

SERVING OUR COMMUNITIES' NEEDS: PROGRESS IN WOMEN'S REPRODUCTIVE HEALTH CARE

Department of Obstetrics & Gynaecology
2015-2016 Performance Report



INSIDE

Caring for women

- 4 Expanding fertility treatments: Atlantic Assisted Reproductive Therapies develops services and capacity to help couples conceive
- 6 Diabetes in pregnancy: Clinic marks 20 years of protecting moms and babies from diabetes risks
- 8 Cutting cancer risk: Clinic assesses and addresses women's risk of hereditary cancers

Educating physicians

- 10 Developing subspecialists: Post-residency training programs ensure highest standards of patient care
- 12 Broadening horizons: Overseas experiences offer insights and inspiration
- 14 Global health at home: Residents launch clinics for vulnerable women in Halifax

Improving health through research and innovation

- 16 Safe deliveries in Tanzania: Innovation project builds capacity for high-level obstetric and neonatal care in Africa
- 18 Safe passage to birth: Health care improvement grant supports superior care in labour's second stage
- 19 A legacy of learning: Atlee endowment fund provides perpetual support for research
- 20 Shedding light on the sunshine vitamin: Researchers explore impacts of vitamin D status in pregnancy

MISSION STATEMENT

Within our discipline, to promote optimal health of women, their children and families, through excellence in clinical care, education and research.



SERVING OUR COMMUNITIES' NEEDS

A message from Dr. Anthony Armson



B. Anthony Armson

Head, Department
of Obstetrics &
Gynaecology

I AM DELIGHTED TO SHARE

with you the Department of Obstetrics & Gynaecology's 2015-2016 performance report, "Serving Our Communities' Needs: Progress in Women's Reproductive Health Care."

As you will see, the department is dedicated to meeting the changing health care needs of women, couples and families through our three-part mission to deliver excellence in clinical care, education and research.

We are seeing and responding to major shifts in the health status of our population. For example, infertility rates have doubled in Canada since the 1980s. Over the past few years, Atlantic Assisted Reproductive Therapies has introduced new technologies and procedures that are increasing pregnancy success rates for couples in Atlantic Canada.

Another troubling statistic shows gestational diabetes doubled in Nova Scotia between 2001 and 2014. In response, we've expanded clinics and education programs to help more women manage diabetes in pregnancy and prevent potentially tragic complications. Department members are also working to reduce the risk that women with certain inherited mutations will develop gynaecologic cancers, improve the management of the second stage of labour, and determine how much vitamin D women should take in pregnancy.

Department members are responding to urgent health care needs of women in other countries, through large-scale research projects designed to improve the safety of childbirth, as well as smaller-scale projects, sabbaticals and elective work placements.

We were very proud to work with our colleagues in the departments of Surgery and Anesthesia, Pain Management & Perioperative Care to organize and host the 15th annual Bethune Round Table. This conference brought together 132 delegates from 13 countries to devise strategies for improving outcomes of surgical care in low- and middle-income countries.

Closer to home, our physicians, residents and students have initiated new efforts to help women overcome barriers to quality care. This included many volunteer hours to launch well-women clinics at the North End Community Centre in Halifax and education sessions/clinics for refugee women.

I continue to be inspired by the passion, creativity and absolute commitment of our department members. In 2016, we bade farewell to four members who together spent nearly 130 years serving the health needs of women in their care. I am forever grateful to them, and our remaining faculty members, trainees and staff, for their tireless efforts.

A handwritten signature in blue ink, appearing to read "B. Armson".

OUR PEOPLE

Dalhousie's Department of Obstetrics & Gynaecology, faculty, staff and trainees as of December 2016

General Obstetrics & Gynaecology

Nicholas Braithwaite, MD, assistant professor
Thomas Corkum, MD, assistant professor
Catherine Craig, MD, associate professor
Isabelle Delisle, MD, assistant professor
Winifred Lee, MD, assistant professor
Scott Mawdsley, MD, assistant professor
Leanne McCarthy, MD, assistant professor
Barbara Parish, MD, associate professor
David Rittenberg, MD, assistant professor
Brett Vair, MD, assistant professor
Nancy Van Eyk, MD, associate professor

Maternal Fetal Medicine

Victoria Allen, MD, professor
B. Anthony Armson, MD, professor
Jo-Ann Brock, PhD, MD, associate professor
Jillian Coolen, MD, associate professor
Lynne McLeod, MD, associate professor
Chris Nash, MD, assistant professor
Heather Scott, MD, associate professor
Michiel Van den Hof, MD, professor

Gynaecologic Oncology

James Bentley, MD, professor
Robert Grimshaw, MD, associate professor
Katharina Kieser, MD, associate professor
Stephanie Scott, MD, assistant professor

Urogynaecology

Baharak Amir, MD, assistant professor
Scott Farrell, MD, professor
Donna Gilmour, MD, associate professor
Marianne Pierce, MD, assistant professor

Gynaecologic Reproductive Endocrinology & Infertility

Renda Bouzayen, MD, associate professor
Linda Hamilton, MD, associate professor
Mike Ripley, MD, assistant professor

Scientific Faculty

Younes Anini, PhD, associate professor
Linda Dodds, PhD, professor
Stefan Kuhle, PhD, associate professor
Christy Woolcott, PhD, associate professor

Administrative Staff

Jillian Ashley-Martin
Darlene Baxendale
Mary Boudreau
Catherine Bulger
Karen Collins
Coralee Gallant
Joan Halfyard
Catherine Hamblin
Tina Hiscock
Catherine Kelly
Angela MacDonald
Annette MacLellan
Bryan Maguire
Kelly Maher
Adrienne McCarthy
Gayle McGee
Michelle Pineau
Janice Rafuse-Crowe
Janet Slaunwhite
Beverly Thomas
Tess Williams
Pamela Zimmer

Residents & Fellows

Lauren Adolph, PGY1
Alyson Digby, PGY1
Rebecca McBriarty, PGY1
YuYang Wang, PGY1
Justin White, PGY1
Kaitlyn Adare, PGY2
Navi Bal, PGY2
Ian Ferguson, PGY2
Megan O'Neil, PGY2
Lavanya Ravichandran, PGY2
Jocelyn Stairs, PGY2
Brittany Black, PGY3
Kiel Luhning, PGY3
Gillian MacMullin, PGY3
Heather Stone, PGY3

Mohammad Alyafi, PGY4
Rachelle Findley, PGY4
Seirin Goldade, PGY4
Shannon Joice, PGY4
Jessica Pearsall, PGY4
Lesley Roberts, PGY4
Jessica Bosse, PGY5
Maeghan Keddy, PGY5
Anca Matei, PGY5
Angus Murray, PGY5
Amanda Moore, PGY5

Subspecialty Trainees

Lise Gagnon, MFM
Mila Smithies, MFM
Anita Smith, urogynaecology

Research Trainees

Jehier Afifi, MSc candidate
Maggie Brown, MSc candidate
Jillian Carter, MSc candidate
Martina Desousa, medical student
William Gendron, MSc candidate
Seirin Goldade, CIP program
Emily Gray, medical student
Alexa Grudzinski, medical student
Courtney Gullickson, medical student
Maria Hartley, MSc candidate
Liz Jeffers, MSc candidate
Allan Kember, medical student
Maria Karaceper, medical student
Felicia Ketcheson, MSc candidate
Michael Landsman, honours science student
Natasha MacInnes, medical student
Nicholas MacLellan, medical student
Kayla MacSween, medical student
Anna von Maltzahn, MSc candidate
Kim Nix, medical student
Meghan Plotnick, medical student
Rodrigo Romao, MSc candidate
Ashley Rowe, MSc candidate
Kyungsoo Shin, PhD candidate
Emily Whelan, medical student
Akila Whiley, medical student



CARING FOR WOMEN

EXPANDING FERTILITY TREATMENTS:

Atlantic Assisted Reproductive Therapies develops services and capacity to help couples conceive

INFERTILITY RATES IN CANADA

have doubled since the 1980s. As increasing numbers of couples face this heartbreaking situation, the team at Atlantic Assisted Reproductive Therapies (AART) in Halifax, N.S., is expanding the clinic's ability to help these couples build the families they so deeply desire.

"Infertility is not a choice but an increasingly prevalent problem faced by as many as one in six couples in Canada," says Dr. Linda Hamilton, AART's medical director and an associate professor in Dalhousie's Department of Obstetrics & Gynaecology. "It can be devastating to peoples' lives and relationships. We are dedicated to helping couples from across Atlantic Canada realize their dream of having a child."

The AART team consistently achieves pregnancy success rates greater than 55 per cent per in vitro fertilization cycle started, for women under the age of 35. These are in line with the best results in Canada and above the national average of 39 per cent per cycle started. With the March 2016 addition of the most advanced climate-controlled equipment for protecting embryos and eggs during handling and examination, the team aims to push success rates even higher.

"AART is the first fertility clinic in Canada to install the third-generation Cell Tek workstation," notes AART's scientific director,

Dr. David Mortimer, a reproductive biologist who advises fertility clinics around the world. "Temperature, PH balance and humidity are carefully controlled, and any impurities filtered from the air, inside this fully enclosed chamber. A high-powered microscope and arm ports allow embryologists to examine eggs

and embryos without exposing them to stressors in their environment. Research shows these workstations can increase the number of high-quality embryos by as much as 50 per cent compared to conventional IVF workstations... it's a very worthwhile investment in success."



◀ Dr. Renda Bouzayen, division head, Gynaecologic Reproductive Endocrinology & Infertility program (GREI) and director of the GREI training program; Dr. Mike Ripley, and Dr. Linda Hamilton, medical director of AART

▼ The new Cell Tek chamber provides a perfectly controlled environment for handling embryos and eggs.





Amanda Barrett-Jackson, Barrett Jackson Photography

EMILY ROBERTSON grew up knowing her greatest goal in life was to be a mother—but for her, the journey would not be easy. After trying for two years, she and her husband, David Irwin, sought help for their apparent infertility. Dye tests revealed Emily's fallopian tubes were completely blocked by scar tissue, the result of surgery at age 12 to prevent her rare bowel disease from becoming cancerous. They decided to proceed with in vitro fertilization through Atlantic Assisted Reproductive Therapies (AART) in Halifax. Their hopes were high in 2012 when their first cycle resulted in pregnancy—then dashed when Emily miscarried around six weeks and again when their two frozen embryos failed to survive the thawing process. Gathering their courage, they started another cycle under the care of Dr. Renda Bouzayen in 2013. This time, they were blessed with a healthy boy, Braxton, born with Dr. Bouzayen's assistance on December 7 (and shown moments after his birth on the front cover of this report, in a photo taken by his father).

"To finally be able to hold him in our arms, what we had hoped for and wanted so long, was the most amazing feeling," Emily says. "It was an emotional roller coaster to get here, but it was so worth it."

In November 2016, Emily and David were thrilled to announce the success of another fertility cycle. They are expecting a brother for Braxton—Tucker Irwin—in the spring of 2017.

AART has also invested in a new equipment for freezing embryos and eggs using a process called vitrification. "Unlike normal freezing, vitrification prevents the formation of ice crystals, reducing the likelihood

of damage and increasing survival rates when thawing frozen eggs and embryos," notes Dr. Hamilton. "This is particularly important for preserving the viability of frozen eggs."

Several members of AART's lab staff have completed training in the delicate art of egg freezing and thawing. This, along with the new equipment, positions AART to achieve greater success with egg freezing.

"There are many reasons a woman may want to freeze her eggs," says Dr. Mike Ripley, a physician at AART and assistant professor in the Department of Obstetrics & Gynaecology. "If she needs chemotherapy or radiation for cancer, for example, or if she is establishing a career, she may want those young and healthy eggs safely stored so she has the option to pursue fertility when the time is right."

Atlantic Assisted Reproductive Therapies (AART) is:

- achieving pregnancy success rates as high as any in Canada, greater than 55 per cent per cycle started for women under 35
- building capacity to perform up to 500 IVF cycles a year
- expanding services to include egg, as well as embryo, freezing
- first in Canada to adopt the latest climate-controlled technology for handling eggs and embryos
- providing access to pre-implantation testing of embryos for chromosomal and genetic abnormalities

AART is a not-for-profit clinic established by the physician practice group of the Department of Obstetrics & Gynaecology in 2004.

DIABETES IN PREGNANCY:

Clinic marks 20 years of protecting moms and babies from diabetes risks

THE PREGNANCY AND DIABETES

Clinic at the IWK has been helping pregnant women with diabetes control their blood sugar and keep themselves and their babies healthy since 1995.

“The idea was to create a single entry point where pregnant women with gestational or pre-existing diabetes could receive all the care and information they needed in one visit, in one location,” explains Department of Obstetrics & Gynaecology Head, Dr. Anthony Armson, who co-founded the clinic with colleagues in maternal-fetal medicine, endocrinology, nursing, dietetics, social work, physiotherapy, and mental health. Modelled after a multidisciplinary clinic in California, it was the first of its kind in Canada.

“As a result of the comprehensive care provided through the clinic, we’re seeing fewer diabetes-related pregnancy complications, even though rates of diabetes in pregnancy are climbing,” notes Dr. Armson.

Pregnancy statistics collected through the Nova Scotia Atlee Perinatal Database show that rates of gestational diabetes more than doubled in the province between 2001 and 2014, from 2.7 to 6.5 per cent of pregnancies. This rise in gestational diabetes rates brings with it a rise in associated risks.

“Uncontrolled blood sugar affects the placenta and fetus and can lead to miscarriage, stillbirth,



Front: Coleman, A.J., Breton, Kinnon; Back: Maddox, Mary

MARY BARRINGTON GEORGE calls them her “sugar babies.” Four sons, all born healthy and with no complications, in spite of the fact that she developed gestational diabetes during each of her first two pregnancies and was diagnosed with type 2 diabetes before her third. The middle-school teacher from East Hants, N.S., credits the Pregnancy and Diabetes Clinic at the IWK Health Centre for her ability to control her blood sugar throughout four pregnancies.

“They taught me how to monitor and manage my sugars on a daily basis, administer insulin, and keep meticulous records we would go through on each visit to see what was happening and what I could do to keep things on an even keel,” recalls Mary, who’s expecting a fifth baby in March 2017. “It was reassuring to know I could call or email with questions anytime between visits.”

or birth defects involving the heart, kidneys and spine,” says Dr. Jillian Coolen, a maternal-fetal-medicine specialist in the clinic. “More typically, we see babies born too

large or too early, and often with jaundice, respiratory problems, and/or low blood sugar.” As she explains, hypoglycemia can trigger damaging seizures in newborns.



▲ The diabetes clinic staffers, left to right: Cheryl Shipley, Cathy Walsh, Joline Medynski, Dr. Jillian Coolen, Dr. Shirl Gee, Kim Munro

By educating women and working with them—before, during and between pregnancies—the Pregnancy and Diabetes Clinic has reduced the rates and severity of such complications and virtually eliminated the hospitalizations that used to be common among pregnant women with diabetes.

“Before we had this clinic, women with diabetes could spend as many as nine to twelve weeks in hospital throughout their pregnancies,” recalls Lois Ferguson, a registered nurse who worked with the clinic from its inception until her retirement in 2015. “They would have to be admitted three or four times to get their sugars under control, and would often spend the last month of their pregnancy

in hospital, where we could closely monitor the fetus to reduce the likelihood of stillbirth. Diabetes-related pregnancy admissions are now extremely rare.”

Over the years, the clinic has expanded its services to meet growing and changing needs. In addition to providing prenatal care to women with pre-existing diabetes in their interprofessional clinic, staff now run two to three group classes a week for women with gestational diabetes. They’ve also started working with diabetes centres across Nova Scotia to ensure women in all parts of the province have appropriate support. Recently, they’ve added a new clinic for pregnant women with gestational diabetes severe enough to require insulin, and made more appointments available for women with diabetes who are looking for guidance before attempting to conceive.

“We want to ensure the healthiest pregnancies and best outcomes for women with any kind of diabetes,” Dr. Coolen notes. “This approach includes counselling women with diabetes or a history of gestational diabetes to be physically active and

keep their weight and blood sugar under control before they conceive—to prevent potentially serious birth defects—and maintain these health targets after giving birth to reduce their own risk of diabetes and its complications.”

The Department of Obstetrics & Gynaecology took the lead in establishing the Pregnancy and Diabetes Clinic in 1995.

The Pregnancy and Diabetes Clinic is:

- helping approximately 250 women a year manage diabetes and stay healthy during pregnancy
- teaching women with gestational diabetes how to monitor blood sugar and keep their levels steady with proper planning and timing of meals and physical activity
- teaching women with more severe gestational or pre-existing diabetes how to administer insulin/adjust their dose/use insulin pumps
- reducing rates of diabetes-related pregnancy complications, such as pre-eclampsia, miscarriage, premature labour and stillbirth
- dramatically reducing diabetes-related hospitalization of pregnant women
- reducing neonatal complications in babies of mothers with diabetes

CUTTING CANCER RISK:

Clinic assesses and addresses women's risk of hereditary cancers

ALTHOUGH FEWER THAN TEN

per cent of all cancers are caused by an inherited gene, people who carry certain defective genes face a steep increase in lifetime risk. That's why gynaecologic oncologist Dr. Katharina Kieser is working with Maritime Medical Genetics at the IWK Health Centre to identify women and family members with genetic mutations that can lead to gynaecologic cancers.

"People with the mutations for Lynch syndrome, for example, have a 50 per cent chance of developing endometrial cancer, colon cancer—or both—over the course of their lifetime," says Dr. Kieser, an associate professor in the Department of Obstetrics & Gynaecology. "These and other cancers associated with Lynch syndrome are often aggressive and tend to occur at a fairly young age."

Dr. Kieser and her colleague, gynaecologist and assistant professor Dr. Leanne McCarthy, see as many as 24 new Lynch syndrome patients a year at the Hereditary Gynaecologic Cancer Clinic at the QEII Health Sciences Centre. For most women, abnormal bleeding is their first indication that something is wrong. As Dr. Kieser explains, "Pap tests do not pick up early endometrial cancers, there is no sensitive way to screen for this disease."

First-line treatment of endometrial cancers involves surgical removal of the uterus, fallopian tubes and ovaries, and possibly lymph



▲ Dr. Katharine Kieser and Dr. Leanne McCarthy (inset)

nodes. If the patient is under the age of 50, gynaecologic pathologists examine the tumour for a specific group of proteins. If these particular proteins are missing, there is a chance the patient has Lynch syndrome and she is referred to Maritime Medical Genetics for possible genetic testing.

"If Lynch syndrome is confirmed, the woman will be referred for ongoing screening for colon and other cancers associated with the syndrome," Dr. Kieser says. "Her family members will also be referred for testing and then the appropriate cancer screening... we see the female relatives to discuss the possibility of preventive hysterectomy."

Dr. Kieser and Dr. McCarthy take a similar approach to another genetic

cause of cancer—mutations in the BRCA gene that give affected women a 60 to 80 per cent lifetime risk of developing breast cancer, and a 15 to 40 per cent lifetime risk of developing ovarian cancer.

"Women we identify with Lynch syndrome or as BRCA-positive face some tough and very personal decisions, particularly if they're young and haven't yet started a family," notes Dr. McCarthy. "We help them understand their risks and options, so they can make well-informed decisions about preventive surgeries versus active surveillance. The key thing is, we know they're at risk and we continue to follow them."



EDUCATING PHYSICIANS

DEVELOPING SUBSPECIALISTS:

Post-residency training programs ensure highest standards of patient care

CERTAIN SUBSPECIALTY FIELDS

within obstetrics and gynaecology require training beyond a five-year residency. The complexities of maternal fetal medicine, urogynaecology, and reproductive endocrinology and infertility—among other subspecialties—require highly specialized knowledge and skills. Obstetrician-gynaecologists complete two additional years of intensive training following their residencies to practice in these fields. Dalhousie's Department of Obstetrics & Gynaecology offers this training in all three.

“Our subspecialty programs have stellar reputations and attract top-quality applicants from across Canada,” says Dr. Baharak Amir, director of the urogynaecology training program. “These trainees are incredibly valuable assets who bring

skill and enthusiasm to their vital roles in educating residents, caring for patients and leading research initiatives.”

Many of these trainees choose to stay on and pursue careers in the Maritimes, building the region's capacity to provide the highest level of care in these important fields.

“Subspecialists provide essential back-up to obstetricians and gynaecologists, who turn to them for consultations and referrals,” notes Dr. Renda Bouzayen, director of the gynaecologic reproductive endocrinology and infertility training program. “Without them, we would not be able to maintain our standards of care and women and couples would have to travel outside the region to receive the care they need.”

The Department of Obstetrics & Gynaecology is deeply committed to

its subspecialty training programs.

“As an academic centre, we strive to provide appropriate educational opportunities, in order to prepare the next generation of subspecialists to be competent leaders in their fields,” says Dr. Victoria Allen, director of the maternal fetal medicine program. “The impact of this is felt across Canada, with our graduates working in centres from British Columbia to Newfoundland.”

Dalhousie OB-GYN subspecialist trainees:

- are future leaders and care providers in the fields of reproductive endocrinology, maternal-fetal medicine and urogynaecology
- provide exemplary clinical care to women in Atlantic Canada
- play a vital role in educating residents and medical students
- take the lead on important research initiatives
- are essential to the vitality and reputation of an academic health centre



▲ Maternal fetal medicine fellow Dr. Lise Gagnon perfects her ultrasound skills.



▲ Mila Smithies, maternal fetal medicine specialist and PGY4, Seirin Goldade, practising in the Skills Lab.

“Subspecialists provide essential back-up to obstetricians and gynaecologists, who turn to them for consultations and referrals.”

—DR. RENDA BOUZAYEN
Gynaecologic Reproductive
Endocrinology & Infertility training
program



DR. ANITA SMITH
Urogynaecology

Early in her residency at Dalhousie, Dr. Anita Smith observed the surgical repair of a woman's prolapsed uterus, done through the vagina rather than an abdominal incision. The surgeon's technical skills and patient's excellent results piqued her interest in non-invasive surgery and urogynaecology. "As our population ages, more women will require specialist care for pelvic-organ prolapse and incontinence," she says. "These problems aren't life threatening, but they do have a huge impact on quality of life. It's gratifying to develop the skills to fix them from the outstanding surgeons here in Halifax. I hope to use these skills helping women in the Maritimes when I finish my training."



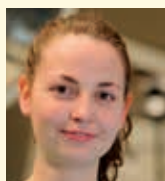
DR. DIANE AHN
Gynaecologic Reproductive Endocrinology & Infertility

Ontario native Dr. Diane Ahn came to Halifax after completing an honours degree in science at the University of Toronto. "I was looking for a more personal, community-focused medical education program," she says. "I love it here and opted to stay at Dal for my residency in obstetrics and gynaecology and fellowship training in reproductive endocrinology and infertility." Dr. Ahn sees patients at the IWK Health Centre and Atlantic Assisted Reproductive Therapies. The latter provides fertility treatments to women and couples from across the region. "Between the IWK and AART, we get a lot of referrals for complex cases, so we trainees are exposed to a tremendously broad spectrum of problems."



DR. LISE GAGNON
Maternal Fetal Medicine

After MD and residency training at University of Ottawa and UBC, Shediac native Dr. Lise Gagnon was thrilled to pursue maternal fetal medicine subspecialty training at Dalhousie, with funding from the New Brunswick government. "There's a big focus on diagnosing fetal anomalies and growth restrictions, and monitoring women with high-risk pregnancies and complex medical conditions," she says, adding that her research explores the impact of threatened preterm labour on fetal growth and birth outcomes. After her training is complete, she will return to N.B. to provide advanced prenatal care.



DR. MILA SMITHIES
Maternal Fetal Medicine

Women's health and childbirth has always been a keen interest for Dr. Mila Smithies, who completed a degree in women's studies and considered midwifery training before entering medicine at University of Western Ontario. She chose Dalhousie for her residency in obstetrics and gynaecology and fellowship in maternal fetal medicine. "Dalhousie is nationally recognized for the excellence of its MFM fellowship," notes Dr. Smithies, who says she "found her home in medicine" with the MFM subspecialty. "It is a deep privilege to help families through complicated pregnancies and then be with them through the delivery as well."

BROADENING HORIZONS:

Overseas experiences offer insights and inspiration



SINCE LAUNCHING ITS GLOBAL

Health Interest Group in 2013, the Department of Obstetrics & Gynaecology has facilitated overseas experiences for several residents seeking the new perspectives that time in another country provides. Numerous faculty members have also travelled abroad on research, teaching and service missions, bringing back new knowledge and inspiration to share with their trainees and peers.

DR. ELIZABETH RANDLE: Systems for safer birth in Rwanda

For senior resident, Dr. Elizabeth Randle, four weeks on a Dal-IWK mission to Rwanda instilled a deeper appreciation of the risks and challenges of birth in the developing world. “They have substantial issues with maternal and newborn morbidity and mortality,” she says, pointing for example to the high numbers of mothers who die from sepsis after c-section.

One of Dr. Randle’s roles during her time at Centre Hospitalier Universitaire de Kigali was to test the feasibility of a “safe childbirth checklist.” Similar to the World Health Organization’s safe surgery checklist, this is designed to ensure thoroughness at every major checkpoint along the obstetric care path—from admission through labour and delivery to discharge.

In spite of the differences she observed between birthing in Rwanda, compared to Canada, Dr. Randle was most powerfully struck by the similarities: “No matter where you are, moms in labour experience the same fears and the same joy when their child is safely born.”

DR. ANCA MATEI: Better data for better birth outcomes in Ghana

Dr. Anca Matei has made two trips to Ghana during her residency so far, as part of a contingent of Dalhousie faculty members who make frequent visits to the country through the Kybele educational partnership. One of Kybele’s goals is to improve birth outcomes but, as Dr. Matei discovered, lack of health data in Ghana makes progress difficult to track.

“My time in Ghana opened my eyes to the importance of consistent, methodical data collection,” says Dr. Matei. “Reliable data provides the only means of understanding what’s really happening, so you can trace problems to their root cause, address them, and monitor results.”

On Dr. Matei’s second stint, the Kybele team worked with teaching hospital staff to lay the groundwork for launching a surgical safety checklist and better audit tools for monitoring maternal and perinatal care at the hospital. “We want to support the Ghanaians’ efforts to improve quality of care and safety of childbirth,” she says.

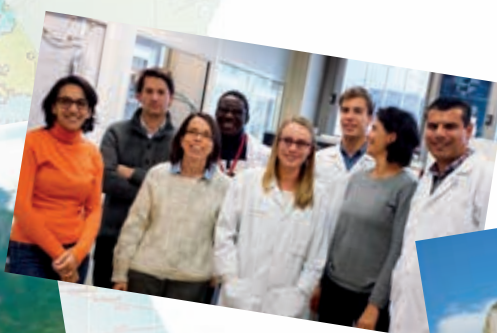


DR. ANTHONY ARMSON: Preventing preterm birth worldwide

Department head Dr. Anthony Armson followed his long-time interest in preventing preterm birth to World Health Organization (WHO) headquarters in Geneva, Switzerland. During his two-month sabbatical in 2015, Dr. Armson pored over systematic reviews of interventions to prevent preterm birth in low, middle and high-income countries.

“Preterm birth is the leading cause of newborn and infant morbidity and mortality worldwide,” Dr. Armson says. “A WHO study published in *The Lancet* found that being born too soon raises the risk of newborn death 6 to 26 times in resource-poor countries—with rates of preterm birth as high as 25 per cent in some places, the impact is enormous.”

Dr. Armson is helping the WHO craft a plan to reduce these rates and improve outcomes for preterm babies. “I’m assessing the evidence and working with others to prioritize interventions for implementation and more research,” he says.



“My first steps are identifying the most promising interventions and the issues we need to explore further.”

For Dr. Armson, who plans to continue his work with the WHO until and after his retirement in 2018, the time in Geneva was energizing: “Just to be there with several thousand other people, everyone passionately involved in their mission, was inspiring.”

DR. YOUNES ANINI: Understanding appetite and obesity

In his month with a leading research group at Université Paris Diderot, Dr. Younes Anini gained new insights into the role of hormones in obesity, infertility and weight loss.

“The Paris group has developed many models and techniques for studying metabolic dysfunction,” explains Dr. Anini, an associate professor in the Neuroendocrine and Reproduction Investigation Unit in Dalhousie’s Department of Obstetrics & Gynaecology. “We are now able to apply these in my lab in Halifax... It’s very important, as a scientist, to step back and see what other people are doing.”



His time in Paris set the stage for ongoing collaboration, with a focus on the roles of leptin, ghrelin and insulin in appetite and energy regulation. This will play into Dr. Anini’s work with a local collaborator, Atlantic Assisted Reproductive Therapies. “Obesity is a key contributor to infertility,” notes Dr. Anini. “We’re looking for biomarkers to help us assess the viability of individual eggs for in vitro fertilization procedures.”

Trips abroad on sabbatical or elective experiences:

- broaden perspectives and deepen insights of trainees and faculty members
- help health care teams and institutions in the developing world advance teaching, practice and standards of care
- expose faculty and trainees to new techniques, methods, models and philosophies
- strengthen partnerships and lay the groundwork for future teaching, service and research endeavors

GLOBAL HEALTH AT HOME:

Residents launch clinics for vulnerable women in Halifax



◀ Drs. Navi Bal, Amanda Moore and Anca Matei (left to right) are among the OB-GYN residents who volunteer at a well-woman clinic at the North End Community Health Centre. Drs. Rachelle Findley, Leslie Roberts, Anita Smith and Jocelyn Stairs also see women at the monthly clinic.

MEMBERS OF THE OBSTETRICS & Gynaecology Global Health Interest Group know “global health” encompasses more than outreach to the developing world. It also tends to the needs of marginalized groups in advanced nations like Canada. That’s why OB-GYN residents are reaching out to vulnerable women in Halifax—be they locals living in shelters or refugees from war-torn regions.

“There are so many barriers that prevent some women from receiving the health care they need,” says senior resident, Dr. Amanda Moore. “It’s important for us, as residents, to learn about these barriers from the women who face them, and to do what we can to address them.”

In just such an effort, a handful of OB-GYN residents launched a education program and clinic for refugee women in October 2015, through the Transitional Health Clinic for Refugees in Halifax.

“We developed education materials about HPV, cervical cancer and Pap tests, which we had translated into Arabic, Nepalese and Farsi,” says Dr. Moore. She notes that this is unfamiliar material for many refugees; there are cultural as well as language barriers to surmount. “Interpreters worked with us to present the information and answer women’s questions. We let the women handle the speculum and used simulation models to show them how the test works. With the information and comfort level we’d provided, most women chose to have a Pap test.”

Another well-woman clinic—which the residents launched in January 2016 at the North End Community Health Centre (NECHC) in Halifax—provides evening office visits with OB-GYN residents once a month. In addition to Pap tests, the residents check for sexually transmitted infections, perform

breast exams, and discuss birth control options, among other issues.

“Many women who come to this clinic are socially vulnerable,” notes Dr. Jocelyn Stairs, an OB-GYN resident who volunteers at the clinic. “Some live in shelters, some work in the sex trade, some are clients of the methadone clinic. Instead of a formal interview, we let them drive the conversation—they seem to appreciate the opportunity to talk openly about their concerns.”

The north end clinic doesn’t benefit only those women who attend. “The residents are gaining a much deeper understanding of these women’s lives and the challenges they face, which will inform their future practice,” says Dr. Anne Houstoun, a family physician at the NECHC for 30 years. “They have a genuine interest in social justice and a great deal of enthusiasm, which will influence their colleagues as well.”



IMPROVING HEALTH THROUGH
RESEARCH AND INNOVATION

SAFE DELIVERIES IN TANZANIA:

Innovation project builds capacity for high-level obstetric and neonatal care in Africa

DALHOUSIE-IWK CLINICIAN-

researchers are working with health care teams in Tanzania to develop, launch and evaluate obstetric and neonatology training programs in this magnificent yet challenged east African nation.

“There are few trained obstetrician-gynaecologists, anesthesiologists or neonatologists in Tanzania,” explains Dr. Heather Scott, associate professor in the Department of Obstetrics & Gynaecology. “There has been training in c-section for medical officers, who are the Tanzanian equivalent of a general practitioner, but not much in obstetric

emergencies, vacuum and forceps delivery, post-partum hemorrhage, newborn respiratory distress, and other critically important topics.”

Dr. Scott and her colleagues are striving to help fill this gap, with funding from Canada’s Global Health Research Initiative, which awarded the Dalhousie team nearly \$1 million over four years through its “Innovating for Maternal and Child Health in Africa” program. Dr. Scott is joined by Dalhousie collaborators in obstetric anesthesia (Dr. Ron George), neonatology (Dr. Doug MacMillan, Dr. Marsha Campbell-Yeo), health human resources (Dr. Gail Tomblin) and global

health (Shawna O’Hearn). Dr. John LeBlanc, a pediatric psychiatrist, is the principal investigator.

The Dal team is working with staff in the Tanzania Training Centre for International Health to develop and test an intensive hands-on training program, supported by online modules and ongoing mentoring.

“The Tanzanians are delivering the training program themselves, we are there to guide the process and provide feedback along the way,” says Dr. Scott. “We’re also evaluating the success of the program, in terms of participants’ competencies and impact on service delivery.”



▲ Dr. Heather Scott in Tanzania.

The training program is targeted primarily to clinical associates—health professionals who work closely with physicians in hospitals and clinics, not just in Tanzania but in many African nations.

“Ultimately, we want to have a packaged training program that’s portable to other nations, with a fine-tuned curriculum, rigorously tested e-learning modules, effective teaching methods and proven implementation model,” Dr. Scott says. “This way, we hope to make a far-reaching and lasting impact on the fates of women and infants throughout the developing world.

“Accessing Safe Deliveries in Tanzania” is:

- developing a comprehensive obstetrics and neonatology training program for health professionals in Tanzania
- testing the effectiveness of the training program and perfecting its content and delivery
- laying the groundwork to run the training program in other countries
- aiming to reduce maternal and newborn deaths and complications in Africa



MISSION OF MERCY:

Med student brings engineering know-how to R&D projects in mother and child health

Second-year medical student Allan Kember is determined to help the millions of women in the developing world who suffer the humiliation and discomfort of obstetric fistula—a post-childbirth injury that allows urine to leak freely from the bladder into the vagina. “It’s unbelievably prevalent in low-income countries, where you have very young, malnourished women giving birth in the absence of prenatal or emergency obstetric care,” he says. “Once injured, they lack treatment and even absorbent pads... some literally end up huddled in a corner, unable to function and shunned in their communities. It’s tragic.”

Kember learned about fistula when he was an engineering student, in Angola building a cable ferry to replace bridges blown up in the country’s civil war. Now, as a medical student, he’s applying his engineering knowledge to medicine, working with several companies to develop and test a variety of devices for stopping the flow of urine, non-invasively.

At the same time, Kember is testing a simple device called the PrenaBelt, which he designed to prevent pregnant women from sleeping on their backs. “It’s essentially a belly band with a couple of high-density plastic balls on the back that produce uncomfortable pressure points when the woman rolls onto her back,” explains Kember. “This prompts her to shift back onto her side, taking pressure off the inferior vena cava.” Pressure on this major blood vessel can reduce nutrient and oxygen flow to the fetus and placenta, raising the risk of low birth weight and stillbirth. Dr. Heather Scott is supervising this “Research in Medicine” undergraduate research project, a clinical trial which is running concurrently in Ghana and Halifax.

SAFE PASSAGE TO BIRTH:

Health care improvement grant supports superior care in labour's second stage



◀ Dr. Erna Snelgrove

WHILE ALL STAGES OF LABOUR

and delivery pose their risks, the second stage of labour is perhaps the most perilous in the journey to birth. This stage begins when the cervix is fully dilated to 10 cm and ends when the baby is born. At the outset, the baby's head may or may not be fully engaged in an unobstructed position in the pelvis, and the mother may or may not have the urge to push.

"It's critically important that the second stage of labour is managed properly, with close adherence to best evidence," says Dr. Erna Snelgrove-Clarke (PhD), a senior researcher and experienced birth-unit nurse with a faculty cross-appointment to the Department of Obstetrics & Gynaecology.

"The condition of the mother and/or the baby can deteriorate when best practice is not followed in this stage, with potential adverse consequences."

As Dr. Snelgrove-Clarke explains, if the mother starts to push too soon or too hard, she can waste vital energy and increase her risk of ligament injuries and perineal lacerations. Worse, if the baby is not in the proper position when pushing begins, its passage through the birth canal can be obstructed, necessitating an emergency c-section or forceps- or vacuum-assisted delivery.

Dr. Snelgrove-Clarke is co-principal investigator of a study that aims to improve provider adherence to the clinical practice guideline for second stage management.

She's co-leading the project with Jennifer West, manager of the IWK Health Centre's Birth Unit, in collaboration with obstetricians, Drs. Joan Wenning and Victoria Allen. The team also includes providers from other health disciplines. The project has received a \$65,000 TRIC grant (Translating Research into Care) from the IWK Foundation.

"The guidelines require staff to ensure that the mother has a strong urge to push, that the baby meets all the positional criteria for a safe delivery, and that the fetal heart rate is normal, before giving the green light to push," explains Dr. Snelgrove-Clarke. "From there they have to monitor the fetal heart rate and position frequently, and communicate constantly with the mother and each other."

Approximately 250 to 350 women meet the guideline criterion monthly, which requires staff to record a status entry in the birth log every hour during these women's labours. "We're amassing a mountain of data to let us know what we're doing and what we can do better," Dr. Snelgrove-Clarke says. "The research is becoming an intervention, as staff are thinking and talking about the guidelines more than ever and being even more consistent in their approach to the second stage. The next step will be to measure sustainability of guideline implementation."

A LEGACY OF LEARNING:

Atlee endowment fund provides perpetual support for research

FOR MANY, THE ATLEE NAME IS synonymous with Nova Scotia's famed Atlee Perinatal Database, the first provincial, population-based perinatal database in Canada and one of the longest-running, most-extensive such databases in the world.

People may be less familiar with the man behind the name—Dr. Harold Benge Atlee, first head of Dalhousie's Department of Obstetrics & Gynaecology—and the fact that his legacy reaches far beyond the influential database that carries his name.

Not only did Dr. Atlee shape the Department of Obstetrics & Gynaecology into a driving force for better care during his lifetime, after his death in 1978 he left behind a

substantial bequest that has allowed the department to continue its pursuit of excellence. Since 1980, the Atlee Endowment Fund has awarded roughly \$400,000 in research grants, equipment support and studentships, enabling department members to answer pressing research questions in the fields of prenatal care, childbirth, infertility and women's health.

"The Atlee Endowment Fund has provided the department with a solid base for its members' research efforts," says current department head, Dr. Anthony Armson. "It has allowed us to develop our data collection and analysis infrastructure, attract additional funds from outside sources, and explore all kinds of scientific, clinical and population health issues."



DR. HAROLD BENGE ATLEE was a champion of positive change who established obstetrics and gynaecology as distinct and important fields at Dalhousie Medical School. He was a strong proponent of research and supported such forward-thinking programs as natural childbirth training and early ambulation (to get mothers walking within hours—rather than days—of giving birth). Born in Pictou

County, N.S., Dr. Atlee grew up in Annapolis and completed his medical training at Dalhousie in 1911. After a stint as a general practitioner, he went to England for further medical training. With the outbreak of WWI, he joined the British Medical Service, receiving the Military Cross for "gallantry during active operations" in Turkey. When the war was over, he completed his obstetrics and gynaecology training and returned to Canada in 1922 to lead the new combined Department of Obstetrics & Gynaecology at Dalhousie.



Dr. Stefan Kuhle

A recent award of \$30,000—the largest in the Atlee fund's history—provided cornerstone funding for Dr. Stefan Kuhle

to leverage nearly \$150,000 from the Canadian Institutes of Health Research (CIHR). "The Atlee Fund provided the critical first commitment that allowed me to secure another \$60,000 in matching funds from the IWK, Dalhousie Medical School and the Department of Pediatrics," says Dr. Kuhle, an associate professor and perinatal epidemiology researcher.

Some of these funds enabled Dr. Kuhle and his collaborators to analyze information recorded in the Atlee database about maternal characteristics and perinatal outcomes in nearly 70,000 pregnancies. "For example, we estimated the impact that achieving a healthy weight could have on mother and child health," he says. "We found that more than half of all gestational diabetes and a quarter of pregnancy-related hypertension cases could potentially be prevented if overweight and obese women reached healthy weights before and during pregnancy. There would also be substantially fewer c-sections and babies born large for gestational age."

SHEDDING LIGHT ON THE SUNSHINE VITAMIN:

Researchers explore impacts of vitamin D status in pregnancy

INVESTIGATORS IN THE

Perinatal Epidemiology Research Unit (PERU) are shedding light on the importance of vitamin D in pregnancy. Dr. Linda Dodds and Dr. Christy Woolcott are testing assumptions about vitamin D and its impact on mother and child health in a variety of studies, including some with collaborators at McGill and Laval universities in Quebec.

The U.S. Institute of Medicine and Health Canada recommend that pregnant women maintain vitamin D levels at concentrations of at least 50 nanomoles of 25OHD per litre of blood (25OHD is a metabolic marker of vitamin D that is relatively easy to detect and measure). The Canadian Pediatric Association, however, recommends 25OHD levels of 75 nanomoles/L or higher.

“We’re finding some adverse effects at levels lower than 50 nanomoles of 25OHD per litre of blood,” says Dr. Dodds. “Women with 25OHD levels under 30 doubled their risk of pre-eclampsia, while women with levels between 30 and 50 increased their risk one-and-a-half-fold.”

The researchers came up with some unexpected results. “When we linked the data on vitamin D levels from cord blood samples with our clinical data, we found that babies with lower-than-recommended levels of vitamin D were half as likely to be born with a low birth



weight, compared to those with recommended levels or higher,” says Dr. Dodds. “We had expected babies with lower vitamin D to have a higher risk of low birth weight.”

Another surprising finding was that lower-than-recommended vitamin D levels affected the risk of gestational diabetes only among women who smoked during pregnancy.

“Smokers with 25OHD levels below 30 increase their risk of gestational diabetes fourfold,” notes Dr. Dodds. “We hope our findings will lead to stronger recommendations for women to quit smoking in pregnancy—or at least boost vitamin D levels to protect against diabetes.”

Exposure to sunshine is the most efficient way to increase vitamin D levels—but too much sun is not

▲ Dr. Linda Dodds and Dr. Christy Woolcott

safe for the skin. Taking supplements and eating foods fortified with vitamin D may help women reach the recommended intake of 600 International Units daily to achieve desired blood levels.

“We’re looking at what factors influence vitamin D status and what levels are required for health of mothers and babies,” explains Dr. Woolcott. “Low socioeconomic status and high body mass index are also associated with lower levels of vitamin D, so these factors may have to be considered when determining how to support women to achieve the levels they need for health.”

FAREWELL AND GRATITUDE

In May 2016, the Department of Obstetrics & Gynaecology bade an official farewell to four long-serving faculty members who are retiring and/or embarking on new challenges. Together, these outstanding academic clinicians gave 130 years of dedicated service to the department, the women in our care, and the trainees under our guidance. Each one made a unique mark on the department and will be remembered with gratitude and esteem for many years to come.



JOAN WENNING

As the department's residency program director for many years, Dr. Wenning shaped the education of many obstetricians and gynaecologists in Canada and around the world. Known for her sense of humour and tenacity, she contributed to all aspects of the department's operations, serving as head of the obstetrics division in the latter part of her career.



DAVID YOUNG

Dr. Young brought calm compassion to his every role, including as an obstetrician, educator and department head. His patients loved him for his ability to put them at ease even in the midst of crisis. He transitioned to fertility medicine later in his career, working with IVF patients at Atlantic Assisted Reproductive Therapies, where he was executive director.



ARTHUR ZILBERT

Dr. Zilbert was a strong-willed force to be reckoned with, who worked diligently on behalf of his patients at both the IWK and Dartmouth General Hospital. He was never one to shy away from voicing his opinion and fighting for women in Nova Scotia.



GILLIAN GRAVES

As a nationally respected reproductive endocrinologist, Dr. Graves played a role on many accreditation teams. She is widely known as an excellent surgeon and clinician who always cared deeply about her patients. In fact, it was not unusual to see her in her office, late at night, calling patients personally to discuss their care.



▲ Drs. David Young, Joan Wenning, Anthony Armson, Gillian Graves and Arthur Zilbert celebrating at the farewell event in May 2016.

OBSTETRICS & GYNAECOLOGY

5850 / 5980 University Avenue
Halifax, Nova Scotia B3K 6R8
(902) 470-6460
Fax: (902) 425-1125

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