce low birth weight?*

Dr. Arne Ohlsson, Professor, Departments of Paediatrics, Obstetrics and Gynaecology, and Health Policy, Management and Evaluation, University of Toronto; Director, Mount Sinai Hospital, Toronto

■ *A promising therapy to reduce LBW: progesterone therapy*

Dr. Mark Klebanoff, Director, Division of Epidemiology, Statistics and Prevention Research, National Institute of Child Health and Human Development, Rockville, Maryland

Dr. Anthony Armson, Expert Chair, University of Toronto, Toronto

■ *How should programs be structured to reduce the rate of low birth weight?*

Dr. Brian McCarthy, Medical Epidemiologist, WHO Collaborating Center for Reproductive Health Division of Reproductive Health, Center for Disease Control and Prevention, Atlanta, Georgia

10:00 – 10:30 am

Refreshment Break

Wildrose Ballroom Foyer

10:30 – 11:20 am

■ *What do people need to know before pregnancy to prevent low birth weight?*

Merry-K Moos, Professor, Maternal Foetal Medicine Division, Department of Obstetrics and Gynaecology, University of North Carolina

11:20 – 11:50 am

What are the most effective service delivery models to reduce Low Birth Weight?

■ *What can we learn from the experiences of other countries?*

Dr. Hildur Harðardóttir, Chief of Obstetrics and Prenatal Diagnosis Unit, National University Hospital, Reykjavik, Iceland

11:50 am – 12:50 pm

Lunch

THURSDAY MAY 24, 2007 CONTINUED

- 12:50 – 1:20 pm ■ ***What can we learn from the experiences of other countries?***
Dr. Kerstin Hagenfeldt, Professor Emeritus, Department of Woman and Child Health, Division of Obstetrics and Gynecology, Karolinska University Hospital, Karolinska Institute, Stockholm, Sweden
- 1:20 – 1:45 pm ■ ***Do different service delivery models for prenatal care affect low birth weight?***
Dr. Jeannette Ickovics, Professor, Yale University, New Haven, Connecticut
- 1:45 – 2:40 pm **Questions and Discussion**

2:40 – 3:10 pm What further research is needed (clinical and policy)?

- **Expert Group:**
Dr. Heather Baxter, Department of Family Medicine Regional Obstetrical and Newborn Program Leader, Calgary Health Region
Dr. Suzanne Tough, Associate Professor, Departments of Community Health Sciences and Paediatrics, University of Calgary
Dr. Stephen Wood, Associate Professor, Department of Obstetrics and Gynecology, University of Calgary
Penny Lightfoot, Director of Population Health and Research, Capital Health, Edmonton
- **Synthesis:**
Dr. Michael Kramer, Scientific Director, Canadian Institutes of Health Research, Ottawa
- 3:10 – 4:00 pm **Questions and Discussion**

Friday, May 25, 2007

- 8:00 – 9:00 am Breakfast and Registration

Wildrose Ballroom Foyer

9:00 – 9:30 am Reading of the Consensus Statement

- Consensus Panel Chair: Dr. Shoo Lee**, Scientific Director, Integrated Centre for Care Advancement through Research (iCARE); Capital Health, Edmonton
- 9:30 – 10:30 am **Open Discussion**
- 10:30 – 11:00 am **Closing Remarks**
Implications of consensus statement:
- ***For clinical practice***
Dr. Anthony Armson, Expert Chair, University of Toronto, Toronto
- ***For policy assessment***
Professor Egon Jonsson, Executive Director and CEO, Institute of Health Economics, Edmonton
- ***For priorities in research***
Dr. Kevin Keough, President and CEO, Alberta Heritage Foundation for Medical Research, Edmonton
- ***Next steps***
Corine Frick, Program Director, Alberta Perinatal Health Program, Calgary
- 11:00 – 11:30 am **Press Conference**

Speakers and Abstracts



EXPERT CHAIR

B. Anthony Armson

MD MSc

Interim Director, Maternal, Infant and Reproductive Health Research Unit, University of Toronto

B. Anthony Armson received his medical training at Dalhousie University and obtained a Master of Science degree in Community Health and Epidemiology from Dalhousie University, May 2000. Dr. Armson is the Interim Director of the Maternal, Infant and Reproductive Health Research Unit, Professor of Obstetrics and Gynaecology, University of Toronto, and Research Scientist at Women's College Hospital and Sunnybrook Health Sciences Centre. As a perinatal clinician scientist, Dr. Armson has conducted research in maternal, fetal and neonatal health. His primary research interests are the prediction and prevention of preterm birth and the epidemiology and management of diabetes in pregnancy. Dr. Armson has also been actively involved in perinatal clinical trials as site Principal Investigator for the Canadian Early Amniotomy Study, the Canadian Early and Mid-trimester Amniocentesis Trial (CEMAT), and the Trial

to Reduce IDDM in the Genetically at Risk (TRIGR). He currently serves on the Steering Committees for Multiple Courses of Antenatal Corticosteroid Study (MACS), Multiple Courses of Antenatal Corticosteroids for Preterm Birth Study-5 Year Follow-up (MACS-5), Twin Birth Study (TBS), Early External Cephalic Version-2 Trial (EECV2) and Control of Hypertension in Pregnancy Study (CHIPS). He is principal investigator of the proposed Prevention of Problems of Preterm Birth in Women at Increased Risk Trial (POPPI).

ABSTRACT 1

A Promising Therapy to Reduce LBW: Progesterone Prophylaxis

Numerous secondary preterm birth strategies have been evaluated but, until recently, none have been shown to effectively reduce preterm birth rates in women at increased risk. Two recent studies have suggested that progesterone reduces preterm deliveries in women with singleton pregnancies at high risk. da Fonseca and colleagues compared vaginal progesterone (100mg daily from 24 – 34 weeks gestation in 142 women) to placebo and found a reduction of preterm birth (PTB <37 weeks) from 28.5% to 13.8%.¹ Meis randomised 459 women with prior history of spontaneous preterm birth to 250mg intramuscular (IM) 17-hydroxy progesterone (17P) or placebo from 16 – 20 weeks until 37 weeks or delivery.² The risk of PTB (<35 weeks) was reduced from 30.7% to 20.6%. However, neither trial demonstrated significant reductions in perinatal death or serious neonatal morbidity. These results were consistent with smaller, lower quality trials conducted

in the 70s and early 80s.³⁻⁶

Following the publication of the Meis trial, the American College of Obstetrics and Gynecology recommended that consideration be given to progesterone prophylaxis for women with a prior history of spontaneous preterm birth but acknowledged that further studies were needed to evaluate the use of progesterone in women with other risk factors for preterm birth including multiple gestation, short cervical length, and positive fetal fibronectin results.⁷ Five systematic reviews have evaluated the effectiveness of progesterone prophylaxis in preventing preterm birth.⁸⁻¹² Using different criteria to select recent and older clinical trials, the meta-analyses provide further evidence that both vaginal and IM progestational agents reduce the risk of PTB. Most authors emphasize that clinical trials are needed to confirm that progesterone prophylaxis also reduces perinatal mortality and serious neonatal morbidity.

Three recently completed, but yet unpublished, trials have yielded conflicting results. In an RCT of 655 healthy twins, Caritis showed no reduction in the risk of preterm birth in women allocated to 17P or placebo. Creasy also showed no reduction in preterm birth rates in 500 singleton pregnancies with previous preterm birth history treated with vaginal 8% progesterone gel (90mg) or placebo. In contrast, Nicolaides investigated the effectiveness of progesterone in women with short cervix (<15 mm) and demonstrated a decrease in PTB rates (< 34 weeks) from 34% to 19%, and a 50% reduction in perinatal mortality (5.6% to 2.4%) using vaginal progesterone 200mg

daily from 22 weeks to 34 weeks or delivery.

A number of other clinical trials have been initiated to evaluate the benefits and risks of progesterone therapy for women at increased risk of spontaneous preterm birth. Many trials are evaluating the effects of 17P, which is not currently available for public use and requires weekly intramuscular injections. Vaginal progesterone may be more acceptable to women. Six trials are evaluating vaginal progesterone and none of these trials is adequately powered to evaluate the effects of progesterone on the risk of perinatal mortality or serious neonatal morbidity. Primary data from an ongoing survey of more than 300 prenatal patients from three tertiary perinatal centres in Canada to assess women's views on progesterone prophylaxis found that 47% of women preferred self administered vaginal progesterone and 45% preferred intramuscular injection. The 50/50 split in women's preferred route of administration was observed in both high and low risk groups. These findings may have important implications in terms of patient compliance, the implementation of practice guidelines and national health policy discussions regarding drug approval should progesterone prophylaxis become an established standard of practice.

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2. Meis PJ, Klebanoff M, Thom E, Dombrowski MP, Sibai B, Moawad AH et al. Prevention of recurrent preterm delivery by 17 alpha-hydroxyprogesterone caproate. *N Engl J Med* 2003; 348(24):2379-2385.
3. Papiernik E. Double blind study of an agent to prevent preterm delivery among women at increased risk. *Edition Schering* 1970; 3:65-68.
4. Johnson JW, Austin KL, Jones GS, Davis GH, King TM. Efficacy of 17alpha-hydroxyprogesterone caproate in the prevention of premature labor. *N Engl J Med* 1975; 293(14):675-680.
5. Hartikainen-Sorri AL, Kaupila A, Thimala R. Inefficacy of 17 alpha hydroxyprogesterone in the prevention of prematurity in twin pregnancy. *Obstet Gynecol* 1980; 56:692-695.
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7. Use of progesterone to reduce preterm birth. ACOG Committee Opinion No 291. American College of Obstetricians and Gynecologists. *Obstet Gynecol* 2003; 102:1115-6.
8. MacKenzie R., Walker MC, Armson A, Hannah M. Progesterone for the prevention of preterm birth among women at increased risk: a systematic review and meta-analysis of randomized controlled trials. *Am J Obstet Gynecol* 2006;194:1234-42.

9. Sanchez-Ramos L, Kaunitz AM, Delke I. Progestational agents to prevent preterm birth: a meta-analysis of randomized controlled trials. *Obstet Gynecol*. 2005; 105(2):273-9.

10. Dodd JM, Crowther CA, Cincotta R, Flenady V, Robinson JS. Progesterone supplementations for preventing preterm birth: a systematic review and meta-analysis. *Acta Obstet Gynecol Scand*. 2005 June; 84(6):526-33.

11. Dodd JM, Flenady V, Cincotta R, Crowther CA. Prenatal administration of progesterone for preventing preterm birth. *Cochrane Database Syst Rev* 2006 Jan 25;(1):CD004947.

12. Coomarasamy A, Thangaratnam S, Gee H, Khan KS. Progesterone for the prevention of preterm birth: A critical evaluation of evidence. *European Journal of Obstetrics & Gynecology and Reproductive Biology*; 129(2006): 111-8.

ABSTRACT 2

What screening tests and obstetrical interventions affect low birth weight?

Late preterm birth, defined as delivery between 34^{0/7} and 36^{6/7} weeks gestation, is responsible for 70-75% of all preterm births in Canada. Most of the increase in the preterm birth rate is due to a steady increase in the rate of late preterm births. In fact, the rate of early preterm births (< 34 weeks) has remained relatively stable over the past decade. Although serious neonatal morbidity is uncommon, late preterm infants are at two to three fold risk of mild to moderate morbidity including hypothermia, hypoglycaemia, respiratory distress, delayed lung fluid clearance, poor feeding, jaundice, infection and readmission after discharge. Since there is significant growth and maturation of the developing brain in the final weeks of gestation, infants born in the late preterm period may also be at risk for neurodevelopmental problems and learning disabilities.

The factors responsible for the increase in late preterm births are complex and multifactorial. Gestational age determination by first trimester ultrasound has been associated with a decrease in post term pregnancy rates and in increase in late preterm birth. Practice guidelines regarding the management of post term pregnancy have also tended to shift the mean gestational age of delivery to the left resulting in higher late preterm birth rates. The most important factors associated with the rise in late preterm births are higher multiple gestation rates secondary to ART and obstetrical interventions for maternal and fetal indications such as preeclampsia, diabetes, preterm prelabour rupture of membranes and suspected fetal growth

restriction. Concerns about maternal and fetal health identified through increased maternal surveillance of maternal medical complications and improved monitoring of fetal growth and well being using ultrasound has resulted in higher rates of induction and caesarean delivery in the late preterm period. An apparent positive consequence of this trend has been a reduction in the stillbirth rate. Delayed childbearing, maternal obesity and fetal macrosomia have also been associated with increased risk of late preterm birth.

Improvements in first trimester prenatal diagnostic tests such as sonographing early pregnancy review and first trimester maternal serum screening have raised the possibilities of identifying mothers and fetuses at risk for obstetric and medical complications prior to the manifestation of the condition. Mothers and fetuses identified to be at risk of preeclampsia, gestational diabetes or fetal growth restriction may benefit from emerging prophylactic interventions which may improve neonatal outcome and may even prevent the development or exacerbation of such conditions.



MODERATOR

Ian R. Lange

MB ChB FRCSC

Regional Department Head, Obstetrics & Gynaecology, Calgary Health Region and University of Calgary

Ian Lange is a Maternal Fetal Medicine specialist, a New Zealander who attended medical school in Dunedin. His internship and residency were completed at the University of Otago, New Zealand, as well as Queens University, Kingston, Ontario.

He received his FRCS(C) in 1980. Thereafter he undertook a perinatal fellowship at the University of Manitoba and was a faculty member in Winnipeg until 1987.

Dr. Lange relocated to the University of Calgary in 1988, and in addition to a busy Maternal Fetal Medicine practice, has been very active in areas of quality assurance, regional clinical practice guidelines and preterm labour prevention.

He was also involved with the Royal College Specialty Examination Board in Obstetrics and Gynecology (1998-2002) and sat on the Financial Committee of the SOGC (2001-2005).

His Alberta responsibilities include being a member of the Alberta Perinatal Health Advisory Committee, the Alberta Perinatal Health Program's Fetal Fibronectin Education Program and MORE^{OB} Steering Committee.

In 1995, Dr. Lange was appointed Regional Clinical Department Head for the Calgary Health Region, and in 1997 was promoted to Professor and Chair, Department of Obstetrics and Gynecology, University of Calgary.

Heather Baxter

MD

Department of Family Medicine Regional Obstetrical and Newborn Program Leader, Calgary Health Region

Heather Baxter has been a Family doctor in Calgary for 22 years. She received her medical training at the University of Toronto in 1982, and performed her residency in Calgary. In addition to her family practice, Dr. Baxter is the Faculty Advisor for the Advanced Life Support in Obstetrics (ALSO) Program, and is the Division Chief of Obstetrics and Newborn Care, Department of Family Medicine, Calgary Health Region.

Dr. Baxter currently maintains an active practice in low risk obstetrics as part of the Maternity Care Clinic in NE Calgary, dealing with women of diverse multicultural backgrounds, and disadvantaged populations, and is a committee member of the Maternal

Newborn Care Committee, College of Family Physicians of Canada.

She is also a Clinical Assistant Professor in the Department of Family Medicine, University of Calgary.

G rard Breart

MD

Professor of Public Health, University of Pierre and Marie Curie (Paris VI); Director, Epidemiological Research Unit of Perinatal Health and Women's Health, National Institute of Health and Medical Research (INSERM), Paris, France

G rard Breart received his medical training at Paris University in Paris, France. He completed his advanced studies in both Reproductive Biology and Epidemiology, and completed his residency in 1975. Dr. Breart currently holds the positions of Professor of Public Health at the University of Pierre and Marie Curie (Paris VI); Director of the Epidemiological Research Unit of Perinatal Health and Women's Health, National Institute of Health and Medical Research (INSERM), Paris, France; and Adjunct Faculty, Tulane School of Public Health and Tropical Medicine in New Orleans.

Dr. Breart has acted as Principal and Co-Principal Investigator on numerous studies on the topic of preterm babies, including research for the European Commission on the 'Organization of care for very preterm neonates', and 'Prevention of post-partum haemorrhage.' Completed research for the Clinical Outreach Program includes 'Long-term outcome of very preterm babies'. Currently, he is Co-Principal Investigator for 'Emerging Infectious Disease and Pregnancy' for the French Embassy.

ABSTRACT 1

Preterm birth, low birthweight and prenatal care - Some data from France

Decrease in preterm birth rates has been observed in France. It is difficult to find one explanation. It was probably due to the modification of demographic factors (such as age and parity) combined with increase in prenatal medical and social intervention.



John Collins

FRCSC, FRCOG, FACOG

Professor Emeritus, McMaster University

John Collins received his MD and postgraduate training in Obstetrics and Gynaecology from the University of Western Ontario, followed by post-residency training in reproductive medicine at the University College Hospital, London with Gerald Swyer and in Edinburgh with John Lorain. He has been a member of the Department of Obstetrics and Gynecology at the University of Western Ontario and Assistant Dean, Undergraduate Medicine.

Dr. Collins has been Department Head, Obstetrics and Gynaecology at Dalhousie University and Chief of Staff, Grace Maternity Hospital, Halifax. He was Department Chair at McMaster University. He also held a cross-appointment in Clinical Epidemiology and Biostatistics. His clinical practice involved Reproductive Endocrinology and Infertility. He was a Visiting Fellow at the World Health Organization Research in Human Reproduction Program and a Francqui Foundation International Visiting Chair at Brussels Free University and the Catholic University in Leuven, Belgium. He is a Professor Emeritus at McMaster University and Adjunct Professor at Dalhousie University.

A previous member of the editorial boards of The New England Journal of Medicine, Fertility and Sterility, Human Reproduction Update and Evidence-Based Medicine, Dr. Collins is a member of the Editorial Board of Obstetrics and Gynecology, and Editor-in-Chief of Human Reproduction Update. Dr. Collins is also a member of The ESHRE Capri Workshop Group and a consultant to the Practice Committee of the American Society

for Reproductive Medicine. He is a former President of the Society of Obstetricians and Gynecologists of Canada, the Canadian Fertility and Andrology Society and the Association of Professors of Obstetrics and Gynecology.

Dr. Collins' research, which has been reported in more than 160 refereed publications, involves the evaluation of outcomes, such as the effectiveness, safety and cost of interventions for reproductive health disorders and the long-term cardiovascular and cancer outcomes associated with use of oral contraception and hormone treatment.

ABSTRACT 1

How do multiple births affect low birth weight?

Multiple births account for approximately 3% of births and 14% of infant deaths.¹ The excess mortality is due mainly to premature birth and low birth weight.² Multiple birth-associated LBW rates are rising because multiple births are more common with older maternal age, and because ovulation stimulation treatments for infertility are more frequently used.

Multiple births and low birth weight

Preterm delivery rates before 37 weeks are 6% to 7% in singletons, 40% to 50% in twins and over 90% in triplets.² Low birth weight rates <2500g are 10-fold higher in twins and 15-fold higher in triplet or more pregnancies compared with singletons.² Rates for LBW were 4%, 43% and 64% for singletons, twins and triplets, respectively.

Multiple births and perinatal mortality

Maternal characteristics, lower birth weight, earlier gestational age, mono-chorionicity, birth order and the presence of anomalies in a sibling fetus increase the risk of perinatal mortality.³ Perinatal mortality rates were 6.2 and 32 per 1,000 births for singleton births and multiple births, respectively in the United States in 1999.

Temporal trends in multiple births

Multiple birth rates began to decline in the 1950s to a minimum in the 1970s, and have risen since then, more remarkably since 1980. The multiple pregnancy rates per 1,000 births in England and Wales were 13.2, 9.6

and 14.4 in 1951, 1976 and 1998, respectively.^{4,5} In the United States the overall multiple birth ratio increased 59% from 19.3 to 30.7 multiple births per 1,000 live births from 1980 to 1999.¹

Maternal age and the frequency of multiple birth

The frequency of dizygotic twinning increases from puberty up to about 37 years of age,⁶ and the increase in the twin birth rate is associated with more dizygotic than monozygotic twins.⁷ Delayed child bearing and older mothers accounts, however, for only about 25% to 30% of the rising trend in multiple birth rates since 1970.⁴

Infertility treatment and frequency of multiple birth

The primary factor in rising rates of multiple birth is wider use of treatments that stimulate the development of multiple oocytes. In a summary of 14 studies, assisted reproduction technology accounted for 17% to 24% of twin births and 22% to 59% of triplet births. Ovulation stimulation with clomiphene citrate or gonadotropins accounted for 22% of twins and 31% to 38% of triplet births.⁴

Conclusions

Twin and triplet births are associated with higher risks of low birth weight and perinatal morbidity and mortality. Rising trends in multiple birth are due to delayed childbearing and increased use of ovarian stimulation treatment with or without in vitro fertilization.

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ABSTRACT 2

Evidence to guide policy on ART in order to reduce LBW?

Background

Reducing the frequency of multiple pregnancy in ART cycles would help to prevent the prematurity and low birth weight that are associated with multiple births. Single embryo transfer (SET) is the most effective means of improving safety in ART cycles because it reduces twin rates to less than 1%. Even in good prognosis patients, however, there is a small reduction in the overall pregnancy rate.

Evidence from randomized controlled trials (RCTs)

Six RCTs have evaluated SET compared with double embryo transfer (DET).¹⁻⁶ All compared SET to DET, but one included a cryopreserved embryo transfer cycle in the SET group⁴ and another included two SET cycles.⁵ The results in both cases include data from the first SET cycle. The RCTs included mainly good prognosis patients, based on female age and number of good quality embryos available. Eligible patients comprised from 11% to 46% of those having ART cycles in each clinic.

The average on-going pregnancy rates were 29% and 44% per cycle in the SET and DET groups. The weighted average rate difference was 15% (95% CI 10%, 20%) using either inverse variance or random effects methods. I² was zero. The multiple birth rates were 2% and 32% (summary rate difference 29%, 95% CI 24, 35) (I² = 12%). For every seven ART cycles (95% CI 5, 10) there will be one more pregnancy with DET than SET, but for every three pregnancies (95% CI 2, 4) there will be one more multiple birth with DET than SET.

Economic evaluations

Premature newborns may require neonatal intensive care, drug therapy, inhalation therapy, expensive imaging and other diagnostic procedures. The cost of providing these services reflects the extent of newborn damage. Three of the SET vs DET RCTs did cost-effectiveness analyses.⁷⁻⁹ A systematic review showed that DET is both more effective and more expensive than SET.¹⁰ Depending on the assumptions

and local costs, each additional DET pregnancy would cost an additional €11,000 to €73,000. The studies did not include the costs that twins with LBW incur during infancy and childhood, which may be ten-fold higher for twins than singleton births.¹¹

Pragmatic evidence

The evidence has been sufficient to introduce SET protocols in European and American ART clinics.^{12,13} On July 1, 2003, the Belgian government began to reimburse ART laboratory costs for couples with female age less than 43 years for a maximum of six treatment cycles, in return for a liberal SET transfer policy aiming at reduced multiple pregnancy rates and associated costs.¹⁴ ART utilization has increased, but the twin rate has been reduced to below 10% with no reduction in overall live birth rates.

Assessment

European experience has shown that making ART more affordable and accessible facilitates the uptake of SET and reduces the utilization of ovarian stimulation in non-ART cycles.

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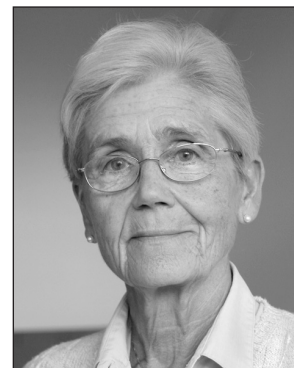
Paul Gibson is an Assistant Professor of Medicine and Obstetrics & Gynecology at the University of Calgary. He obtained his medical degree (1993) and Internal Medicine residency (1998) at the University of Manitoba, and thereafter completed Fellowship training in Medical Disorders in Pregnancy at Brown University in Providence, Rhode Island, USA (2001). Dr. Gibson provides inpatient consultation for medically-complicated pregnancies at Foothills Hospital and heads up the Medical Disorders in Pregnancy clinics in Calgary. His research interests focus on medically complicated pregnancies with an emphasis on thrombosis, vascular disease and medical education.

ABSTRACT

Dr Gibson will review several common medical disorders which complicate pregnancy including hypertension,

diabetes, thrombosis and thrombophilia, and autoimmune disease.

Discussion will include prevalence, association with LBW and management issues.



Kerstin Hagenfeldt

MD PhD

Professor Emeritus, Karolinska Institutet, Sweden

Dr. Kerstin Hagenfeldt completed her medical training at the Karolinska Institute, Stockholm, Sweden. She became a specialist in obstetrics and gynaecology, and completed her postgraduate training in gynaecologic endocrinology. Dr. Hagenfeldt was the Dean of Undergraduate Medical Education at the Karolinska Institute from 1987 to 1993. She currently works in the Department of Woman and Child Health, Division of Obstetrics and Gynaecology, Karolinska University Hospital.

Dr. Hagenfeldt was a board member of the Swedish Society of Obstetrics and Gynaecology from 1969 to 1985, and was the President in 1984-1985. She has been a board member of the Swedish Society of Medicine since 1986, and was the President in 1994-1995. She was also a Chairperson for the Ethical Committee from 1999-2003. From 1994-2001, Dr. Hagenfeldt was a Member of the Board and Scholarship Committee for the Sweden-America Foundation, whose purpose is to promote scientific and cultural exchange between the USA, Canada and Sweden. She has been a member of the IPPF International Medical Advisory Panel since 1992, and was the Chairperson from 1995-1999.

Dr. Hagenfeldt has also served as a member of the WHO Special Programme of

Research, Development and Research Training in Human Reproduction, Geneva, Switzerland. There, she was a member of several Task Forces and the Scientific and Technology Advisory Group. She has continued to serve as a chairperson for the Scientific Review Group since 1995.

Dr. Hagenfeldt has published over 100 scientific papers in obstetrics and gynaecology, reproductive endocrinology and medical ethics.

ABSTRACT

Antenatal care in Sweden-the importance of midwives

This presentation will report on the Swedish tradition of having qualified midwives responsible for the care of healthy pregnant women and for the normal delivery. Since the 1950s GPs have seldom been involved in the antenatal care and never in deliveries. When the midwife needs a doctor, she needs an obstetrician.

The Swedish Medical Birth Registry, which since 1973 registers all births in the country, is one of the most complete registers in the world. The basis are the nowadays computerised records of antenatal and obstetrical care in use for several decades in all public and private institutions. Preterm birth contributes to the majority of neonatal morbidity and mortality.

Smoking and alcohol use among pregnant women have been identified as an issue where training of midwives in identifying those problems was used in an effort to influence the habits of women. The preterm birth rate in Sweden shows a significant decrease beginning in the mid 1980s, most evident among singleton births at gestational age 34-36 weeks. The decrease is evident despite an increasing contribution of multiple births due to increased use of assisted reproductive technologies and increasing maternal age. One important reason for this seems to be the apparent decrease in smoking among pregnant women; from 31.4% in 1983 to 11.3% in 2001; a result both of national campaigns to the whole population but also a result of the efforts of the midwives in the antenatal care centres. Our efforts to decrease alcohol use have not been as successful.



Hildur Harðardóttir

Chief of Obstetrics and Prenatal Diagnosis Unit, Landspítala University Hospital, Iceland

Hildur Harðardóttir completed her advance studies in Obstetrics and Gynaecology at the University of Connecticut in 1994, and in 1996, she completed her advance studies in Fetal Medicine. She is currently a part-time teacher for the Faculty of Medicine, Collegiate Iceland. She is also the Chief of Obstetrics and Prenatal Diagnosis Unit at Landspítala University Hospital at Reykjavik, Iceland.

ABSTRACT

Prenatal care in Iceland

Social/demographic background.

Iceland is an island in the North Atlantic ocean with approximately 300,000 inhabitants, mainly Caucasians of Norwegian and Irish decent. For centuries the islanders have lived off the sea, mainly by eating fish, fowl and their eggs and later agricultural products such as dairy and meat products. After the second world war the nation rose from poverty to an extremely high degree of prosperity in a short period of time. The national gross income per capita is ranked 5th in the world (2005) and the level of education is high and illiteracy unknown. During the past 10 years there has been an increase in immigrants, mainly from Eastern Europe and Asia.

Birth statistics.

In Iceland there are approximately 4,100 births annually and the number of births has been rising slowly for the past decade. The birth rate is among the highest in

Europe with an average of 2.0 births per woman. Perinatal mortality rate (PNMR) is 6/1000 deliveries after 22 weeks gestation (WHO criteria) and <3/1000 after 28 weeks gestation (old criteria, birth >28 weeks), during the years 1994-2005. PNMR is tenfold higher among multiple pregnancies with preterm deliveries being the largest factor. Seventy five percent of all deliveries take place at the National University Hospital in Reykjavik (Landspítali), where there is a neonatal intensive care unit (NICU). Another 800 deliveries take place at four smaller hospitals and the remaining 200 hundred deliveries take place in smaller health care facilities around the country. The incidence of home births is low but rising and were 43 last year. The mean birthweight is 3814g at 40 weeks and has increased by an average of 190g since 1980.

The preterm birth rate is 4.6% (average 1995-2005). Percentage of low birth weight infants, i.e. infants weighing less than 2500g at birth is 4.2% (average 1995-2005). The mean age at first delivery is 26.8 years and the mean age at delivery for the multipara is 31.7 years.

Intervention rates. The caesarean section rate is currently at 18% and has been ranging from 15-18% for the past 10 years. The rate of labor induction is 11.4%. The rate of vacuum deliveries is 7% and forceps deliveries is <1%. The rate of episiotomies is 8.4%; 13.8% for primipara and 5.5% for multipara.

Health care system.

There is a national health care service with primary care for pregnant women and immunization for infants, free of charge. Each health care unit has a primary care physician and a midwife on staff. If complications arise the woman is referred to an obstetrician in a hospital setting. Ultrasound examination at 20 weeks gestation to screen for fetal anomalies was introduced in 1984 and the attendance is 99%. It is an integral part of prenatal care although it is optional and is free of charge. It is available at eight locations around the country. Ultrasound examination at 12 weeks with nuchal translucency

measurement was introduced in 1999 and biochemical markers in maternal serum (free, -hCG and PAPP-A) This combined risk assessment for fetal aneuploidy currently has an 80% uptake. This examination is the only prenatal care service which has a charge and the cost is approximately US\$ 90. It is available at two locations and is an optional exam. Ultrasound later in gestation is performed if there is a suspicion for small/large infant for gestational age and Doppler is only available in Reykjavík.

Two thirds of the population live in the greater Reykjavík region and have easy access to health care, i.e. drive less than one hour to the nearest health care facility. This part of the population can choose primary care or seek private care from an obstetrician at the beginning of pregnancy and subsequently have midwifery care if no risk factors are present. One third of the population lives in rural areas and has access to health care by car, with driving time from 30 minutes to three hours.

New challenges in a rapidly changing society include complications related to maternal obesity and rising rates of immigrants with cultural differences and sometimes lack of basic education and inability to use health care.

Smoking, alcohol and use of illicit drugs during pregnancy. Among pregnant women 20% smoke at the beginning of pregnancy but the number of those who give up smoking during pregnancy is uncertain. Statistics are not available regarding the use of alcohol and illicit drugs during pregnancy.

Summary:

Prenatal care in Iceland is given primarily by midwives and primary care physicians, with referrals for pregnancy complications to specialized midwives and obstetricians in a hospital setting. There is easy access to health care and prenatal care is free of charge, with the exception of fetal aneuploidy screening. The level of education is high and income is high with low poverty rates. The societal structure has strong family ties and relatively short distance between family members.



Jeannette Ickovics

PhD

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Dr. Jeannette R. Ickovics is Professor of Epidemiology and Public Health and of Psychology at Yale University. She is Director of Social and Behavioral Sciences at the School of Public Health. She is Deputy Director for the Yale Center for Interdisciplinary Research on AIDS, where she also serves as Director of Development/Education and Training. Dr. Ickovics is also Director of the Office of Yale Community Alliance for Research and Engagement (CARE), which will be established in 2007 as part of the new Yale Center for Clinical Investigation. Her community-based research on women's reproductive health is characterized by methodological rigor and cultural sensitivity. She is the author of more than 90 peer-reviewed publications. Dr. Ickovics is the recipient of several awards, including the Emerging Leadership Award and the Early Distinguished Contributions for Psychology in the Public Interest from the American Psychological Association. She is a Fellow of the American Psychological Association, and was elected to membership in the American Psychosomatic Society and the New York Academy of Medicine. Dr. Ickovics has consulted with the Institute of Medicine, National Institutes of Health, US Public Health Service, and the Centers for Disease Control and Prevention as well as with investigators at other universities worldwide.



Jo-Ann Johnson

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Professor, Department of Obstetrics and Gynecology, University of Calgary

Jo-Ann Johnson is Professor of Obstetrics and Gynecology at the University of Calgary, Calgary Alberta. Her main areas of clinical interest are in prenatal genetic screening and diagnosis, and the ultrasound diagnosis and management of fetal anomalies. Her current research interests are in the evaluation of new ultrasound and biochemical markers in early pregnancy for prediction of adverse pregnancy outcome. She is a frequent national and international speaker, and is a member of the board of the International Society for Prenatal Diagnosis (ISPD) and as founder of the Fetal Medicine Foundation (FMF) Canada, has played a key role in the implementation of quality assurance for nuchal translucency screening in the first trimester.

ABSTRACT

What screening tests and obstetrical interventions affect low birth weight?

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Late preterm birth, defined as delivery between 34^{0/7} and 36^{6/7} weeks gestation, is responsible for 70-75% of all preterm births in Canada. Most of the increase in the preterm birth rate is due to a steady increase in the rate of late preterm births. In fact, the rate of early preterm births (<

34 weeks) has remained relatively stable over the past decade. Although serious neonatal morbidity is uncommon, late preterm infants are at two to three fold risk of mild to moderate morbidity including hypothermia, hypoglycaemia, respiratory distress, delayed lung fluid clearance, poor feeding, jaundice, infection and readmission after discharge. Since there is significant growth and maturation of the developing brain in the final weeks of gestation, infants born in the late preterm period may also be at risk for neurodevelopmental problems and learning disabilities.

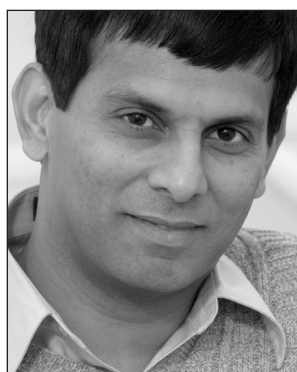
The factors responsible for the increase in late preterm births are complex and multifactorial. Gestational age determination by first trimester ultrasound has been associated with a decrease in post term pregnancy rates and in increase in late preterm birth. Practice guidelines regarding the management of post term pregnancy have also tended to shift the mean gestational age of delivery to the left resulting in higher late preterm birth rates. The most important factors associated with the rise in late preterm births are higher multiple gestation rates secondary to ART and obstetrical interventions for maternal and fetal indications such as preeclampsia, diabetes, preterm prelabour rupture of membranes and suspected fetal growth restriction. Concerns about maternal and fetal health identified through increased maternal surveillance of maternal medical complications and improved monitoring of fetal growth and well being using ultrasound has resulted in higher rates of induction and caesarean delivery in the late preterm period. An apparent positive consequence of this trend has been a reduction in the stillbirth rate. Delayed childbearing, maternal obesity and fetal macrosomia have also been associated with increased risk of late preterm birth.

Improvements in first trimester prenatal diagnostic tests such as sonographing early pregnancy review and first trimester maternal serum screening have raised the possibilities of identifying mothers and fetuses at risk for obstetric and medical

complications prior to the manifestation of the condition. Mothers and fetuses identified to be at risk of preeclampsia, gestational diabetes or fetal growth restriction may benefit from emerging prophylactic interventions which may improve neonatal outcome and may even prevent the development or exacerbation of such conditions.

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K.S. Joseph received his Bachelor of Medicine and Surgery (MBBS) and MD (Community Medicine) degrees from Christian Medical College, Vellore, India and a PhD in Epidemiology and Biostatistics from McGill University. He works as a perinatal epidemiologist, with a joint appointment as an Associate Professor in the Departments of Obstetrics and Gynaecology, and Pediatrics at Dalhousie University and the IWK Health Centre, Halifax. His research interests include pregnancy complications, preterm birth, fetal growth, perinatal mortality and serious neonatal morbidity.

Dr. Joseph is a member of the Steering Committee of the Canadian Perinatal Surveillance System (Public Health Agency of Canada) and a member of the Institute Advisory Board, Institute for Human Development, Child and Youth Health (Canadian Institutes of Health Research). In

2002, he received the Peter Lougheed New Investigator Award from the Canadian Institutes of Health Research. More recently, he was awarded the Geoffrey C. Robinson award of the Canadian Paediatric Society for contributions to child and youth health through population health research.

ABSTRACT 1

How frequently does low birth weight occur in Canada and the world?

The World Health Organization (ICD-10) defines low birth weight as birth weight less than 2,500g (up to and including 2,499g). Very low birth weight is defined as birth weight less than 1,500g, while extremely low birth weight refers to birth weight less than 1,000 g. ICD-10 defines preterm birth as a gestational duration less than 37 completed weeks (less than 259 days). Small-for-gestational age refers to estimated fetal weight or infant birth weight for gestational age that is below the normative value of a population standard. The normative value is typically the 10th or 3rd percentile of birth weight for gestational age specified by the population standard.

Low birth weight infants constitute a heterogeneous group which include both preterm and small-for gestational age infants. Thus, a 2,000g female infant is low birth weight but could have delivered at 32 weeks (70th percentile of birth weight for gestational age) or at 38 weeks (less than 3rd percentile of birth weight for gestational age). Such heterogeneity is important because preterm and SGA births are different from an etiologic and prognostic perspective. As an indicator of population perinatal health as well, low birth weight can be misleading; low birth weight rates in Canada did not change over the last decade (5.7% and 5.9% in 1995 and 2004, respectively), whereas rates of preterm birth have increased (from 7.0% to 8.2%) and SGA rates have declined (from 10.1% to 7.8%) over the same period. The advantages of low birth weight as an indicator of perinatal health include ease of measurement (available for most countries in the world) and the strong association with fetal and infant mortality and serious neonatal morbidity.

Approximately 15% of infants in the World are born low birth weight. Globally, about 20 million low birth weight infants are born annually, with 11 million being born in South Asia and four million in Sub-Saharan Africa (there are approximately 20,000 low birth weight infants born in Canada every year). It is not clear whether the global burden of low birth weight is more appropriately addressed by attempting to reduce the occurrence of low birth weight or by improving the care of low birth weight and normal birth weight infants. UNICEF favours the former approach, while others suggest that low birth weight is difficult to prevent and improvements in birth weight-specific mortality are more easily achieved.

ABSTRACT 2

How do age and factors that influence the age of conception affect low birth weight rates?

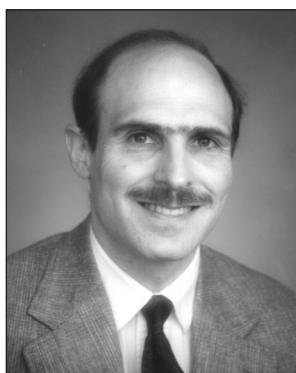
The relationship between maternal age and preterm birth (PTB) and small-for-gestational age (SGA) birth appears J-shaped, with the extremes of age more likely to be associated with higher rates of these adverse perinatal outcomes. There is an almost ubiquitous association between adolescent pregnancy and crude rates of PTB and SGA. A study from Utah showed a 90% increase in PTB and a 30% increase in SGA birth. There is some controversy, however, regarding the cause of the increased risk; biological immaturity vs economic, social and behavioural correlates of teen pregnancy are the competing mechanisms proposed.

Older maternal age (35-39, ≥ 40 years) is also associated with higher rates of PTB and SGA birth, with an clear dose-response relationship. The mechanisms for this relationship include higher rates of chromosomal abnormalities, multiple births and pregnancy complications (such as hypertension, diabetes, placenta previa) among older mothers. Recent advances in assisted reproduction techniques have helped infertile older mothers conceive at later ages but this has been accompanied by an excess of multiple births which are much more likely to be preterm and small-for-gestational age.

The proportion of live births to older mothers

has been increasing steadily in Canada; in 2004 14.3% and 2.9% of live births were to mothers 35-39 and ≥ 40 years of age, respectively. Age-specific rates of birth have declined substantially in all age categories over the last several decades. However, a small increase has occurred in the last two decades in the older age groups. Although women need to be aware of the higher risks associated with older maternal age, the population impact of older maternal age is not extraordinary. If all mothers ≥ 35 years were to have delivered at 20-24 years of age, the rate of preterm birth in Canada in 2004 would have declined by $<10\%$ and the rate of SGA would have declined by $<5\%$.

Older paternal age is another factor that has received increasing attention in recent years. Although several studies have shown no excess risk associated with older paternal age, one recent study showed higher rates of very preterm birth and another showed a higher rate of low birth weight. Further studies are need to ascertain if this association is causal or confounded, although it is unlikely that paternal age plays a major role in the occurrence of PTB and SGA births.



Mark Klebanoff

MD MPH

Director, Division of Epidemiology, Statistics and Prevention Research, National Institute of Child Health and Human Development

Dr. Klebanoff completed his undergraduate and medical degrees at Johns Hopkins University. He did his pediatric residency at the University of Rochester, and returned to Johns Hopkins for his MPH degree. He joined the Division of Epidemiology, Statistics and Prevention Research at the National

Institute of Child Health and Human Development, NIH, as a fellow, and became a tenured investigator in 1987. Since 1998 he has been director of the Division. Dr. Klebanoff is board-certified in pediatrics, and is a member of the Editorial Board of the *American Journal of Epidemiology*. He has served as president of the Society for Pediatric and Perinatal Epidemiologic Research, serves on numerous advisory committees, and is a member of the Johns Hopkins Society of Scholars, the American Epidemiological Society and the Society for Pediatric Research. Dr. Klebanoff's research interests span a broad range of issues in maternal and child health, with a focus on preterm delivery and fetal growth.

ABSTRACT

17-Alphahydroxyprogesterone Caproate (17-OHPC) and Preterm Birth: Research Findings

From 1999-2002 the NICHD-MFMU Network conducted a multicenter randomized clinical trial of weekly injections of 17-OHPC or placebo among women with a singleton fetus and a documented prior spontaneous preterm birth. Randomization occurred at 16-20 weeks; treatment continued until 36 weeks. The study was terminated for benefit after 463 (310 17-OHPC, 153 Placebo) women enrolled. Treatment reduced delivery at <37 weeks from 54.9% to 46.3% ($p=0.0001$); and at <32 weeks from 19.9% to 11.4% ($p=0.018$). Use of 17-OHPC among all eligible women in the U.S. would reduce the total occurrence of preterm birth only slightly, from 12.1% to 11.9%. In 2004 the children were followed up; 80% were enrolled at 48 months of age, when the Ages and Stages Questionnaire (ASQ), the Preschool Activities Inventory (PSAI), a health survey, and a physical exam were administered. No significant differences were seen between the groups in the ASQ, height, weight, head circumference blood pressure, physical anomalies nor reported health conditions; values were as expected for age. Gender-specific play did not differ by treatment, and was similar to expected. The Network completed a trial of 17-OHPC in twin gestations, where treatment did NOT reduce the occurrence of birth <35 weeks (relative risk 1.1, CI 0.9-1.3). In summary, 17-OHPC appears to reduce the recurrence of preterm

birth in selected women, and has not manifested side effects at four years, but use should be confined to situations where benefit has been demonstrated by randomized clinical trials. Benefit at the population level is limited.



Michael S. Kramer

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Michael S. Kramer is James McGill Professor in the Departments of Pediatrics and Epidemiology and Biostatistics at McGill University Faculty of Medicine. A former National Health Research Scholar and National Health Research Scientist of Health Canada's National Health Research and Development Program (NHRDP) and Chercheur-boursier senior (senior research scientist) of the Fonds de la recherche en santé du Québec (FRSQ), he is currently a Senior Investigator of the Canadian Institutes of Health Research (CIHR). He has been principal investigator on several large, multicentre epidemiologic studies and randomized trials in the general area of maternal and child health. A member of four expert committees of the U.S. Institute of Medicine, in 1997-98 he served as President of the Society of Pediatric and Perinatal Epidemiologic Research. From 1995-2001, he chaired the Steering Committee of the Canadian Perinatal Surveillance System and until May 2003, chaired the Institute Advisory Board of CIHR's Institute of Human Development and Child and Youth Health (IHDCYH). He currently serves as IHDCYH's Scientific Director. He has received operating grant support from the Medical Research

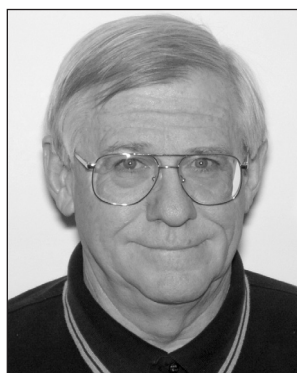
Council (now CIHR) of Canada, NHRDP, NIH, FRSQ, and the March of Dimes.

Dr. Kramer has authored or co-authored 20 books and monographs, and has published over 250 original articles. His recent systematic review of the evidence on the optimal duration of exclusive breastfeeding led directly to new infant feeding recommendations by WHO and the World Health Assembly. His current principal areas of research are the causes and prevention of preterm birth and intrauterine growth restriction, the determinants of fetal and infant mortality, and the health effects of breastfeeding.

Penny Lightfoot

Director, Population Health and Research, Capital Health

Penny Lightfoot is *Director of Population Health and Research* within the Capital Health region. She is responsible for assessment of the population's health and selected policy development. Her health field experience spans over 25 years and includes clinical practice and research, with a focus on public health and policy development.



Dr. Brian McCarthy

MD MSc CAPT USPHS (Ret)

Senior Service Fellow, WHO Collaborating Center in Reproductive Health; Office of the Director, Division of Reproductive Health, National Center for Chronic Disease Prevention and Health Promotion, National Centers for Disease Control and Prevention

Brian McCarthy is the Supervisory Medical Officer of the World Health Organization (WHO) Collaborating Centre in Reproductive Health, National Center for

Chronic Disease Prevention and Health Promotion. He has held the title of Principal Investigator of the Office of the Director in this division since August of 1990, previously acting as Chief from 1987 to 1990. He also is Clinical Associate Professor of the Department of Pediatrics in the School of Medicine and the Division of International Health in the Rollins School of Public Health at Emory University, Georgia.

Dr. McCarthy has worked with the Centers for Disease Control (CDC) and the WHO in Epidemiology for over 30 years, first starting with the Family Planning and Evaluation Division of CDC, and moving through the Maternal-Child Health Unit, and Birth Defects Branch, before starting in the Division of Reproductive Health in 1986.

He completed his MD at the State University of New York in 1973, where he also undertook his residency in Pediatrics. Dr. McCarthy has been widely published in numerous Medical Journals, and has contributed to various WHO Reports, Textbooks, and Position Papers. He was awarded the Outstanding Service Medal in 1999.



Merry-K Moos

BSN FNP MPH FAAN

Professor, Department of Obstetrics and Gynecology, University of North Carolina

Merry-K. Moos is a Professor in the Department of Obstetrics and Gynecology, and Adjunct Professor in both the School of Public Health and the School of Nursing at the University of North Carolina at Chapel Hill. Ms. Moos is also director of the Women's Health Information Center at UNC Hospitals in Chapel Hill. She is a

researcher, author and clinician who is nationally and internationally recognized for her expertise in prenatal services, adolescent pregnancy and prevention, preconceptional health promotion and the organization of well woman services. She and her colleague, Robert Cefalo, wrote the first book on preconceptional health in the US in 1988; the book was revised in 1995 and has served as a platform for change in the delivery of reproductive health care. In the 1990s she consulted frequently with provincial governments of Canada on creating a service model in Canada. In 2005, Ms. Moos was appointed as an initial member of the CDC Select Panel on Preconceptional Health and she is currently serving as chair of the Panel's subcommittee to create a national curriculum on preconceptional health for health care providers of many disciplines.

Ms. Moos' current research and programmatic interests center around intendedness of pregnancy, implementation of interconceptional care services and reframing women's wellness care into a continuum model of preventive services. Clinically, Ms. Moos has been an advanced practice nurse (FNP) for more than 30 years. She directs the University of North Carolina Hospitals' Teenage Pregnancy and Prevention Clinic, provides services in a local health department and oversees coordination of obstetrical services between seventeen public clinics and the University of North Carolina's Department of Obstetrics and Gynecology.

ABSTRACT

What Do Women and Providers Need to Know to Prevent Preterm Birth?

The perinatal prevention paradigm traditionally starts with the first prenatal visit, increases in intensity until the delivery of the infant and then abruptly ends with little consideration of continuing health concerns for the woman or for future reproductive outcomes. However, in obstetrics most of our outcomes are determined before we ever meet our patients. By reframing the prevention paradigm to use a woman's wellness perspective as the foundation, the opportunity exists to impact women's' health through the lifespan, the

health of their pregnancies, should they become pregnant, and the health of the next generation. By changing the focus of care to one which puts the life course perspective first we will achieve preconceptional health promotion for those women who become pregnant. Making this change a reality will require reaching generations of women with information about the importance of preventing poor pregnancy outcomes before conception; reaching providers with continuing education about what we know and what we don't know about the impact and processes of preconceptional health promotion; providing time efficient strategies to reach every woman, every time she has a health care visit; and assuring affordable, accessible, targeted services for women known to have risks amenable to intensive preconceptional care.



Patricia O'Campo

PhD

Director, Centre for Research on Inner City Health, St. Michael's Hospital

Patricia O'Campo is a social epidemiologist. She has been conducting research on the social determinants of health and well-being among women and children for over 17 years. She pioneered the application of multilevel modeling in the field of maternal and child health in the early 1990s to understand the effects of urban residential neighborhoods on the risk of intimate partner violence during the child bearing year and on low birth weight. She has conducted a number of clinic and community based evaluations of programs concerning smoking cessation, prevention of perinatal transmission of HIV, and prevention of infant mortality. She has also focused on methods

development as part of her research including application of multilevel modeling to understand residential and workplace contexts on health and development of monitoring methods for rare health events in small areas.

ABSTRACT

How do residential neighbourhoods increase the risk for adverse pregnancy outcome? A review of the evidence.

This session will examine the relationship of residential neighbourhood factors in its relationship to adverse birth outcomes, with a focus on low birth weight. The evidence for this association will be examined along with a discussion of the methodological strengths and challenges of this area of research



Arne Ohlsson

MD MSc FRCPC FAAP

Director, Evidence-Based Neonatal Care and Outcomes, Mount Sinai Hospital

Arne Ohlsson received his MD from the University of Uppsala, Sweden. He qualified as a specialist in Paediatrics, and in Child and Youth Psychiatry in Sweden, before undertaking subspecialty training in Neonatology at the Karolinska Hospital in Stockholm, Sweden and at the Hospital for Sick Children Toronto, Canada. He worked as a Consultant Paediatrician and Neonatologist at the King Faisal Specialist Hospital and Research Centre, in Riyadh, Saudi Arabia for five years. He received his Master of Science degree in Clinical Epidemiology from McMaster University in 1990. In 1998 he took up the position as Director Evidence Based Neonatal Care and Outcomes Research, Division of

Neonatology, Department of Paediatrics, University of Toronto, Department of Paediatrics, Mount Sinai Hospital. The same year he became the Director of the Canadian Cochrane Network and Centre and served as such until 2005.

Areas of research include systematic reviews/meta-analysis, interventions to prevent adverse perinatal outcomes, diagnostic tests and prevention and management of pain and stress in the newborn. He currently serves on the Steering committees for the Canadian Perinatal Surveillance System and the Canadian Neonatal Network, and several CIHR funded multicentre randomized controlled trials in perinatal (obstetric or neonatal) medicine. He is a member of the Board of Directors of the Canadian Institute of Child Health.

He is Professor, Departments of Paediatrics, Obstetrics and Gynaecology, and Health Policy, Management and Evaluation, University of Toronto, Canada. He is Active Staff Neonatologist; Mount Sinai Hospital, Hospital for Sick Children, and Consultant Staff Sunnybrook & Women's College Health Sciences Centre, Toronto.

He has published more than 230 peer-reviewed papers as principal author or co-author in high impact general medical journals and specialty paediatric and obstetric journals.

He has served as an Editor of Pediatric Research and as a Member of the Canadian Institutes of Research Clinical Trials Committee.

In 2003 he was presented with the Distinguished Neonatologist Award from the Neonatal/Perinatal Medicine Section of the Canadian Paediatric Society.

ABSTRACT

What strategies are known to work to reduce low birth weight?

A. Interventions/strategies with strong / moderate evidence of effectiveness

1. Modification of life style
 - a. Smoking cessation and relapse prevention as a routine component of prenatal care, particularly

interventions that include intensive counseling, multiple contacts, provision of supportive material and follow up.

2. Prevention or treatment of infections
 - a. Treatment of infection (urinary tract infection, syphilis, gonorrhea)
 - b. Screening mothers with previous history of preterm/LBW births for infection
 - c. Antibiotic for preterm labor with rupture of membranes
3. Maternal nutrition
4. Promotion of balanced nutritious diet for all pregnant women. Provision of nutritious food to mothers identified as having limited resources to meet the demands of pregnancy may be beneficial.
5. Treatment of maternal general medical conditions
6. Treatment of pregnancy associated conditions
7. Reducing multiple births following in-vitro fertilization or artificial reproductive technologies
8. Tocolytics for inhibition of threatened preterm labor
 - a. Betamimetics for inhibition of threatened preterm labor
 - b. Calcium channel blockers for inhibition of threatened preterm labor
 - c. Progestational agents for inhibition of threatened preterm labor
9. Antiplatelet agent administration to mother to improve fetal growth

B. Interventions/strategies with probable evidence of effectiveness

1. Adolescent pregnancy
 - a. Measures to reduce adolescent pregnancy
 - b. Early enrollment of pregnant adolescents in prenatal programs
 - c. Home visiting and psychosocial support to pregnant adolescents
2. Promotion of adequate weight gain during pregnancy*
3. Improvement in maternal nutrition
 - a. Promotion of optimal nutrition during the preconceptional period*

- b. Nutritional advice to mother
- c. Balanced energy and protein intake
- d. Iron supplementation
- e. Folic acid supplementation⁺
- f. Calcium supplementation
- g. Magnesium supplementation
- h. Zinc supplementation
- i. Multiple micronutrients supplementation
- j. Fish oil supplementation
4. Treatment of infection
 - a. Treatment of bacterial vaginosis
 - b. Antibiotics in 2nd or 3rd trimester to all woman
 - c. Treatment of HIV
 - d. Treatment / prevention of Influenza
5. Maternal life style related factors
 - a. Measures to reduce alcohol exposure
 - b. Treatment of substance / narcotic use
6. Improvement in occupational conditions
7. Prenatal care
 - a. Provision of antenatal care which provides an opportunity for individual assessment as well as diagnosis and appropriate management of maternal medical conditions
 - b. Improved content of prenatal care
 - c. Multicomponent preterm birth prevention programs
8. Provision of psychosocial support to high risk women experiencing chronic stress*
9. Legislation regarding regulation of artificial reproductive technologies
10. Early detection of preterm labor
 - a. Generic education of all pregnant women for signs symptoms of preterm labor
 - b. Identification by ultrasound markers of preterm labor
 - c. Home uterine activity monitoring
11. Cervical cerclage for inhibition of threatened preterm labor
12. Antioxidant – lycopene administration to mother to improve fetal growth
13. Maternal transport to tertiary care centers for threatened preterm labor

*Research regarding the effectiveness of specific strategies is required



Nancy Poole

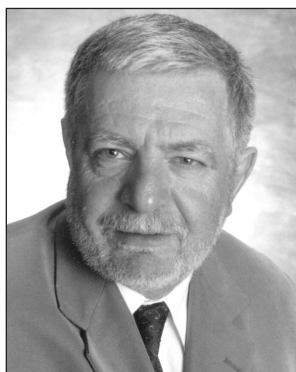
Research Associate, British Columbia Centre of Excellence for Women's Health; Research Consultant, Women & Substance Use Issues, BC Women's Hospital, Vancouver

Nancy Poole has over twenty years experience in research, policy and practice relating to prevention, treatment and harm reduction with women with substance use problems. She is a Research Associate with the British Columbia Centre of Excellence for Women's Health and a doctoral student with the University of South Australia studying virtual knowledge translation on women's health and substance use. She has a CIHR fellowship with the IMPART program, a training program in Gender, Women and Addictions. Ms. Poole also acts as a provincial consultant on women's substance use issues with BC Women's Hospital. She is involved with research teams undertaking policy relevant research related to women's substance use, facilitates national 'virtual learning communities' on women and substance use issues, and collaborates on addictions policy, service design and research with governments and organizations across Canada. In addition she is currently leading province wide professional education on reducing harms associated with alcohol and tobacco use in pregnancy, associated with the BC governmental platform entitled ActNow BC - Healthy Choices in Pregnancy.

ABSTRACT

How do alcohol, tobacco and other substance use, as well as related health determinants such as experience of violence and poverty affect low birth weight rates?

Substance use before, and during pregnancy can affect low birth weight. Often the impact of substance use on women's and fetal health is considered in isolation from important linked determinants of health such as women's experience of violence and poverty, as well as key related influences such as the stigma directed to mothers who use substances and mothering/child welfare policies. This presentation will offer a contextualized view of the impact of women's substance use on low birth weight, from recent literature and research done in several service settings in Vancouver: a pregnancy outreach program in Vancouver's poorest neighbourhood and BC Women's Hospital's specialized Fir Square Combined Care Unit.



Reg Sauve

*MD FRCPC
Professor, Departments of Community Health Sciences and Paediatrics,
University of Calgary*

Reg Sauve is a professor of Paediatrics and Community Health Sciences. His clinical work focuses on neonatology, which he practices at the Foothills Hospital Neonatal Intensive Care Unit and Rockyview Hospital Special Care Nursery along with follow-up care at the Alberta Children's Hospital. He is the Academic Head, Division of Neonatology, and Director of the Perinatal Follow-up program.

Dr. Sauve's own research interests focus on Neonatal Epidemiology and Follow-up and Perinatal Surveillance. He is currently seconded on a part time basis to the

Maternal Infant Health Section, Public Health Agency of Canada, where he chairs the Canadian Perinatal Surveillance System and provides consultation regarding research and related projects affecting mothers and infants. Dr. Sauve also co-chairs the recently formed Alberta Perinatal Program at Alberta Health and Wellness.

His most satisfying professional accomplishments have come from being able to link together his clinical, education, administrative and research interests in mothers and infants.

ABSTRACT

What are the health effects of low birth weight

This session will review the health effects of low birth weight, focusing on effects experienced by the baby during early infancy and childhood. The topics covered will be:

- The basis of adverse outcomes in low birth weight/preterm infants
- Life line approach to understanding the pathophysiology of adverse effects on infants' and childrens' health
- Burden of disease due to low birth weight/preterm birth
- Mortality
- Associated with mild to moderate prematurity
- Mild to moderate prematurity and its management
- Population vs individual effects
- Associated with extreme prematurity and low birth weight
- Infants at the edge of viability
- Morbidity
- General health and influencing factors
- Growth
- Growth of AGA and SGA preterm infants
- Respiratory illnesses
- Chronic lung disease of prematurity
- Risk of "pulmonary normalcy" in preterm infants

- Developmental issues
- Severe vs mild to moderate impairments
- Functional vs diagnosis-based approaches
- Learning abilities
- Learning difficulties in non-disabled low birth weight infants



Donald Schopflocher

PhD

Director of Research, Institute of Health Economics

Don Schopflocher was trained as a research Psychologist, obtaining his PhD in psychological measurement from the University of Alberta.

Dr. Schopflocher has worked as a biostatistician for the Health Surveillance Branch, Alberta Health and Wellness since 1995. He sat on the Population Health Surveys Advisory Committee for Statistics Canada, and managed health survey data analysis and dissemination for Alberta Health and Wellness. He also analyzed large administrative datasets for Surveillance purposes.

Dr. Schopflocher is active in academic research and teaching. He is an adjunct associate professor in the School of Public Health at the University of Alberta, and in the Department of Community Health Sciences at the University of Calgary where he team teaches a graduate course in Public Health Surveillance.

This year, Dr. Schopflocher has been seconded 0.8 to the Institute of Health Economics where he is Director of Research.



Prakeshkumar Shah

MBBS DCH MRCP MRCPCH

Assistant Professor, Departments of Paediatrics and Health Policy, Management and Evaluation, University of Toronto; Staff Neonatologist, Department of Paediatrics, Mount Sinai Hospital

Prakesh Shah is a Staff Neonatologist and Epidemiologist at Mount Sinai Hospital, Toronto. He is an Assistant Professor in the Departments of Paediatrics and Health Policy, Management and Evaluation at the University of Toronto. He completed his medical training in India, postgraduate training in India and UK followed by fellowship in Neonatal Perinatal Medicine at University of Toronto hospitals. During the fellowship, he also completed MSc in Clinical Epidemiology at the University of Toronto and currently teaches in the Clinical Epidemiology Program at the University of Toronto. His research interests are knowledge synthesis, birth asphyxia, clinical trials in neonates and review of changes in practice and their impact on neonatal and post neonatal outcomes.

ABSTRACT

Low birth weight (LBW) is considered a public health priority due to its association with higher mortality and morbidities that include adult-onset disorders such as hypertension, ischemic heart disease, stroke, metabolic syndrome, diabetes, malignancies, osteoarthritis, and dementia. Preterm birth (PTB) is of significant public health importance because of its association with an increase in mortality and childhood morbidities such as developmental problems, cerebral palsy,

cognitive delay and learning difficulties, blindness, deafness and an increased risk of sudden infant death. Fetal growth restriction (FGR, variably termed SGA or intrauterine growth restriction - IUGR), status at birth has been shown to be associated with lower educational level, lower socioeconomic functioning level and more frequent reported mood disorders in childhood.

Several factors are implicated to be associated with LBW/PTB/FGR. Broad categories include, and not limited to, maternal, paternal, fetal, societal, environmental, life style related, infectious, nutritional, genetic, and psychosocial factors. Maternal factors include maternal age, parity, birth interval, previous induced abortion, previous history of preterm birth, her own LBW status, race/ethnicity, aboriginal status, acculturation, marital status, pre-pregnancy height, body mass index, gestational weight gain, history of infertility and subsequent in-vitro fertilization, medical conditions and pregnancy associated conditions such as hypertension and diabetes. Paternal factors include paternal birth weight, age, family history, and certain occupations. Fetal factors include fetal sex and fetal genetic factors. Societal factors include socio-economic status, types of occupation, occupational conditions, violence, trauma, and events that may lead to acute stress. Environmental factors include air and water pollution, pesticide exposure, noise, and seasonal influence. Life style related factors include use of nicotine, alcohol, caffeine, cocaine, narcotics, other addictive substances, herbal and alternative medicines, and exercise or lack thereof. Infectious causes include infections with many organisms such as aerobic or anaerobic bacteria, viruses, spirochetes, and chlamydia. Nutritional causes include deficiencies of iron, folic acid, zinc, calcium, magnesium, and multivitamins. Genetic factors include specific syndromes, in addition to continually expanding array of genetic defects that are identified to be associated with PTB/LBW. Psychosocial factors include

acute and chronic stress, neighborhood conditions and disadvantaged situations or states. Additionally, anatomical factors such as uterine abnormalities and functional causes such as placental factors are implicated. These factors are suspected as determinants of LBW/PTB/FGR. However, various studies have yielded differing results with reference to these determinants and their association with LBW/PTB/FGR.



Suzanne Tough

MSc PhD

Associate Professor, Paediatrics & Community Health Sciences, Medicine, University of Calgary; Scientific Director, Alberta Centre for Child, Family and Community Research

Suzanne Tough is an Associate Professor with the Departments of Paediatrics and Community Health Sciences in the Faculty of Medicine at the University of Calgary and is a Population Health Investigator currently funded by Alberta Heritage Foundation for Medical Research. She is also an Associate Director of the Institute of Maternal and Child Health (University of Calgary/Calgary Health Region) and the Scientific Director of the Alberta Centre for Child, Family and Community Research, an organization whose vision is to improve child, family and community well-being through applied research.

Dr. Tough's research program focuses on the health and well being of mothers and infants prior to conception through infancy. Specifically, she has research interests in the area of maternal and child health, preconception and prenatal care, low birth weight and preterm birth, delayed

childbearing, and fetal alcohol spectrum disorders. The underlying aim of Dr. Tough's research program is to create evidence that informs the development of community and clinical programs and influences policy to optimize birth and childhood outcomes.

ABSTRACT 1

How Frequent is Low Birth Weight in Alberta?

In 2005, the low birth weight rate was 6.6% in Alberta, which is higher than the national rate. The national rate of low birth weight was 5.9% in 2004. Low birth weight rates in Alberta have increased since 1990. This talk will include information on the frequency of low birth weight among various regions and populations in Alberta, highlighting the need to understand factors that contribute to low birth weight.

ABSTRACT 2

How Do Factors that Influence the Age of Conception Affect Low Birth Weight Rates?

An increasing number of women are having children over the age of 35, which is a significant factor affecting the low birth rate in Alberta. This talk will include information on what influences the timing of childbearing for both men and women, what they know about the risks of childbearing at different ages, and what strategies may increase public knowledge about healthy reproduction. This data was gathered from over 2000 Alberta men and women.

Stephen Wood

MD

Associate Professor, Department of Obstetrics and Gynaecology, University of Calgary

Stephen Wood is an Associate Professor in the Departments of Obstetrics and Gynecology and Community Health Sciences. He received his medical training at the Queen's University, and performed his residency at the University of Calgary. Dr. Wood has also completed a MSc in Epidemiology from the University of Calgary.

Panel Members

PANEL CHAIR

Shoo Lee

MD PhD

Scientific Director, Integrated Centre for Care Advancement through Research (iCARE), Capital Health

In September 2005, Shoo Lee was appointed as the inaugural Scientific Director for the Integrated Centre for Care Advancement through Research (iCARE), a joint venture of the University of Alberta and Capital Health. At iCARE, Dr. Lee leads the effort to advance the paradigm in health research through an integrated organizational approach that includes implementation, evaluation, and feedback. Dr. Lee is also a Professor of Pediatrics at the University of Alberta and holds the Canada Research Chair (Tier I) in Knowledge Translation and Healthcare Improvement.

Dr. Lee was recruited from the University of British Columbia where he was Associate Professor of Pediatrics, Faculty of Medicine and served as Director of the Centre for Healthcare Innovation and Improvement (CHII), Child and Family Research Institute. While in Vancouver, the neonatologist and health economist was the recipient of the Aventis Pasteur Research Award from the Canadian Pediatric Society. With interests that include neonatal-perinatal care, health economics, health services research, and quality improvement, Dr. Lee founded the Canadian Neonatal Network in 1995 to develop models for quality improvement and to guide health policy in Canadian NICUs. The Network received the Knowledge Translation Award from CIHR in 2004. He also founded the International Neonatal Collaboration and the Neonatal-Perinatal Interdisciplinary Capacity

Enhancement Team to support collaborative research aimed at improving neonatal-perinatal care.

Dr. Lee received his medical degree from the University of Singapore and completed his residency in Newfoundland. After completing his neonatal fellowship training at Boston's Children's Hospital, Dr. Lee earned his PhD in Health Policy (Economics) at Harvard University.

PANEL MEMBERS

Tracey Bailey

BA LLB

Executive Director, Health Law Institute, University of Alberta

Tracey Bailey was appointed Executive Director of the Health Law Institute at the University of Alberta in July 2003. Prior to that, she was the Institute's Project Manager. Ms. Bailey graduated from the Faculty of Law, University of Alberta in 1991. She practiced with the firm now known as Fraser Milner Casgrain LLP in the area of health law until 1997, and subsequently worked as a legal instructor prior to joining the HLI in May 2001.

Ms. Bailey is actively involved in the education component of the HLI, including coordinating workshops and conferences, teaching in a number of health professional faculties at the University of Alberta, presenting at conferences, and providing outreach education to health care professionals and members of the public. In addition, she is currently an Assistant Adjunct Professor with the John Dossetor Health Ethics Centre at the University of Alberta; an Assistant Adjunct Professor in the Postgraduate Medical Education Office, Faculty of Medicine and Dentistry; and a

sessional lecturer in the Faculty of Law. Other activities include research, both contract and grant funded, to assist agencies in policy making. She is editor of the Health Law Journal and the Health Law Review. Ms. Bailey is currently a member of the Capital Region Health Ethics Coordinating Council, the Capital Care Group Ethics Committee, the Glenrose Health Ethics Committee and the Health Research Ethics Board Panel B (for the University of Alberta, Capital Health Authority and Caritas). She is the Chair of the National Canadian Bar Association (CBA) Health Law section and a former Co-Chair of the Northern Alberta CBA Health Law section. Ms. Bailey has also served in the past on the Edmonton Regional Mental Health Planning Committee.

Radha Chari

MD

Perinatologist and Associate Professor, Faculty of Medicine and Dentistry, University of Alberta

Radha Chari attained her MD with Distinction in 1988 at the University of Saskatchewan, and completed her residency at the University of Alberta, where she is now an Associate Professor of Obstetrics and Gynecology and the Division Director of Maternal-Fetal Medicine. She also completed a subspecialty fellowship at the University of Tennessee in Memphis in 1995.

Dr. Chari acted as the Residency Program Director of Obstetrics and Gynecology at the University of Alberta from 1997 to 2001, and was on the Examination Board of the Royal College of Physicians and Surgeons Obstetrics and Gynecology from 2000 to 2005.

Her clinical interests include Hypertension in Pregnancy, Preterm PROM, Preterm Delivery, and Prenatal Screening and Diagnosis. Currently, her research is focused on Preterm Premature Rupture of the Membranes, Preterm Delivery/ Fetal Fibronectin, Maternal Serum Screen and the High Risk Pregnancy, and Trauma in Pregnancy.

Gillian Currie

Assistant Professor of Health Economics, University of Calgary

Gillian Currie is an Assistant Professor in the Department of Paediatrics at the University of Calgary, and is also cross appointed in the Department of Community Health Sciences. She is a member of the Institute of Maternal and Child Health at the University of Calgary, and is also a Research Fellow with the Institute of Health Economics. She received a PhD in Economics from Yale University in 1998 and has been doing research in health economics at the University of Calgary since that time. Her research has been funded by the Canadian Institutes of Health Research, the Alberta Heritage Foundation for Medical Research, the Canadian Diabetes Association, and the Institute of Health Economics.

Dr. Currie's research focus is in economic evaluation of health and health care, with a primary methodological interest in stated preference methods for assessing benefits of health interventions.

Don Davis

MD

President, Society of Obstetricians and Gynaecologists of Canada

Donald Davis is the 63rd President of the Society of Obstetricians and Gynaecologists of Canada (SOGC). Dr. Davis is an Assistant Clinical Professor in the Department of Obstetrics and Gynaecology at the University of Calgary. He is also a practicing obstetrician/gynaecologist in his hometown of Medicine Hat, Alberta, where he has been providing care at Medicine Hat's Medical Arts Centre and the Medicine Hat Regional Hospital since 1978.

Dr. Davis received his medical degree from the University of Alberta in 1973 and

completed his residency training in Obstetrics and Gynaecology at Louisiana State University and at Edmonton's University Hospital from 1974 to 1978.

Dr. Davis has a long standing record of service with the Society of Obstetricians and Gynaecologists of Canada, as well as with provincial and national health associations. A member of the SOGC since 1979, Dr. Davis served as the SOGC council's Western Region Representative from 1991 to 1997, Western Chair from 1992 to 1995, and as a member of the Society's Medicolegal Committee. In addition to his many professional and time commitments, Dr. Davis also sits on the Board of Directors of the Family YMCA in Medicine Hat.

Sandra de la Ronde

MD

Calgary Urban Project Society Maternal Child Clinic

Sandra de la Ronde works as an obstetrician for the women's health program of the Calgary Urban Project Society (CUPS). This is a place for socially disadvantaged women to access obstetric and gynaecological care. These women include aboriginal women who cannot access family physician services in their rural community outside of Calgary, women from drug dependency programs, sex trade workers and homeless women. Under her guidance and leadership, the existing program of perinatal care has grown to include a Women's Health Program. She has also been a model for collaborative care, working with a nurse practitioner, a licenced practical nurse and a social worker. They have developed an innovative way of encouraging women to reach for followup care for themselves and their infants.

Catherine Ford

Author/Commentator

Catherine Ford retired in 2004 from her day job as an opinion columnist for the Calgary Herald. Her thrice-weekly columns appeared in newspapers across Canada, including the Vancouver Sun, Montreal Gazette, Edmonton Journal, Windsor Star and, of course, the Calgary Herald. She was raised and educated in Calgary and Edmonton and attended the University of Alberta majoring in English.

In her 40-year career as a journalist, Ms. Ford was Associate Editor of the Calgary Herald for eight years and prior to that, the paper's editorial-page columnist. She was in the newspaper business all her working life, joining the Herald as a reporter in 1964. She has worked on newspapers across Canada and has returned to Calgary on three separate occasions.

Ms. Ford was awarded a Southam Fellowship for study at the University of Toronto and subsequently worked for Southam News as the Ontario Correspondent, based in Toronto. She is the winner of ten Western Ontario Newspaper Awards, including the Joan May Trophy for columnists; is a National Media Award winner for the Canadian Association for the Advancement for Women and Sports and holds an International Fire Fighters' media award. She was honoured by the Alberta branch of the Canadian Bar Association with its media award in 2000; was named recipient of the Freedom of Expression Award in 2006, and holds an Association of Opinion Page Editors gold award. She is a frequent television and radio commentator and has written monthly columns for En Route magazine, Calgary Magazine and Apple. In November 2006, she was presented with the annual Bob Edwards Award.

Her non-fiction book, *Against The Grain: An Irreverent View of Alberta* was published in hard cover in 2005 to acclaim and a position on the best-seller lists. She is also a contributor to *What Is A Canadian?* published in 2006 by McClelland & Stewart.

Ms. Ford is a past president of Mensa Canada, a former member of the board of directors of the National Conference of Editorial Writers, and a member of the board of directors for Media Magazine, published by the Canadian Association of Journalists. In 2005, she was awarded an honorary doctorate from the University of Calgary and in 2006 taught a course on mass media and Canadian culture at the U of C. She will return to the U of C in 2007.

Maureen Heaman

RN PhD

Associate Professor and Associate Dean, Faculty of Nursing, University of Manitoba

Maureen Heaman is an Associate Professor and Associate Dean of

Research in the Faculty of Nursing at the University of Manitoba, with cross-appointments in the Department of Obstetrics, Gynecology and Reproductive Sciences and the Department of Community Health Sciences, Faculty of Medicine. She obtained her Bachelor of Nursing and Master of Nursing from the University of Manitoba, and completed her PhD in the Individual Interdisciplinary Program in 2001. Dr. Heaman is the recipient of a New Investigator award from the Canadian Institutes of Health Research (CIHR) (2003-2008). Dr. Heaman holds Research Associate appointments with the Manitoba Centre for Health Policy at the University of Manitoba and the Perinatal Research Centre at the University of Alberta, an Adjunct Associate Professor appointment with the Faculty of Nursing at the University of Alberta, and a Scientist appointment with the Manitoba Institute of Child Health. Her research interests include perinatal epidemiology, risk factors for preterm birth, utilization and quality of prenatal care, and psychosocial and behavioral aspects of pregnancy.

Dr. Heaman is an editorial board member for *Journal of Obstetrics and Gynaecology Canada* and *MCN The American Journal of Maternal Child Nursing*, and a reviewer for other scientific journals. She serves on the Maternal Health Study Group and the Maternity Experiences Study Group for the Canadian Perinatal Surveillance System (CPSS) of the Public Health Agency of Canada. Dr. Heaman is a member of the Institute Advisory Board for the CIHR Institute of Human Development, Child and Youth Health. In 2007, she was the recipient of the University of Manitoba Rh Award for Outstanding Contributions to Scholarship and Research in the Interdisciplinary category.

Thierry Lacaze

MD PhD FRCPC

Neonatologist, Department of Paediatrics, University of Alberta

Thierry Lacaze grew up in France and obtained his medical degree from Rene Descartes University in Paris. Following his Pediatric residency, Dr. Lacaze obtained a PhD in Developmental Biology. He then joined the University Paris-Sud to

complete a fellowship in Neonatology. He was appointed Professor in Pediatrics at the same University in 1997.

Dr. Lacaze is now staff Neonatologist at the Royal Alexandra Hospital and is Director of Research in the Department of Pediatrics. His main research interests are prematurity-related diseases and long-term consequences, lung development, pulmonary surfactant, and newborn brain injury.

Taunya Madge

Parent, Preterm Quads

In July 2001 my husband Rob and I had just found out we were pregnant. We were very excited and surprised because we had just started trying. When we went for our first prenatal exam, our Doctor suggested that I was a bit big for dates. Thinking that maybe we were going to have twins was a very excited thought but nothing could prepare us for what happened next.

We were scheduled for an early ultrasound and both my husband and myself went to the appointment already knowing in our hearts we were having more than one baby. The ultra sound technician took quite awhile – checking things out before she said, “We better bring your husband in.” When Rob was seated comfortably she said, “Would you like me to show you your four babies?” We could not believe our eyes or ears.

We then were referred to many specialist and support groups to help us prepare for the arrival of the Madge Boys. We knew that the boys would be born earlier than full term but never thought for a moment that we would have any difficulty bringing in all four boys happy and healthy. It was 3:00 am when I woke to a terrible pain in my back and strong feeling of pressure. I woke Rob, and we went off for the hospital.

The news was heart wrenching. We were in labour and there was no stopping it. We were just 24 weeks along and now we were going to deliver the boys. I begged the doctor to make the labour stop but there was nothing more he could do. All four boys were delivered, put on respirators and whisked off to the NICU. Baby A (as he was referred to) was

Wesley at 1 lb 1oz, Baby B was Justin at 1lb 7 oz, Baby C was Matthew at 1lb 11 oz and Baby D was Avery at 1lb 1oz. The days that followed were such a blur. The boys were very sick and fighting for their little lives.

The odds were not great and all we could do as parents was hope and pray and surround our children with love. At 10 days old, Wesley had a massive lung insult for which there was no recovery. At 24 days old, Justin’s lungs could take no more pressure from the ventilator and we had to let him go. There is no pain like watching your very sick children suffer, except for the pain of losing them. Matthew and Avery continued to fight. Lots and lots of ups and downs. PDA surgery, ROP surgery, hernia surgery to name a few. I remember making note of every gain and every loss in my journal each day as they continued to grow and thrive. 111 days later we were going home with our two little miracles.

Now they are vivacious, out going, active, inquisitive little four year olds. Matthew and Avery have been attending Renfrew since September 2005 and we can’t believe where the time has gone. If we have one message to all parents of babies in the NICU and SCU it is this... try not to think about tomorrow, focus your energy on today, and if you do, you will find the little miracles that are all around you.

Rory North

CFA

Chief Operating Officer and Portfolio Manager, North Growth Management

Rory North is a 37 year old father of three boys. The oldest child, was born at 25 weeks, weighing 625 grams and spent five months in hospital. The middle child was born at 34 weeks, weighing 1870 grams and spent three weeks in hospital. The youngest child was born at 37 weeks, weighing 2410 grams and spent no time in hospital.

Mr. North is the Lead Portfolio Manager and Chief Operating Officer at North Growth Management Ltd, a Vancouver based mutual fund company focused on US equities. He is also a director of the North Growth Foundation, a small private foundation focused on hard to fund

environmental and social issues. Rory's previous experience was in investment banking in Canada and equity research in Asia.

Lesley Paulette

*Registered Midwife with the Fort Smith Health and Social Services Authority
Fort Smith, Northwest Territories*

Lesley Paulette works as a registered midwife in the small rural community of Fort Smith on the border of Alberta and the Northwest Territories, where she has lived for twenty-five years. Of Mohawk descent, she is a member of the Smith's Landing First Nation.

She has helped to return birthing services to the community of Fort Smith and to ensure the recognition of midwifery as a regulated health profession in the NWT. Her participation in the design and implementation of a PHCTF project has resulted in the integration of midwifery services into the core programming of the Fort Smith Health and Social Services Authority.

Jim Ruiter

*BSc MD
Rural Family Doctor, Bonnyville*

Jim Ruiter is a family physician from Bonnyville, a small town in rural Alberta. He qualified in general practice at the University of Alberta with advanced obstetric privileges in 1989. He began work in Bonnyville in that year and this practice has now evolved into predominantly an obstetrical one. He has been involved in Primary Care Networks (PCN) since their inception as a physician lead, utilising it as a vehicle to improve patient care and access to health care in his town. As part of the PCN, he has implemented an innovative, and well-received Well Baby Program and a multidisciplinary patient centered office based Obstetric Program. As he became more involved in the process of change in medicine as it pertained to the PCN, he became interested in the process of change in the culture of medicine. He is a clinical lecturer in the department of Family Medicine at the University of Alberta's Faculty of Medicine.

Dr. Ruiter is a member of the faculty of the Society of Obstetricians and

Gynaecologists of Canada assisting in teaching their patient safety program, MOREOB across the country; he is also a member of their Obstetric Content Review Committee. He is a member of the Education Standing Committee of the Alberta Perinatal Health Program. He is committed to sustainable high quality rural obstetrics and to the world of Patient Safety. He has become vocal in forwarding the agenda for Patient Centred Care. However, he is mostly committed to his wife and four children who are his never ending support!

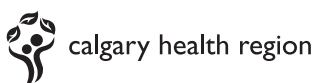
Richard Stanwick

*MD MSc FRCPC FAAP
Chief Medical Officer of Health, Public Health/Aboriginal Experience, Vancouver Island Health Authority*

Richard Stanwick is currently the Chief Medical Health Officer for the Vancouver Island Health Authority, formerly the Capital Health Region, in Victoria. He completed his medical school training and received his Fellowship in Pediatrics after training at the Winnipeg Children's Hospital. He did a Fellowship in Community Pediatrics at McGill University, where he also received his Masters Degree in Epidemiology and Health. On his return to Manitoba, Dr. Stanwick acquired his Fellowship in Community Medicine and rose to the rank of Full Professor at the University of Manitoba. He spent two years with the Province of Manitoba, including one as the Acting Provincial Epidemiologist. He became the Medical Officer of Health for the City of Winnipeg in 1990, a post he held for five years. He joined the Capital Regional District in September 1995 and the (now) Vancouver Island Health Authority, in April 1997.

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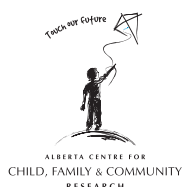
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